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## Impact of Organizational Culture and Perceived Process Safety in the UAE Oil and Gas Industry

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## Impact of Organizational Culture and Perceived Process Safety in the UAE Oil and Gas Industry

### Abstract

In the last few decades, there had been a lot of accidents in the oil and gas industry throughout the world. This article reports a qualitative study of 30 employees employed in the United Arab Emirates (UAE) oil and gas industry. Health, Safety, and Environment (HSE) culture is a concept which was studied in many researches. However, this research is set to examine how certain behaviors affect the safety performance in UAE's oil and gas industry. Four core themes that were drawn from the interviewee discussions of how safety culture, leadership safety behaviors, supervisory safety behaviors, and employee training on safety affect the employee's performance on safety. The emergent narratives on the safety culture showed that an employee was likely to perceive safety in the organization favorably if s/he believed that his/her role in ensuring process safety was critical. Moreover, results pertaining to supervisory safety culture showed that the safety culture promoted by a supervisor within his/her role often set the standard for his/her subordinates constituted the benchmark against which all his/her subordinates rated their own idea and practice of safety culture. In addition, the findings confirm the important role played by safety leadership, which entails leader-follower interactions where the former influences the achievement of safety goals. Lastly, it was emphasized that safety training stimulated employees with negative or indifferent attitudes towards safety to be more actively engaged in safety matters in the organization.

### Keywords

Health, Oil and Gas, Qualitative Research, Safety and Environment (HSE), Semi-Structured Interviews, United Arab Emirates (UAE)

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## Impact of Organizational Culture and Perceived Process Safety in the UAE Oil and Gas Industry

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*In the last few decades, there had been a lot of accidents in the oil and gas industry throughout the world. This article reports a qualitative study of 30 employees employed in the United Arab Emirates (UAE) oil and gas industry. Health, Safety, and Environment (HSE) culture is a concept which was studied in many researches. However, this research is set to examine how certain behaviors affect the safety performance in UAE's oil and gas industry. Four core themes that were drawn from the interviewee discussions of how safety culture, leadership safety behaviors, supervisory safety behaviors, and employee training on safety affect the employee's performance on safety. The emergent narratives on the safety culture showed that an employee was likely to perceive safety in the organization favorably if s/he believed that his/her role in ensuring process safety was critical. Moreover, results pertaining to supervisory safety culture showed that the safety culture promoted by a supervisor within his/her role often set the standard for his/her subordinates constituted the benchmark against which all his/her subordinates rated their own idea and practice of safety culture. In addition, the findings confirm the important role played by safety leadership, which entails leader-follower interactions where the former influences the achievement of safety goals. Lastly, it was emphasized that safety training stimulated employees with negative or indifferent attitudes towards safety to be more actively engaged in safety matters in the organization. Keywords: Health, Oil and Gas, Qualitative Research, Safety and Environment (HSE), Semi-Structured Interviews, United Arab Emirates (UAE)*

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### Introduction

Combining the term health, safety and environment (HSE) with the concept of safety culture, supervisory safety behavior's, leadership safety behaviors and safety on training have become a common terminologies in the petroleum industry in UAE oil and gas industry since 2017 after the dramatic explosion which took place in ADNOC Refining on January 15<sup>th</sup>, 2017. Historically, construction projects in the oil and gas industry have been witnessing numerous disastrous events. As a result, this has been a major contributor to the establishment of the groundwork for professional industry practices to avoid such catastrophes (Kibria, 2016). Health, Safety, and Environment (HSE) remains an indispensable component of every organization because it is a measure of organizational efficiency. In the oil and gas industry, HSE regulation has become more crucial, as it involves adherence to HSE regulations, an arrangement of preventive measures and making sure that the system operations are incident free. The achievement of effective HSE mechanisms and approaches entails the combination of HSE with the culture concept. This, in turn, has yielded the concept of safety culture, which is traceable to the report of the International Atomic Energy Agency (IAEA) about the 1986 nuclear catastrophe in Chernobyl (Høivik et al., 2009). Safety leadership refers to the

interaction process between followers and their leaders in a process that allows leaders to exert their influence to ensure the achievement of the safety goals of an organization (White, 2016). Effective leadership goes beyond understanding leadership styles. It entails other personal level factors that transcend collective organizational perceptions by workers. For example, managerial vision and credibility, coupled with a commitment to safety, influence perceptions of safety leadership in an organization (Conchie, 2013).

Moreover, Zohar (2000) suggested that the perception of workers of the comparative prioritization of efficiency goals and safety in the practices and behaviors of their supervisors contributes significantly to the perceived safety climate in an organization. Theoretical insights demonstrate that this behavior informs and establishes “supervisory safety practices as a link between safety climate and culture” (Nielsen, 2014, p. 8). Antonia (2011) proposed the application of insights drawn from sophisticated safety theories. Lastly, the working definition of safety training in the current research portrays it as “instruction and practice for acquiring skills and knowledge of rules, concepts, or attitudes necessary to” ensure effective safety practices in an organization (Cohen et al., 1998, p. 11). For long, researchers have been reiterating the importance of safety training as an organizational characteristic with effective outcomes through enhancement of employee knowledge and skills on organizational safety (Shea et al., 2016).

This article outlines the concept of HSE culture, the impact of leadership behaviors; outline the importance of supervisory behaviors, and the importance of safety on training. We believe this will be helpful for oil and gas companies to adopt strategies and action that will aid the improvement of HSE performance.

### **Background and Industry Context**

The oil and gas industry is the main contributor to the economy of the UAE (Alzahmi, 2016). The UAE ranks seventh among countries with the petroleum production rates across the world with its 2017 projections of its hydrocarbon exports reaching USD 65 billion according to the US Energy Information Administration (EIA, 2017). The significance of the oil and gas industry to the UAE is manifested in the Country’s federalist constitution, which gives each emirate control over its oil production and development of resources (Sambidge, 2010). The capital, Abu Dhabi, has the largest oil deposits in the UAE and is the largest emirate (Rai & Victor, 2012). The Supreme Petroleum Council (SPC) defines the policies and objectives associated with petroleum in Abu Dhabi. The dominance of Abu Dhabi in the oil production among the seven emirates making up the UAE renders the SPC the most critical entity within the country for the establishment of the policy governing the oil and gas industry in the Country (EIA, 2017). Despite the dominance of the SPC in policy setting, the HSE regime for the UAE oil and gas sector has no specific regulation (Thomson Reuters, 2018). In general, the Environmental Law No. 24 of 1999 and the Federal Law No. 8 of 1980 related to labor law contain specifications about some requirements for health and safety. The Environmental Law No. 24 of 1999 addresses environmental safety. It stipulates that the Ministry of Environment and Water is responsible for the assessment of environmental impacts and development of standards for protecting the environment in all industrial projects within the UAE (Kashwani, 2017). For example, Article 55 of the Environmental Law No. 24 of 1999 requires that establishments and enterprises “provide the necessary means of protection to the workers in accordance with conditions of safety and occupational health including choice of machines, equipment and suitable types of fuel, taking into consideration the time of exposure to such pollutants.”

The Federal Law No 8 of 1980 provides for the means and ways of protecting workers against occupational hazards. Ministerial Order No. 32 of 1982 corroborates the Federal Law

No. 8 of 1980 by stating that the employer is under obligation to safeguard the safety and health at work for every employee by providing appropriate means for protecting employees from the dangers of fire, equipment-related safety threats, occupational diseases and accidents at work. On the other hand, the employee is required to use protective clothing and equipment provided, adhere to all safety instructions prescribed by the employer, and avoid causing hazards or acting in a manner that could hamper safety operations.

From the information provided thus far, it is evident that the UAE does not have a regulatory body or even regulation that addresses HSE in the oil and gas industry specifically. Kashwani (2017) observed that the UAE lacks a distinctive, official authority or government body that is responsible for monitoring safety matters in the construction projects in the UAE oil and gas industry. This gap exists both at the local and federal legislative levels. However, Butt (2001) observed that the principles of HSE in the UAE are addressed through various local and federal legislation that do not detail the technical requirements and processes for implementing HSE principles.

### **Theoretical Framework**

Safety climate in an organization is dependent on other elements of the organizational culture of the firm. Clarke (1999) described safety as organizational culture's subclass. This implies that safety climate is not a standalone concept. It is neither the only lens via which one can view a group's safety behavior. This could partially explain the diversity of definitions of safety climate (Yang et al., 2009). For example, Cox and Cox (1991) described safety as a reflection of values, beliefs, attitudes, and perceptions shared by employees concerning safety. From a nuclear industry perspective, Pidgeon (1991) described safety as a set of roles, norms, technical, social, attitudes, and belief practices intended to minimize the exposure of the public, managers, employees, and customers to injurious or dangerous conditions. For Ostrom et al. (1993), safety is a concept entailing the attitudes and beliefs in an organization as manifested in the procedures, actions, and policies that affect the safety performance of the organization. Like most of the other researchers, Lee and Harrison (2000) defined safety climate as the behaviors, perceptions of risk, beliefs, values, and attitudes relating to employee safety in an organization. Hence, the concept of safety cannot be analyzed independently without consideration of the other organizational culture.

Considering the numerous definitions of safety, the most appropriate for the context of this study is Zohar's (1980) definition of safety is more consistent with the intended approach for investigating safety climate in this research. This is because Zohar (1980) defined safety climate as the perception an employee has about environmental safety characteristics and organizational traits that influence safety performance. This author proceeded to explain that such employee perceptions are subject to the influence of attitude, personality, and organizational policy. However, this definition does not explicitly mention other influencers such as values, perceptions, beliefs and attitudes shared among employees with respect to safety as captured by Cox and Cox (1991) and other authors (including Guldenmund, 2000; Mentzer et al., 2014; Ostrom et al., 1993; Pidgeon, 1991). Consequently, an amalgamation of these two definitions leads to the operational definition of safety in this research. Thus, safety culture's operational definition is the reflection of shared attitudes, values, beliefs, and perceptions manifested in the employee perception of environmental safety and organizational characteristics that influence safety performance (Cox & Cox, 1991; Zohar, 1980).

It's a mandatory of the industry to compete and meet issues on health environment throughout its activities and operations to protect the natural environment. A framework on safety culture for the sector which was proposed by Reason (1998) is as follows:

### **Cultural Threat #1**

The first cultural threat is named as production threat. When a gap is obtained between safety and production, then production pressure comes in due to leadership, which may emphasize meeting rising demands over budgets already made, instead of putting the focus on working safely. An appropriate representation of valid values in the industry may fail to be shown clearly due to leadership qualities. Therefore, this leads to safety margins being disintegrated slowly as a result of pressure yielded between safety and production.

### **Cultural Threat #2**

The second cultural threat determined by Reason (1988) is complacency. When a belief arises in the organization about all risks to have been worked upon and reduced attention of the organization's efforts towards risk, complacency is yielded. An impression of an organization being secured as compared to others, which seems not to need complying with appropriate safety practices and standards of the oil and gas industry may be brought out, which is not true. These organizations do not obtain critical information from incidents that have once occurred earlier due to reduced efforts in obtaining essential safety data.

### **Cultural Threat #3**

In the third part of the framework, deviance is normalized when systems and processes' deviation is accepted. Deviance normalization occurs when it is generally taken to draw difference from systems that are safe, processes, and procedures. To avoid defenses of safety and rules of getting the job done at the time scheduled, systems within the management are not applied throughout some operations. These types of organizations do not provide efficient and effective systems for resolving inadequate operations.

### **Cultural Threat #4**

The fourth and the last cultural threat is tolerance of inadequate systems and resources which describes the tolerance of resources to use and systems even when they are inadequate. When there is acceptance of working with inadequate systems and resources operating become a habit. Employees are therefore able to manage them even when in little quantities to ensure the organization runs well. A problem arises when the management fails to change with the current conditions and adapt to unpredicted issues. This leaves unresolved issues of safety culture in oil and gas industry, hence hindering its performance. These organizations respond slowly when conditions change, thus yielding a gap between a problem that is existing and its solution I issue of safety. However, organizations use approaches in managing safety issues to at least fill gaps and correct errors made.

### **Cultural Defense #1**

The first cultural defense defined by Reason is committed safety leadership. This describes leadership as far as safety cultural of gas and oil are concerned. By making resources adequately available, leadership becomes genuine. Leaders who happen to be committed to issues related to safety understand objectives and goals accurately hence tackling them correctly by actively and directly participating in managing safe systems. Leaders, being at the top of management, know threats hindering the performance of an organization as well as hazards involved. Therefore, they take preventive measures against risks and dangers that may

have been brought about in the organization. With this system of managing an organization, some level of accuracy and accountability is brought out.

### **Cultural Defense #2**

This section entirely describes vigilance, which is the ability to maintain attention in the performance of an organization. It is done through the creation of awareness about safety as well as bringing workers to the understanding of risks related to measures of safety. The organization should also disseminate appropriate ideas regarding safety, which include identification of hazards which cause hindrance to the performance of an organization. Those organizations that are vigilant are leading in their performance as they determine proactive operations, and every employer becomes responsible for reporting a gap identified or an error made.

### **Cultural Defense #3**

The third cultural defense talks about accountability and responsibility of employees in an organization. When challenges face an organization, employees become responsible and help the management to account for them, hence perfecting its performance. Employees on noticing a threat or hazard, immediate report on the same should be done, and any activity that brings about the danger to be eliminated. Employees of an organization are therefore empowered to be responsible while working and make sustainable operations in care for the future generation. The managing body of every organization further, rewards employees for their active participation in the maintenance of rules, laws, procedures, and standards of safety. Through rewards, employees get encouraged, and participation maximized.

### **Cultural Defense #4**

The last cultural defense is resilience, which is the potential to deal with threats and hazards that have emerged within an organization in an environmentally friendly manner and meet the rising demands. Various mechanisms are used to meet the demands and curb threats and hazards. These organizations can survive even with fluctuating needs and requirements. Organizations that work in this manner respond accurately to conditions that are varied and unpredictable, and also, they respond to changes in time. When the management of such organizations is well run, its levels of performance have hardly fluctuated.

**Aims of the study.** In the past, fatal accidents have occurred in UAE oil and gas industry with different factors being blamed on the accidents. For instance, in January 2009, an accident at ADCO in Shah oil field in Abu Dhabi caused three fatalities (Arabian Business, 2009). In March of the same year, an explosion at Abu Dhabi Gas Liquefaction Company facility in Das Island led to three fatalities (Carlisle, 2009). In December 2015, a man lost his life after a boiler he was inspecting in a plastic manufacturing plant exploded (The Straights Times, 2015). Moreover, TAKREER had one of its worst tragedies when a huge explosion occurred in its facilities resulted in \$850 million of damaged assets (Brelsford, 2017).

This research is set to examine different attributes that affect and improve the safety performance in UAE oil and gas industry. Being associated with Abu Dhabi National Oil Co. (ADNOC), which had a big explosion on January 11, 2017, we would like to examine the findings whether UAE oil and gas industry is in line with the scientific literature on safety climate and their relationship with improved safety workplace.

## Approach and Methods

Oil and gas industry consider the backbone of its economy with proven to be the 7<sup>th</sup> largest reserves of oil and natural gas (Helmi, 2017). The companies selected for this study is based on UAE and specialized in oil and gas productions.

Qualitative research was chosen for this study after consideration of the nature of the information sought to answer the set research question. According to Saunders, Lewis, and Thornhill (2016), qualitative studies involve the use of non-numeric or textual information in a study and analysis of a research phenomenon. Lewis (2015) explains that qualitative research is fit for the examination of attitudes and perceptions under investigations. The method is best suited for examination of behaviors of human beings where the researcher is required to interpret information provided by the respondents (Silverman, 2016).

The research was conducted using multiple case studies research design where accidents occurred in UAE oil and gas companies. Considering that the study is aimed at developing an in-depth and comprehensive description and analysis of the perceptions of HSE by working in the gas and oil industry in UAE, multiple case study research design was the most suitable of all the research designs (Collis & Hussey, 2013; Creswell, 2014). When the researcher intends to illustrate an issue based on a compilation of detailed descriptions, multiple case studies are most suitable (Creswell & Poth, 2018).

**Population and sampling.** The target population is 30 employees who are comprised of managers, supervisors, and employees working in oil and gas companies (Table 1). To select the appropriate sample, the researcher used purposive sampling. Also known as judgmental sampling, purposive sampling entails the selection of information-rich cases from a population (Creswell, 2014). Such selection is often achieved by choosing research subjects based on traits that they possess, and which set them apart from others in the rest of the population. To determine the suitable sample, researchers set out a condition or conditions that the target research subjects must meet to be suitable candidates for providing the requisite information to address the study objectives (Bryman, 2016).

Table 1: Participant information and methods of data collection and recording

| Type of Participant    | Number | Gender         | Methods               | Comments                |
|------------------------|--------|----------------|-----------------------|-------------------------|
| HSE managers           | 5      | 8 men          | Individual interviews | All interviews recorded |
| Plant managers         | 10     | 10 men         | Individual interviews | All interviews recorded |
| Safety representatives | 5      | 3 men, 2 women | Individual interviews | All interviews recorded |
| Employees              | 10     | 4 men, 6 women | Individual interviews | All interviews recorded |
| Total                  |        | 22 men 8 women |                       |                         |

For this research, target participants must have worked in oil and gas industries for at least five years and be conversant with HSE in the oil and gas industry. The rationale for setting a five-year requirement for experience was based on the understanding that an individual that has worked in the industry for such a period had a good grasp of HSE and could offer valuable information about the research topic from experience. The respondents were from different oil and gas companies.

**Data collection.** We conducted semi-structured interviews with employees to collect primary data, whereas, credible websites, databases, journal articles, books, and industry reports were the primary sources for the secondary data to address relevant research questions

(Johnston, 2017). Company data available from the case company was also reviewed, as accessing internal secondary data was challenging since the institutions were not willing to release the information or the bureaucracy involved meant a lot of time would be used. The importance of secondary data in this study is not only to inform trends but also to contextualize the information provided during the interviews by the interviewees (Prada-Ramallal, Takkouche, & Figueiras, 2017). Secondary information is also crucial in informing the decision that the study takes and also helps in determination of the questions asked during the study.

Moreover, semi-structured interviews will allow the researcher to interject during the interview sessions to seek clarifications or probe further (Bryman, 2016). Semi-structured research questions also allow for follow-up questions during the interviews. The interview questions were open-ended with follow-up ones, and the respondents expressed themselves freely, e.g., how does your supervisor emphasize on safety? And what practices do your supervisors exhibit to show the importance of safety? With the permission of the interviewees, the interview sessions were recorded and later transcribed for analysis. The interviews were conducted in Arabic since it is the main language in the UAE, and all the respondents were fluent in the language. The interviews were scheduled to last for one hour each, but the actual time ranged from 45 minutes to 1 hour 10 minutes and the 6 months for the complete data collections.

Ethical considerations during research are key to help the researcher develop trust with the respondents and also to avoid harming the respondents. Despite permission being sought from the top management of the different companies, it was made clear to them that no private information about the respondents will be availed to the company. The respondents were assured that all information provided during the interviews was only to be used for the study. The respondents only gave the information freely without compulsion. They were also informed that in case they thought any information provided could cause personal harm to them, they could ask for it to be excluded from the study either in part or in full.

**Analysis.** We use NVivo9 for analyzing transcripts of the interviews to recognize words that are related to narratives of safety management. Coding is the first order analysis where the researcher coded the translated interviews and picked describing codes in the form of words, expressions, and phrases the interviewee used. Then, pattern codes were developed through the application of comparison of the interviewees to frame facets of safety management in oil and gas firms in UAE (Miles & Huberman, 1994). Through these methods, it became possible for the researcher to identify the common narratives and differences between the various narratives. The coding process went on to refine the narratives through the identification of different stories that gave more specific details regarding separate and varying facets of the border narratives. Through this process, four narratives emerged, and several more specific details about the information.

The numerical pattern analysis was also part of the coding process where examination of how much data separate narrative storyline. The numerical pattern analysis helped in to note patterns of salience of the narratives and the related storyline across the entire data set and also helped the researcher to an emphasis on the narratives most discussed.

## Results

The analysis process described in the previous section led to the identification of four core themes that were drawn from the interviewee discussions of how safety culture, leadership safety behaviors, supervisory safety behaviors and employee training on the safety impact the employee's perception of process safety. The various sections that report on the results of the semi-structured interviews are presented using narratives and with the understanding that the narratives are about the same topic and are, therefore, related. Each of the narratives had at

least three storylines representing the various aspects related to employee perceptions of safety culture. In the subsequent sections, the narratives that underpin the storylines are used to illustrate the results of this study.

As demonstrated in the table below, the reference patterns for storylines and narratives in all the interviews comprise at least two storylines for every narrative. For the purposes of adhering to the ethical considerations and retaining interviewee confidentiality and anonymity, the interviewees are referred to depending on the departments in which they were working. For example, interviewees from the HSE department are referred to as HSE1... HSE5, plant managers as PM1... PM10, safety representatives as SR1... SR5, and employees as Emp1... Emp10. The respective major themes are coded above the subthemes that stood out under each theme. The numbers corresponding to each interviewee and subtheme denote the count of references made by that interviewee under that category. For example, HSE1 recorded four narratives on the safety roles subtheme of safety culture, meaning that he had more than one storyline for that subthemes' narrative. The total refs' column shows the total number of narratives in each subtheme for all interviews, while the bracketed figures are the total count of storylines that constitute the narratives as per the theme. For example, safety culture had 80 references in total, thereby implying the sum of all storylines making up the narratives (Table 2).

Table 2: Reference patterns for storylines and narratives across all the interviews

|  | H | H | H | H | H | P | P | P | P | P | P | P | P | P | P | P | S | S | S | S | S | S | E | E | E | E | E | E | E | E    | E  | E | E | Total |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------|----|---|---|-------|
|  | S | S | S | S | S | M | M | M | M | M | M | M | M | M | M | M | R | R | R | R | R | R | m | m | m | m | m | m | m | m    | m  | m | m | refs  |
|  | E | E | E | E | E | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 1 | 2 | 3 | 4 | 5 | 5 | p | p | p | p | p | p | p | p | p    | p  | p | 0 |       |
|  | 1 | 2 | 3 | 4 | 5 |   |   |   |   |   |   |   |   |   | 0 |   |   |   |   |   |   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9    | 1  | 0 |   |       |
| <b>Safety Culture</b>                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | (80) |    |   |   |       |
| Safety roles                               | 4 | 1 | 0 | 3 | 0 | 2 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 5 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 3 | 0 | 0 | 3 | 1 | 1 | 0 | 1 | 4    | 37 |   |   |       |
| Attitudes and beliefs towards safety       | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 4 | 3 | 3 | 0    | 20 |   |   |       |
| Safety policy                              | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 3 | 0 | 1 | 2 | 1    | 23 |   |   |       |
| <b>Supervisory Safety Behaviors</b>        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | (73) |    |   |   |       |
| Supervisory Safety culture                 | 1 | 2 | 1 | 0 | 2 | 0 | 1 | 2 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 3 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 4 | 1    | 31 |   |   |       |
| Supervisory safety practices               | 1 | 2 | 1 | 3 | 1 | 1 | 1 | 2 | 3 | 0 | 3 | 0 | 1 | 2 | 0 | 2 | 0 | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 3 | 0 | 3 | 0 | 3 | 2    | 42 |   |   |       |
| <b>Leadership Safety Behaviors</b>         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | (96) |    |   |   |       |
| Commitment to safety                       | 3 | 3 | 4 | 3 | 5 | 4 | 2 | 1 | 3 | 2 | 0 | 1 | 2 | 0 | 0 | 1 | 1 | 4 | 2 | 2 | 3 | 3 | 5 | 1 | 4 | 2 | 4 | 0 | 2 | 1    | 68 |   |   |       |
| Safety inspiration from leaders            | 2 | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 2 | 0 | 3 | 0 | 4    | 28 |   |   |       |
| <b>Training on Safety</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | (41) |    |   |   |       |
| Develops positive attitudes towards safety | 1 | 0 | 2 | 1 | 2 | 3 | 1 | 0 | 2 | 1 | 3 | 1 | 2 | 0 | 5 | 3 | 2 | 0 | 1 | 2 | 0 | 3 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 1    | 41 |   |   |       |

The next sections outline the narratives and their respective storylines to demonstrate how the interviewees perceived the various safety culture dimensions in the UAE oil and gas industry. The first section is about safety culture and the narratives and storylines related to safety roles, attitudes, and beliefs towards safety, experiences of safety, and safety policy, as

the subthemes that emerged from the data analysis. In the second section, narratives and storylines addressing supervisory safety behaviors under the subthemes of supervisory safety culture, supervisory safety practices, and safety prioritization. The third section pertains to the theme about leadership safety behaviors where interview data analysis yielded three subthemes of consistency in words and actions, commitment to safety, and safety inspiration from leaders. Finally, the employee training on safety theme, which yielded three subthemes of safety knowledge transfer, encouraging safety participation, and development of positive attitudes towards safety, is reported on before the discussion section. These themes, sub-themes, and storylines have been summarized in Table 3.

Table 3: Identified themes, sub-themes, and storylines for safety performance

| Theme                        | Sub-theme                                | Storylines   |
|------------------------------|--|--|
| Safety culture               | Safety roles                             | Individual is more important   |
|                              |  | Departmental is more important   |
|                              | Attitudes and beliefs towards safety     | Influencing importance of safety   |
|                              |  | Influencing safety policy perceptions  |
|                              | Safety policy                            | Safety policy exists and is important  |
|                              |  | Safety policy exists and is not important:                                     |
| Safety policy does not exist |  |  |
| Supervisory safety behaviors | Supervisory safety culture               | Supervisory safety culture is about beliefs and attitudes towards safety       |
|                              |  | Supervisor’s safety culture is the benchmark                                   |
|                              | Supervisory safety practices             | Frequency of supervisor interaction with subordinates about safety             |
|                              |  | Supervisor’s pattern of action in tasks  |
| Leadership safety behaviors  | Commitment to safety                     | Leaders talk about safety regularly  |
|                              |  | Leader supports and is familiar with the safety policy                         |
|                              | Safety inspiration from leaders          | Leaders applauding safety behavior   |
|                              |  | Safety inspiration from leaders  |
| Training on safety           | Training influence on safety perceptions | Positive transformation and reinforcement of positive attitudes towards safety |
|                              |  | Reinforcement of positive attitudes towards safety                             |

**Safety Culture**

The three subsections below illustrate the storylines and narratives related to safety culture as an influencer of perceptions of employees towards safety. These include safety roles, attitudes, and beliefs towards safety and safety policy.

**Safety roles.** In total, 16 of the 30 interviewees had storylines related to safety roles with respect to safety culture. Two major narratives dominated the storylines about the safety roles. The first narrative showed was about safety roles as an individual responsibility that

influences the perception of an employee towards safety culture. For example, an employee saw the contribution to safety culture as an individual responsibility:

Safety culture really is about me being the person that ensures safety first for myself and for others that I work with. It does not mean that I ignore what another person is doing to contribute to safety, but it has to start with me... no matter how small my contribution is, it counts.... (Emp3)

The second narrative was that of collective safety roles. The narratives and storylines under this category referred to institutionalized collective roles towards contributing to safety culture. At times, this contribution to a favorable safety culture by a department (as a group of employees) seemed to have competing views with that of individual contribution. Some interviewees felt that the contribution to safety culture was more significant at departmental level than at individual level. For instance, a plant manager highlighted this conflict as follows:

I do not think that having a person with a drive for safety culture in the company is helpful to the organization. It is more important and, in fact, should be considered the only way—to have each department develop a safety culture instead of individuals. (PM8)

These two sets of quotes led to the identification of two storylines that alluded to individual and departmental contribution to safety culture as important (Table 3).

**Individual is more important.** Workplace safety, together with health hazards is a key concern to guarantee the safety of individuals at the workplace. The value of safety is pegged on a company's safety procedures and policy. European Agency for Safety and Health at Work in their 2006 report states that safety is a value and argues that all injuries are avoidable, and the goal should be to ensure that there are zero injuries. For instance, one plant manager mentioned that: "Safety culture starts with me as an individual. Forget at organizational or other levels. How can you achieve safety culture in the organization if every individual is not committed to it [safety culture]?" (PM5). "But even if my department has a good safety culture, it does not help if I don't live up to it at my individual level." "I remember incidents where safety was compromised because of one individual... safety of the whole plant...."

**Departmental is more important.** The department and individual jobs should be committed to having a safety culture. Safety is about teamwork, and it should start from the individual himself then to the department he operates under and eventually the entire company. Holt (2015) states that organizations that have created a safety culture right from the departments tend to achieve success since when employees feel their safety is guaranteed, they tend to give their best towards the achievement of the company's goals. One of the employees believe that: "Even if an individual is committed to safety culture in the organization, it is cannot be achieved unless his [or her] department is also committed to safety culture" (Emp10) and that "...safety is not really about me alone... it is teamwork and so is the development and sustenance of a safety culture" (Emp10).

**Attitudes and beliefs towards safety.** The attitudes and beliefs of employees towards safety emerged as critical determinants of how they perceive safety culture and the extent to which they behave towards contributing or inhibiting the development of a favorable safety culture. Two dominant sets of narratives related to attitudes and beliefs towards safety emerged. The first set demonstrated that attitudes and beliefs influence the extent to which an employee considers safety to be important in the organization. A safety representative stated the following in this regard:

I have seen it throughout my career as a safety representative. An employee who believes that safety is important has favorable attitudes towards helping to develop a good safety culture in the organization. Such an employee will not behave in a way that could cause harm to others. On the other hand, an employee who does not believe in the importance of safety will almost always behave in an unsafe way. (SR2)

The second set showed that attitudes and beliefs of the employee determined the extent to which s/he considered the safety policy in the organization as important in ensuring an effective safety culture. An example of a storyline in this respect is as follows:

The safety policy provides the formal guidelines and framework for the way employees live up the safety culture in an organization. [However,] no employee with a negative attitude towards safety in the organization will be keen on implementing the [safety] policy. That way, the employee will not live by the safety policy because he does not believe that it is important... this will kill the safety culture.... (HSE3)

Based on the discussion above, two dominant sets of storylines related to attitudes and beliefs towards safety emerged are as follows:

***Influencing importance of safety.*** With a safety concern culture among employees, the workforce will tend to exert some pressure to the management if they feel that some parameters of safety are being disregarded. These pressures most often result in the management having no other option other than implementing changes and ensuring that safety concerns remain paramount at all times. When the attitude is established, it means each employee will have a sense of ownership towards the safety measures in place. For example, a plant manager stated: “Anyone will see safety as important and act in a safe manner when their attitudes and beliefs support safety as important. This makes them promote a good safety culture whenever they can” (PM10) “Altogether, attitude and the conviction that your contribution counts will determine how much one will contribute to the safety culture of his organization” (PM 10).

***Influencing safety policy perceptions.*** When employees are constantly reminded of the safety measures and how they can ensure their safety, it becomes part and parcel of them. Duncan, Heighway, and Chadder (2019) recommended to organize frequent sessions where employees are taken through the safety guidelines of the company. They also recommended conducting drills after some intervals to make sure that staffs are aware of what they should do in case an emergency came up. In the context of above storyline one of the employees stated: “If I believe that safety is important to me, then my attitude towards safety practices is positive and I do as much as I can to adhere to the safety policy and act as such” and, “I have to like the safety policy to follow it...” and, “People who do not follow the [safety] policy are negative about it... they find it bothersome” (Emp9).

***Safety policy.*** The existence of a safety policy in the organization would provide guidelines on how employees and other stakeholders within the premises of the organization are expected to conduct themselves to guarantee their own safety and that of others. The storylines emerging with respect to the safety policy were consolidated into three narratives. The first one was that a safety policy existed in the organization, and it was considered important. One safety representative put it as follows: “A safety policy is the very basic blueprint that every organization in the oil and gas industry should have. My organization ensures that the safety policy is always updated, and everyone is aware that it exists” (SR4).

The second narrative was that of interviewees that confirmed the existence of a safety policy but did not regard it highly. For some of the interviewees, the safety policy only existed

to ensure compliance with the requirements of occupational health safety in the UAE. Consider the following storyline by an employee:

Yes, we have a safety policy in the organization... but it is a document for formality only and to make sure that the organization has fulfilled its legal obligation... However, I do not really know what it contains, and I don't think I am the only one. (Emp8)

Finally, there were those interviewees who were either not aware of the existence of a safety policy or were sure that none existed. Those that indicated that they were not aware of its existence presented storylines in two perspectives. This point was derived from storylines, such as the one presented below:

My organization does not even have a safety policy... at least I have not seen or heard on any safety policy in this organization. Or is it that we have it, but perhaps we call it something else? No, I am sure we don't have it otherwise I would know about it. (Emp10)

The above discussion emerging to the safety policy has been consolidated into the following three storylines.

***Safety policy exists and is important.*** Any place where several people gather for a period of time for a specific goal or end should have an elaborated safety policy to guarantee the well-being of the staff and avoid accidents. Employees should be reminded of the same regularly with an emphasis on its importance. For instance, a plant manager in the company highlighted this concern as follows: “My organization has a very clear safety policy that we are reminded of time and again because it is very important for ensuring our safety” (PM9). “I can almost recite that policy like a poem....” (PM9).

***Safety policy exists and is not important.*** Most companies have safety policies in place, but due to the rare occurrence of incidents, employees tend to forget and only mention it in passing. According to interviewees, this is where the management should stress the need for awareness of the existing policies: “Even though we have safety policy, I think it is just for the show and not important. It is not one of the things we really talk about” (HSE2) and, “There is some policy somewhere, I am sure” (Emp8) and, “They mentioned it at one point, but I have not seen it really” (Emp10), for example.

***Safety policy does not exist.*** Some institutions do not have a safety policy at all. It should be upon the management to ensure one is in place as people (workforce) safety should be the most crucial factor other than profits. For instance, one employee mentioned: “What is that? What is it for? I am sure we do not have a safety policy, or it is somewhere for managers not people like me” (Emp6).

### **Supervisory Safety Behaviors**

Supervisors play a critical role in promoting and sustaining a favorable safety culture. With the power of offering direction and monitoring action and behavior of their subordinates on behalf of the organization, supervisors may exhibit behavior that has the potential to either promote or impede safety in an organization.

**Supervisory safety culture.** Kavouras and Chalbot (2014) in his study on organization safety noted that the management should take the lead as far as organization safety is concerned. Employees tend to obey the measures implemented more so if the seniors are doing the same. The second narrative was that the safety culture that a supervisor promoted within his/her role often set the standard for his/her subordinates. According to a plant manager:

The supervisor should be frontline in promoting a good safety culture and communicating the importance of safety to his or her subordinates through words and actions regularly. A response to a safety incident also speaks a lot about how much the supervisor believes in a good safety culture... the supervisor must also make sure that his or her subordinates are following in his or her footsteps to ensure a safety culture.... (PM3)

The safety culture of the supervisors has been presented in the storylines below as influencing safety perceptions of employees and those under them.

**Supervisory safety culture is about beliefs and attitudes towards safety.** Marcinkowski (2009) in a research study comparing two organizations whereby both had almost similar safety policies. He noted in one of the companies that the employees were not aware of most of the clauses in the safety policy document. He established that the supervisor likewise was not aware of most of the contents and was less bothered if the juniors understood them. The employees should be introduced to a culture where safety is seen to be essential. From this, gradually, safety concerns become part of them, and their attitude and beliefs are bound to change. An employee and a safety representative shared their experiences as follows: “I know a supervisor’s safety culture because of what he says he believes in and his attitudes towards safety in terms of how he reacts when an incident occurs or is even avoided” (Emp1) and, “My supervisor is very proactive to prevent any incident... I know he believes in safety” (SR4).

**Supervisor’s safety culture is the benchmark.** Employees always look up for leadership from the management, and if any fails to come about, then they will ignore the whole altogether notwithstanding the benefits that they may be accruing from such policies. In the following interview excerpts, participants affirmed that employees would mostly imitate what the seniors are doing: “All employees will go as far as their supervisor goes in terms of believing and promoting a safety culture in any organization. The employees often copy the safety culture of the supervisor” (SR2) and, “My supervisor sets the safety standards for me...” (Emp6) and, “For as long as my supervisor is showing me how much I should adhere to safety practices, then I will follow” (Emp9).

**Supervisory safety practices.** The narratives constituted from the interview storylines for supervisory safety practices are about the frequency at which a supervisor interacts or engages with his/her subordinates about safety. With this view, it was found that supervisors who talk to their subordinates about safety in both informal and formal settings achieve highly desirable safety culture outcomes, as demonstrated in the following storyline: “I know my supervisor is committed to safety and prioritizes it in the workplace and outside because he is always talking about it at any opportunity—even when having coffee!” (Emp4).

On the second dimension, the interview narratives projected the importance of the pattern of actions that supervisors undertake as being critical to determining the perception of safety by the subordinates and even his or her seniors. According to the interviewees, supervisors who undertake tasks without compromising on safety inspire their subordinates and even their seniors to ensure safety practices. A safety representative explained how a supervisor enables a safety-oriented team:

The supervisor is the first-line gatekeeper of safety in management levels of any organization. When a supervisor keeps performing tasks safely, this establishes a safety pattern that inspires everyone to follow suit including those above the supervisor in management levels. (SR1)

Supervisors who talk to their subordinates about safety in both informal and formal settings achieve highly desirable safety culture outcomes, as expressed in the following storylines.

***Frequency of supervisor interaction with subordinates about safety.*** Most supervisors tend to stress so much on the development policy and other strategies and then forget about the safety policy (Hughes & Ferrett, 2016). The supervisor should ensure there is a safe working environment for the employees and an insurance policy if the financial situation allows it (Flynn & Shaw, 2010). Regular interaction between the supervisor and fellow employees would establish a bond where information can easily flow and trust. The supervisors should ensure that the safety policy is changed from time to time to reflect the changes that come about. For example, an employee said, “The more my supervisor talks about safety and its importance, the more my understanding and appreciation of safety increases” (Emp2)

***Supervisor’s pattern of action in tasks.*** Supervisors have to illustrate positive behaviors and serve as a role model and show individualized concern by demonstrating concern for personal safety. They should regularly talk about safety (Akabas & Kurzman, 2005). In a study on supervisory integrity and guidance, Alli (2008) observed that when supervisors encourage work safety and good citizen behavior towards safety, the employees tend to collaborate with the given guidelines. Social distance is defined as the hierarchical distance between the junior employees and their leaders. The supervisors have to ensure that the social distance is not very wide. With a narrow distance, the supervisors are able to have a higher influence on the employees (Bowman, 2010). One of the safety representative believe that: “I have witnessed a supervisor who came and turned around a whole plant section’s value for safety for the better with just the way they completed their tasks beyond just talking about safety” (SR2).

## Leadership Safety Behaviors

Through the way a leader communicates and undertakes tasks within his roles, s/he influences the perceptions of commitment to safety, and the followers tend to adhere. This changes the negative attitudes towards safety among followers with some complying to ensure that they please their leaders. Eventually, such followers tend to take up the habit of ensuring safety, and this culminates into a desired safety culture within the organization. Commitment to safety by the leader and safety inspiration by leaders were the two dominant narratives, as shown in the table at the end of this section.

**Commitment to safety.** The interview analysis revealed two major ways through which a leader was found to be committed to safety. In the first set of storylines, the interviewees mentioned that the leader talks about safety and follows it up with actions such as giving employees feedback about their safety behaviors. This backing up of safety communication with actions made the followers want to commit to safety according to one HSE manager: “A leader who is committed to safety never gets tired of telling and showing his [or her] followers to make sure that they maintain safety standards at all times no matter how small a task is” (HSE5).

The second set of storylines pertained to the leader, ensuring that there is a safety policy in place and refers to it whenever a safety decision needs to be made. The problem-solving skills of a leader in safety matters communicate the ability s/he has to maintain a preferred safety culture within the organization. A leader who is committed to safety also shows the same

to his/her followers by conducting regular safety audits and checks in line with the safety policy to make sure that a sense of prioritizing safety is inculcated even in the followers. A quote capturing some of these dimensions came from a safety representative as follows:

Employees can tell how committed their leader is to safety just by how much respect he [she] has for the safety policy from its development to referring to it every time he [or she] communicates with his [or her] followers and funds its implementation adequately. (SR1)

The sets, thus identified above through interview analysis, have been compiled and elaborated in the following two storylines.

**Leaders talk about safety regularly.** Christian (2009) noted that leaders have to create a consensus on safety measures with their employees through regular talk and encounters. The social interactions help both sides to understand the expectations and the message being passed. Employees tend to abide by directives that the leadership fraternity is committed when they have trust in the leadership (Goodman, 2018). The interviewed employees believed that leadership has to demonstrate commitment so that the workforce can follow suit: “If the leader does not talk about safety and is focused on other things such as production or revenue and so on, it makes me question his commitment to safety” (Emp1) and, “...sometimes I just follow what he [the leader] says... most of the times his advice on safety works...” (Emp3) and, “Safety is like a mantra here... he [the leader] keeps talking about it and that is why we have such a great team of safety players...” (Emp7).

**Leader supports and is familiar with the safety policy.** The leadership should ensure that safety in the workplace becomes a regular topic amongst the workforce. When a matter becomes a topic of discussion among employees, it becomes easier for the management to introduce and have it enforced rather than only having the management handling the issue alone (Ullman, Lomax, & Scriba, 2011). It is easier for an employee to believe a fellow employee of the same rank and so the management should use peer groups to enforce directives like those of safety policy. Some participants indicated the role of management and seniors with adequate safety policies in place to instill confidence in the employees. “All employees will go as far as their supervisor goes in terms of believing and promoting a safety culture in any organization. The employees often copy the safety culture of the supervisor” (SR2) and, “A leader walks the talk about safety and safety culture... [and] this makes followers develop positive attitudes and perceptions towards safety” (HSE2) and, “He [or she] makes sure that the budget allocation for safety is adequate and does not hold back to spend – this tells his [or her] followers that he [or she] is committed to safety” (PM8)

**Safety inspiration from leaders.** On top of the commitment to safety as described in the previous subsection, leaders also influenced the safety behaviors of followers by inspiring them to keep up or do better. In other words, being applauded by a leader for maintaining a safe climate and culture was inspirational to followers: “He [my leader] really never stops to congratulate me when I complete even the smallest task safely. I am sure we [followers] all feel very safe because he really inspires us when we commit to safety” (Emp4).

In terms of ensuring that those that violate the safety code understand the importance of a safety culture, the interview results showed the importance of a leader in influencing favorable safety cultures seemed to incline more towards a leader who is a guide and mentor than a monitor and punisher. This can be found here: “I used to have a leader who kept following me and condemning me for the slightest of mistakes. Now, I have one who guides me and advices me on how to keep up safety practices... it is certainly better!” (Emp6). The following storylines discuss safety inspiration from leaders and their influence on safety culture.

**Leaders applauding safety behavior.** Listening, passion, and purpose are some of the qualities that make a leader inspirational (Dawson, 2009). Leaders should have these qualities to inspire the best from the best of their employees. As is evident from the following quotes, they should applaud and commend display of safety among the employees as a way of enticing them to adopt safety policies in place: “When my superior congratulates me for good safety behavior, I really feel I should commit to ensuring safety... it feels good” (Emp3) and, “It is important for a leader to applaud safe behavior in public and correct in private...good safety behavior soon becomes a culture” (HSE5).

I remember how I was once assigned to a plant where people did not care at all about safety. I began rewarding some people for good safety practices and giving recommendation letters and so on... In one year, you will not believe how much the safety culture had changed... everyone saw the benefit of safety... they continued with safe practices even after withdrawing the rewards (SR3)

**Safety inspiration from leaders.** Leadership should applaud good behavior and demonstrate communication, integrity, sensitivity, and inclusion (Kapp, 2003). Many interviewees felt inspired by the leadership motive to take safety seriously, shown in the following statements: “A leader who inspires me to ensure safety first in every task assigned really inspires me to promote safety even among my colleagues” (Emp5). “Nobody likes being yelled at even when it is their fault... leaders achieve best safety outcomes when they inspire and motivate their followers to make sure of safety” (HSE3). “What is the point of trying to force people to be safe when they are not motivated to do so? It is useless... employees respond better to encouragement...” (SR2).

## Training on Safety

**Training influence on safety perception.** The discussion among participants indicated that safety training led to the transformation of negative or inert attitudes towards safety into active, positive attitudes that inspired safety behavior. A plant manager shared an experience about this: “I have seen some employees with very negative attitudes towards safety practices and the safety policy of my organization gradually change into very positive people who prioritize safety just because they underwent regular training” (PM1). On the other hand, there were instances where safety training was said to reinforce existing attitudes and practices towards safety and safety elements such as the organizational safety policy. This was captured in the following sentiment: “I already knew that safety was critical to my work... after training, I was more motivated to ensure that I practice what I learnt during my work...” (Emp2). The storylines about the influence of training on safety all converged at the point of developing positive attitudes towards safety and have been outlined below:

**Positive transformation and reinforcement of positive attitudes towards safety.** When a new work safety measure is introduced, the workforce should be taken through the new procedures for familiarization. The management has to create an environment that inspires a positive attitude and energy towards the safety measures introduced (Herrington, 2013). For example, quotes below stressed the development of a positive attitude of employees towards the training of newly introduced safety procedures: “I used to be very less concerned about safety... safety training really changed my perception of safety... I am more committed to a safe environment” (PM3) and, “Some people will just show up for training on safety just because they are required to come... some come out of the training with more interest in safety and how to ensure it...” (SR1) and, “Training on safety is mindset changer... it makes one to

think more about it..." (SR3) and, "I only got really concerned about safety after attending many safety trainings in the oil industry" (Emp3).

**Reinforcement of positive attitudes towards safety.** When regular training on safety is conducted, the employees will eventually develop some positive attitudes towards the exercise and the process itself. The employees get to understand that safety is part and parcel of them, and it is usually done for their own good, as shown by the following narratives. "Training motivated me to commit to safety even more" (Emp2) and, "Safety training increased my knowledge about safety and how to maintain it better... I really improved on safety practices" (SR1).

## Discussion

This research was focused on examining how different attributes affect and improve the safety performance in UAE's oil and gas industry. On safety culture, the emergent narratives on the safety role showed that an employee was likely to perceive process safety in the organization favorably if s/he believed that his/her role in ensuring process safety was critical. This finding complements previous literature concerning the critical role of safety-related behavior and individual activities that contribute towards maintaining safe working environments through participation and safety compliance (Griffin & Neal, 2000). The conflicting views about whether individual or departmental participation towards organizational safety culture could be attributed to context and subjective views of the interviewees. This context-based conflict of perceptions is traceable to the different interviewee groups comprising the study sample. Employees seemed to express the view that individual contribution counts more while managers felt that departmental contribution is more effective in influencing the perceptions of process safety.

Essentially, safety culture anchors on attitudes and beliefs about safety within an organization (Cox & Cox 1991; Mentzer et al., 2014). In this study, the findings showed that attitudes and beliefs towards safety were fundamental influencers of the perceptions of safety. The findings of this study showed that attitudes and beliefs determined the extent of safety culture effectiveness, which coincided with previous literature (Cox & Cox, 1991; Glendon & Stanton, 2000; Lekka & Healey, 2012; Mullen & Kelloway, 2011; Yang et al., 2009). However, the findings of this study extend the existing literature by demonstrating that such influence on safety happens because of attitudes and beliefs about safety either influence perceptions towards organizational safety policy or perceived importance of safety. Storylines of the second narrative set showed that there was a connection between the implementation of a safety policy in an organization because the individual employees in the organization believed that it is an important component for ensuring their safety and that of the organization. By extension, this view showed that the success of a safety policy in guiding employee behavior towards acting in a safety-conscious manner that translates to a positive safety culture requires similar positive attitudes and beliefs.

The results also demonstrated that some organizations in the oil and gas industry in the UAE only develop safety policies to comply with the law. In other words, interviewees whose storylines were classified under this category felt that the safety policy would not have existed had it not been a legal requirement in the UAE. This finding extends literature about the way government policy and industry standards obligate each firm within that particular industry to comply with set standards (Cameron & Quinn, 2011). However, the development of a safety policy due to compliance only could account for the disregard of the safety policy by some of the interviewees even if it existed in the organization. On the other hand, it is possible that such obligatory compliance could result in the organization adopting and implementing safety, which would then result in positive safety culture.

The storylines indicating that some interviewees were not aware of an existing safety policy could be interpreted as a demonstration of lack of commitment to having and implementing a safety policy by some organizations in the oil and gas industry. It also indicates the lack of a streamlined approach to ensuring safety in the organization. Consequently, employees do not have a streamlined framework that guides their actions and behaviors or the development of an organizational safety culture, and this could influence their perceptions of safety negatively. From other results on safety policy, the lack of certainty about the existence of a safety policy could be interpreted from two perspectives. The first perspective was that of the direct, "I am not sure we have one" while the second one indicated that they knew it existed although they did not know what exactly a safety policy would look like. For those that were sure it did not exist, it is possible that their organizations had a safety policy, although they were not aware of its existence. Either way, this would likely have an impact on their attitudes and perceptions towards safety culture considering the work of Zohar (1980) who demonstrated that organizational policy has the potential to influence employee attitudes.

Results pertaining to supervisory safety culture showed that the safety culture promoted by a supervisor within his/her role often set the standard for his/her subordinates constituted the benchmark against which all his/her subordinates rated their own idea and practice of safety culture. This is because supervisory safety cultures manifest through their safety practices and actions, which in turn, define the safety climate and safety culture within their supervisory jurisdiction (Nielsen, 2014). On supervisory safety practices, the results of this research were found to be related to the perceptions of safety climate at the group level where the supervisor is in charge.

There was an indication that informal interactions with supervisors inside and outside the workplace about safety reinforced the importance of safety to subordinates more. This is because the subordinates felt that such a supervisor was committed to safety beyond his/her job description. These results were similar to the ones pertaining to leadership safety behaviors where regular communication about safety was considered an influencer of perceptions of followers towards safety. This communication aspect is essential considering the identification of poor communication as one of the process safety issues that led to the Saudi safety incident in 2015 (IOGP, 2017), as described at Section 1.1 in the first chapter. These findings confirm the important role played by safety leadership, which entails leader-follower interactions where the former influences the achievement of safety goals (White, 2016). However, it is notable that leaders who inspire their followers to ensure safety through actions and words achieve better safety outcomes due to positive perceptions by followers concerning safety. Such leaders who engage with their followers on safety beyond the confines of the workplace get trusted and this has a significant influence on safety perceptions and outcomes (Conchie, 2013; Donovan et al., 2017; Zuofa & Ochieng, 2017) through the enhancement of employee engagement in safety behaviors (Conchie & Donald, 2009).

In previous studies (Hinze, Hallowell, & Baud, 2013; Keffane, 2014; Mearns et al., 2010), training emerged as an essential determinant of perceptions of safety in the current study. The findings of these studies showed that the leadership behavior of management to safety, as seen in processes and values influences individual perceptions of safety value within the work environment. They emphasized that leadership commitment to safety triggers positive attitudes towards safety and reduced accident and incident rates in projects. The work presented in this exposition, however, consider the impact of organizational culture and perceived process safety specific to the UAE oil and gas industry. It was found that safety training stimulated employees with negative or indifferent attitudes towards safety to be more actively engaged in safety matters in the organization. Moreover, training was found to be an important reinforcer of positive attitudes towards safety. Based on these findings, it is possible that employees with negative attitudes towards safety practices, policies, and other related safety aspects could

transform if they were offered adequate safety training. The results of this study resemble those reported by Keffane (2014) on the importance of employee safety training in enhancing and workers' attitudes towards safety. Altogether, it is important to note that such attitude and behavioral transformation could be attributed to enhanced skills and knowledge about organizational safety (Shea et al., 2016). Thus, negative employee attitudes and behaviors towards process safety could be due to inadequate skills and knowledge about process safety, and this can be transformed through process safety training in the oil and gas sector in the UAE.

### Limitations and Further Research

In this research, the impact of safety culture attributes such as leadership safety behaviors, supervisory safety behaviors, and employee safety training on the employee's perception of process safety in UAE's oil and gas industry have been demonstrated. The results show that safety culture, leadership safety behaviors, supervisory safety behaviors, and employee safety training influence employee perceptions of safety. The results demonstrated that the influence varies amongst the interviewees based on their storylines, but the findings do not help in identifying the variables that influence an interviewee's response. This brings out the concern of how their storylines and narratives might change if certain variables change, such as employment position, job description, salaries, and so on. It then follows that their narratives and storylines might differ under different conditions, although this research was not about addressing such issues, and this would need further studies.

The exploratory nature of this study using interviews makes it difficult to generalize its findings beyond the interviewees involved in it and the oil and gas industry sectors and positions that they represent. For example, training was found to be influential over safety attitudes and behaviors. This cannot be said to be the holistic, generalizable finding for the entire UAE oil and gas sector. Thus, there is the need for further studies to compare the levels of safety attitudes, perceptions, and behaviors of employees in organizations that offer their employees trainings and those that do not work in the UAE oil and gas industry. A longitudinal study to track changes in attitudes, perceptions, and behaviors of employees before and after a series of trainings on process safety could help to show the actual impact that training creates over time in the oil and gas sector. Such a study could integrate how safety leadership influences the outcomes of such trainings, and this would certainly extend the findings of this study by demonstrating the actual impact of training.

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## Appendix

### Proposed Data Collection Instrument (Interview Guide)

1. Kindly introduce yourself and your position
2. Please inform me about your role and mention your experience in years
3. Kindly provide an overview and brief about Process Safety Management (PSM) at your organization
4. What are the most important KPIs of PSM in the UAE oil and gas industry?
5. Kindly explain your perception of the UAE oil and gas industry employees perceive PSM
6. What do you know about HSE culture?
7. How can your company achieve stronger HSE culture?
8. How do you characterize a company with good HSE culture?
9. Based on your experience, how do leadership behaviors influence the perception of PSM among employees of UAE oil and gas industry?
10. How do the behaviors of supervisors influence the perception of PSM among employees in your organization?
11. How does your supervisor emphasize on safety?
12. What practices do your supervisors exhibit to show the importance of safety?
13. What kind of safety talks do your supervisors related to safety?
14. What are the roles of your company leadership to practice better safety environment?
15. Do leaderships have an influence in attaining better safety behaviors? How?
16. How would your leadership have an effective role in stopping the last accidents occurred in your organization?
17. How does employee training in UAE oil and gas industry companies affect perceptions of safety in your organization?
18. What kind of training would you like to see to enhance safety in your organization?
19. How can UAE oil and gas industry companies improve PSM perceptions among their employees?
20. Please provide any other comments you may have about PSM in your organization or the current research

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