

**DEPARTMENT OF PSYCHOLOGY  
UNIVERSITY OF GHANA LEGON**

**THE EFFECT OF ORGANIZATIONAL SAFETY CLIMATE ON EMPLOYEES'  
PSYCHOLOGICAL CAPITAL AND JOB SATISFACTION AT THE TEMA OIL  
REFINERY, ACCRA.**

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**DECLARATION**

This thesis is a study submitted to the Department of Psychology for the award of Master of Philosophy (MPhil) Degree in Industrial and Organizational Psychology at the University of Ghana Graduate School. I hereby declare that this research is conducted by Joshua Humphrey under the supervision of Dr. Benjamin Amponsah and Dr. Kingsley Nyarko. This thesis is the result of my own original research, except for sections for which references have been duly made, and to the best of my knowledge, no part of it has been presented to this University College or any other institution for the award of a degree.

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God richly bless you all.

**DEDICATION**

This work is dedicated to my mother Victoria Humphrey for her unflinching support throughout my postgraduate studies.

## ABSTRACT

This study investigated the extent to which employees' perceived organizational safety climate predict their psychological capital and job satisfaction at the Tema Oil Refinery in Accra, using a survey research design. A total of 248 respondents were selected using Stratified random sampling technique. Questionnaires that contained the 50-item Occupational Safety Climate Questionnaire (NOSACQ-50) (Kines et al., 2011), 24-item Psychological Capital Questionnaire (Luthans, Avolio & Avey, 2007) and the 36-item Job Satisfaction Survey (Spector, 1997) were used to collect data. Data was analyzed with the Simple Linear Regression test and the PROCESS" Macro Script Moderation Analysis test within the Statistical Package for Social Sciences (SPSS) version 23 application software. Results showed that organizational safety climate predicts employees' psychological capital and job satisfaction. Results also revealed that employees' age and rank does not have a moderating effect on the relationship between organizational safety climate and job satisfaction. Finally, respondents' age, rank and job tenure predicted organizational safety climate. It was concluded that organizational safety climate predict the psychological capital and job satisfaction of employees' at the Tema Oil Refinery in Accra. Hence, positive organizational safety climate has a positive effect on employees' psychological capital and job satisfaction whereas negative organizational safety climate has a negative effect on employees' psychological capital and job satisfaction.

**TABLE OF CONTENTS**

DECLARATION .....	ii
ACKNOWLEDGMENT.....	iii
DEDICATION .....	iv
ABSTRACT.....	v
LIST OF TABLES .....	ix
LIST OF FIGURES .....	x
CHAPTER ONE .....	1
INTRODUCTION .....	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem .....	8
1.3 Purpose of the Study .....	12
1.4 Objectives of the Study .....	12
1.5 Significance of the Study .....	12
1.6 Organization of the Study .....	13
CHAPTER TWO .....	15
LITERATURE REVIEW .....	15
2.0 Introduction .....	15
2.1 Theoretical Framework .....	15
2.1.1 Psychosocial Safety Climate Theory .....	15
2.2 Review of Related Studies .....	19
2.2.1 Relationship between Organizational Safety Climate and Job Satisfaction.....	19
2.2.2 Relationship between Organizational Safety Climate and Psychological Capital .....	21
2.2.3 Age, Gender, Job Tenure and Education Level as Predictors of Organizational Safety Climate.....	22
2.2.4 Status of Organizational Safety Climate in Ghana .....	26
2.2.5 Assessment of Safety Culture within the Oil and Gas Industry .....	29
2.2.6 Profile of Tema Oil Refinery .....	31
2.3 Rationale of the Study .....	32
2.4 Statement of Hypotheses .....	33
2.5 Conceptual Framework .....	34
2.6 Operational Definitions .....	35
CHAPTER THREE .....	36

METHODOLOGY .....	36
3.0 Introduction .....	36
3.1 Research Design .....	36
3.2 Target Population .....	37
3.3 Sample Size and Sampling Technique .....	37
3.4 Data Collection Instrument .....	39
3.5 Data Collection Procedure .....	44
3.6 Pilot Study .....	45
3.7 Ethical Considerations .....	46
3.8 Data Analysis .....	47
CHAPTER FOUR.....	48
RESULTS .....	48
4.0 Introduction .....	48
4.1 Demographic Results .....	48
4.2 Preliminary Analysis .....	51
4.3 Testing of Hypothesis.....	73
4.4 Summary of Results .....	78
4.5 Observed Model .....	79
CHAPTER FIVE .....	80
DISCUSSION, RECOMMENDATIONS AND CONCLUSION .....	80
5.0 Introduction .....	80
5.1 Discussion of Results .....	80
5.2 Contributions of the Study .....	91
5.3 Limitations of the Study .....	93
5.4 Recommendations of the Study .....	94
5.4.1 Recommendations to Management of the Tema Oil Refinery .....	94
5.4.2 Recommendations to Employees of Tema Oil Refinery .....	95
5.4.3 Recommendation to Stakeholders .....	95
5.4.4 Theoretical Recommendation.....	96
5.4.5 Recommendations to Academicians and Students .....	97
5.5 Conclusion.....	97
REFERENCES .....	99

APPENDIX A.....	123
QUESTIONNAIRE .....	<b>Error! Bookmark not defined.</b>
APPENDIX B .....	<b>Error! Bookmark not defined.</b>
ECH APPROVAL LETTER.....	123
.....	123
APPENDIX C .....	124
INTRODUCTORY LETTER TO TEMA OIL REFINERY .....	124
.....	124

**LIST OF TABLES**

Table 1: Representation of Respondents' Gender, Marital Status, Level of Education and Rank	48
Table 2: Respondents' Age and Tenure.....	49
Table 3: Respondents' Department at the Tema Oil Refinery.....	50
Table 4: Descriptive Statistics on Variables .....	64
Table 5: Inter Correlation Matrix on Variables .....	72
Table 6: Simple Linear Regression Test Result on the extent to which Organizational Safety Climate Predict Psychological Capital.....	73
Table 7: Simple Linear Regression Test Result on the extent to which Organizational Safety Climate Predict Job Satisfaction. ....	75
Table 8: PROCESS'' Macro Script Moderation Analysis Test Results on the Moderation Effect of Age and Rank on Organizational Safety Climate and Job Satisfaction. ....	76
Table 9: Simple Linear Regression Test Result on the extent to which Demographic Variables Predict Organizational Safety Climate.....	77

**LIST OF FIGURES**

Figure 1: Hypothesized model of the effect of Organizational safety climate on employees’ psychological capital and job satisfaction..... 34

Figure 2: Observed model of the effect of Organizational safety climate on employees’ psychological capital and job satisfaction..... 79

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

One of the major sources of worry for management and other stakeholders of organizations especially those in the extractive sector (e.g. oil and gas processing) is the high rate at which employees are either injured, maimed or even killed due to poor organizational safety climate (Ampofo, 2017). In the year 2015 and 2016 the Labour Departments of various organizations in Ghana's extractive industry paid a total of GHC6.7million as workman's compensation to their employees and their families (Ampofo, 2017). Besides the aforementioned amount, there was an outstanding amount of GHC5.1 million to be paid for 9 months only in the year 2017 (Ampofo, 2017). The extractive sector in Ghana also recorded a total of 1,096 workplace accidents in the year 2016 as against 2,697 in the year 2015 (Ampofo, 2017).

According to Alkhaldi, Pathirage and Kulatunga (2017) the fatality rate of employees in the oil and gas production sector is significantly higher when compared to that of other production sectors (Alkhaldi et al., 2017). Employees in the oil industry are prone to accidents because the setting of an oil and gas production companies are very hazardous, together with various environmental, technological and human challenges (Hystad et al., 2014). For instance, in a typical oil and gas production plant most workers are exposed to inflammable gases, vapors and hydrogen sulfide which could easily ignite by static, electrical energy sources, lightning, open flames, hot surfaces or frictional heat as well as cutting and welding tools (Troiano, 2018). Similarly, employees are often required to enter confined spaces such as petroleum and other storage tanks, mud pits,

reserve pits and other excavated areas, sand storage containers and other confined spaces around oil wellheads. These confined spaces can ignite flammable vapors or gases, or cause asphyxiation and exposure to chemicals that are hazardous to human beings (Troiano, 2018).

Organizational safety climate has to do with employees' expectation and perception on how safety is valued or prioritized within an organization (Cieri, Shea, Pettit & Clarke, 2012; Gyekye, 2005). According to Radzaz and Bahari (2013), perceived organizational safety climate is employees' subjective perception about the practices and policies intended to ensure a danger-free working environment (Radzaz & Bahari, 2013). Organizational safety climate is said to be a multidimensional construct that encompasses management's attitude towards issues concerning safety, proactive behaviors meant to maintain a hazard free working environment, and a system of reward for adherence to pro-safety behaviors among employees (Hofmann, Morgeson & Gerras, 2003). Nahrgang, Morgeson and Hofmann (2011) and Zohar (2010), therefore, concluded that organizational safety climate is directly connected to organizational safety outcomes irrespective of the sector or countries where the organization operate.

Generally, organizational safety climate can either be positive or negative. A positive organizational safety climate is created when employees have a positive perception about safety within their organization, whereas a negative organizational safety climate is created when employees have a negative perception about safety practices within their organization (Cieri et al., 2012). Hence, the nature of employees' collective perception and expectation about safety practices in an organization predicts their organization's safety climate.

In addition, policies and practices on safety promoted by the management of an organization influences employees' perceived organizational safety climate (Watson, Scott, Bishop & Turnbeaugh, 2005). Usually, when employees have a positive perception about employer's commitment to maintaining high-safety standards, they are motivated to adhere to pro-safety behaviours and develop a positive perception about safety climate (Avrama, Ionescub & Mincua, 2015). Hence, employees who have a positive perception about their organization's safety climate have a higher inclination to strictly adhere to proper safety procedures and practices, and do whatever it takes to avoid work-related accidents (DeJoy, Gershon & Schaffer, 2004). On the contrary, employees who work in an organization with a poor or deficient safety policies and practices usually have negative perception about their organization's safety climate (Sunal, Sunal & Yasin, 2011). Therefore, employees who have positive perception about their safety climate usually exhibit positive attitudes and behaviours towards their employers. Meanwhile, employees who have a negative perception about their safety climate usually exhibit negative attitudes towards their organization (Hoffman, Morgeson & Gerras, 2003).

Usually, employees' perceptions about safety develops with time as they use safety systems within an organization, pay attention to what other employees say about safety, and particularly how employees behave when it comes to safety (Cieri et al., 2012). Hence, employees' perceptions and beliefs about the safety climate at their workplace is influenced by the actions, opinions, values and attitudes of other employees (Cieri et al., 2012; Keil Centre, 2017). Nevertheless, perception about organizational safety climate can be altered by various circumstances, time, among others factors (Cieri et al., 2012).

According to Avrama, Ionescub and Mincua (2015) a positive organizational safety climate could be created by putting in place clear procedures for reporting information regarding safety deficiencies (Avrama et al., 2015). Organizations could as well enhance their safety climate by being fair when rewarding employees' adherence to high safety standards and punishing non-adherence to organizational safety standards (Avrama et al., 2015).

In addition, employers and employees ought to trust each other so as to ensure a positive organizational safety climate. This is so because when there is trust between low level employees and their managers, employees will be eager to alert their supervisors or managers when other employees breach the laid down organizational safety protocols (Avrama et al., 2015). Equally, it is crucial for the leadership of various organizations to make sure that their workers are trained to know exactly what to do at any given time as far as safety practices at the workplace is concerned (Avrama et al., 2015; Burns, 2005).

Zohar (2008) further explained that poor organizational safety climate leads to poor safety outcomes such as ailments that are work-related, near misses and near-miss reporting, a rise in work-related stress and accidents, employee mortality, etc. On the contrary, positive employee perceptions about safety climate reduces work-related accidents, injuries, and enhance employees' adherence to safety protocols (Mearns et al., 2003; Zohar & Luria, 2005). This, therefore, shows that it is necessity for the leadership of various organizations to ensure that they have a positive organizational safety climate.

Stoilkovska, Pančovska and Mijoski (2015) also argued that other factors too ought to be implicated for their role in predicting organizational safety climate. For instance, work-related accidents and injuries are usually caused by high-risk behaviors (e.g.

taking risks which could lead to accidents and injuries, not using the required safety equipment, etc.) among employees (Stoilkovska et al., 2015). In fact, the most common factor that drives work-related accidents and injuries is believed to be managements' and employees' reckless attitude and behaviours towards safety (Stoilkovska et al., 2015). Other common factors that have also been implicated for their role in enhancing accidents at the workplace include insufficient training of employees, inconsistency in the application of safety policies and practices, non-executed medical examinations to ascertain employees' physical and mental health status, and hazardous physical conditions at the workplace (Stoilkovska et al., 2015).

Organizational safety climate is perceived to be moderated by employees' rank/position, work unit/department at the workplace (Hall, Dollard & Coward, 2010; Dollard et al., 2012). For instance, primarily, as an organization's management staff are responsible for the installation of the needed safety policies and infrastructure, they tend to have a more positive evaluation of their organizational safety climate (Gyekye & Salminen, 2009). However, lower level employees' are more inclined to have a negative perception about their organizational safety climate. Thus, rank or position within an organization moderate employees' perception about their organization's safety climate.

Also, level of education has been found to predict how employees' perceive their organizational safety climate (Gyekye & Salminen, 2009). For instance, employees who are well educated or trained especially in organizational safety have a stronger predisposition to develop a negative perception about organizational safety when compared to employees who are less educated or have less training or know nothing about organizational safety (Gyekye & Salminen, 2009). This is so because employees who have

some form of training on safety management practices are in a better position to critically appraise their organizational safety climate.

The state of being knowledgeable in organizational safety climate is essential because among other things, real or imagined hazard free working environment improves employees' job satisfaction and performance (Bakotić & Babić, 2013; Bergheim et al., 2013; Lehtinen, 2001). This is so because among other things, real or perceived safety climate at work predicts number of work-related accidents, psychological capital and job satisfaction (Bergheim et al., 2013; Luthans, Youssef & Avolio, 2007).

Organizational safety climate predict workers' satisfaction with their jobs because when workers feel safe at work, their tendencies to be satisfied when other positive organizational factors are in place is higher (Hystad et al., 2014). Nonetheless, when employees have other benefits (such as good salaries, high compensation packages, etc.) yet they are always fearful that they could be injured or even die at the workplace are unlikely to be satisfied with their jobs.

Gohel (2012) defines job satisfaction as the level of satisfaction employees have with the conditions at their workplace. Job satisfaction is reliant on employees' expectations about their job. When employees' expectations about their jobs are consistently met by their employers it leads to job satisfaction, and vice versa (Yang, 2010). Bull (2005) further explained that job satisfaction is the evaluation and perception employees have about their job, and this is influenced by employees' values, needs, and expectations.

There are four major determinants of job satisfaction. The first determinant comprises fair reward, followed by supportive conditions at work, meanwhile third

determinant is the nature of the job, and finally, the supportive nature of employees' at the workplace (Robbins, 2003). Also, organizational support leads to high job satisfaction levels and reduced turnover intentions among employees (Paille, Bourdeau & Galois, 2010). When employees are satisfied they experience inner peace, thereby making it possible for them to set a long term relationship with their employers based on mutual trust (MacKenzie, Podsakoff & Ahearne, 1998).

According to Latham (2007) job satisfaction is influenced by conditions at the workplace including safety climate. In fact, as far back as the 1960s, it was discovered that some organizational characteristics (e.g. safety climate) had a direct effect on employees' job satisfaction (Friedlander & Margulis, 1969). Furthermore, Malek, Fahrudin and Kamil (2009) have stated that the nature of working environment has a direct effect on employees' job satisfaction (Malek et al., 2009). For instance, an actual or imagined high-risk environment at the workplace leads to lower job satisfaction, whereas, an actual or imagined safe environment at the workplace leads to high job satisfaction (Avrama et al., 2015). Bergheim, Nielsen, Mearns and Eid (2015), therefore, concluded that employees' perception about the safety climate at their workplace has a direct impact on their job satisfaction.

Besides job satisfaction, organizational safety climate has a direct effect on the psychological capital of employees. Psychological capital is the combined effect of optimism, resilience, self-efficacy and hope (Luthans et al., 2007). In other words, psychological capital is a positive psychological state of development which involves: (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) make a positive attribution (optimism) about succeeding now and in

the future; (3) persevere towards goals, and when necessary, redirecting paths to goals (hope) in order to succeed; and (4) sustain and bounce back and even beyond (resilience) to attain success when one is beset by problems and adversity (Parthi & Gupta, 2016). Psychological capital believed to transcend human capital (i.e. abilities, skills and knowledge) and social capital (e.g. building of networks, relationships, etc.) (Luthans, Luthans & Luthans, 2004).

According to Hystadng et al. (2014) employees' positive attitudes and behaviours towards safety correlate with high psychological capital (Hystad et al., 2014). For instance, generally, employees who speak openly to their colleagues and management about lapses in their organization's safety systems have higher self-efficacy (Hystad et al., 2014). In other words, employees with high self-efficacy are quick to point out safety lapses or compromises within their organizations with little fear of a backlash or intimidation. It could, therefore, be deduced from the background of this study that organizational safety climate has a direct effect on the employees' psychological capital and job satisfaction.

## **1.2 Statement of the Problem**

According to the International Labour Organization (2017), the Oil and Gas sector is one of the most lucrative sectors in most sub-Saharan African countries. As such the oil and gas sector is increasingly becoming an important driver of economic growth in the sub-Saharan Africa by contributing to poverty reduction, technology transfer and enhanced competitiveness (International Labour Organization, 2017).

Nevertheless, the Oil and Gas sector is bedeviled with a substantial number of work-related hazards, among other health-related challenges (Bayire, 2016). The Oil and

Gas Sector records one of the highest number of work-related accidents in Africa (Bayire, 2016; International Labour Organization, 2017). The International Association of Oil and Gas Producers (IOGP) have stated in their 2016 report that Africa had the second largest number of fatalities in 2014 and 2015, after North America (International Labour Organization, 2017).

According to Chauhan (2014) what makes the oil extraction and refining a hazard-prone venture is their highly risky operational conditions, and usage of dangerous chemicals and other end products (Chauhan, 2014). Safety hazards in the oil extraction and refining sector come under two main classifications: “Safety and Injury Hazards” and “Health and Illnesses Hazards”. Safety and injury hazards include; motor vehicle accident, trips and falls, fire and explosions, etc. (Chauhan, 2014). Meanwhile, health and illness hazards that include; psychosocial hazards (e.g. violence, isolated sites, odd working hours and overwork, etc.), ergonomic hazards (e.g. repetitive motions, awkward postures, etc.), biological hazards (germs, parasites, virus, etc.), physical hazards (extreme temperature, radiations, vibration, noise, etc.) and chemical hazards (irritant, asphyxiates, carcinogens, corrosive and toxic substances) (Chauhan, 2014).

Even though the Tema Oil refinery (TOR) is one of Ghana’s major National Security installations and one of the major drivers of Ghana’s economy, TOR is increasingly becoming notorious for its industrial accidents due to leakages, explosions, etc. (Ocloo, 2017). The most recent explosion occurred on the 26th day of January, 2017 after a furnace at the Crude Distillation Unit compelled management to shut down all operations (Ocloo, 2017). Specifically, management of TOR carried out an emergency

shutdown of the facility to avert an imminent fire outbreak when a furnace exploded due to disproportionate pressure, heat and leakage (Ocloo, 2017).

According to Toseafa (2017) and Toseafa, Chýlková, Danquah, Bata and Quartey (2016) even though most employees at TOR are knowledgeable and well-trained in safety management and practices, they seldom put their knowledge and skills into practice (Toseafa, 2017; Toseafa et al., 2016). This may be so because of employees' familiarity with their potential dangers at their work stations. In addition, employees who do not regularly put their knowledge and skills on safety into practice are not usually sanctioned, unless they are implicated for causing an accident. Furthermore, the management of TOR gives relatively little attention to the monetary cost of work-related injuries (Toseafa, 2017; Toseafa et al., 2016). Thus, there is a relatively poor organizational safety climate at the Tema Oil Refinery (Toseafa, 2017).

Even though the causes of organizational safety climate has been difficult to establish, a lot of empirical literature have shown that safety climate is determined by organizational and employees related factors (Bergheim et al., 2013). Some of these factors include low job satisfaction, safety rule violations from both management and employees, unsafe work-related behavior, and less management's commitment to organizational safety climate (Bergheim et al., 2013; Zohar & Luria, 2005). For instance, when employees work in an environment with a poor safety climate, they will be more inclined to be dissatisfied with their jobs (Stoilkovska, Žileska Pančovska & Mijoski, 2015) and have higher turnover intentions (Smith, 2017). This is so because human beings are innately inclined to avoid environment that threatens their general safety and survival (Mobbs, Hagan, Dalglish, Silston & Prévost, 2015; Nicholson, 1998). This implies that, irrespective of the good

salary and other benefit employees may get from their job, so far as their job exposes them to danger, they will not be satisfied with their job, and may want to leave in the long term (Smith, 2017). Even though the relationship between organizational safety climate and its consequences seems to be well established in the literature, our theoretical explanations of its antecedents is still limited (Zohar, 2010).

Over the years, relatively few empirical studies have investigated the extent to which organizational safety climate affects employees' psychological capital (Luthans et al., 2007; Zohar, 2010). This is because most studies done in this research area mainly examined the extent to which organizational safety climate affects employees' and organizational performance. Meanwhile, the result of the few studies done in this area indicated that when employees perceive their organizational safety climate to be poor it negatively affect their psychological capital (Bergheim et al., 2013).

After an extensive search, the researcher could not find studies done in Ghana that assessed the extent to which organizational safety climate predicts employees' psychological capital together with job satisfaction. This, therefore, shows that a research gap exist in this research area which ought to be filled/bridged. It is, therefore, important to conduct a study to assess TOR's safety climate and how it predicts employees' psychological capital together with their job satisfaction (in an attempt to bridge the above research gap). It is for these reasons that this study empirically investigated the effect of organizational safety climate on employees' psychological capital and job satisfaction at the Tema Oil Refinery in Accra.

### **1.3 Purpose of the Study**

This study examined and explored how organizational safety climate predicts employees' psychological capital and job satisfaction.

### **1.4 Objectives of the Study**

- i. To determine the extent to which organizational safety climate predicts employees' psychological capital and job satisfaction.
- ii. To ascertain whether age and rank moderate the relationship between organizational safety climate and job satisfaction.
- iii. To examine the extent to which demographic variables (i.e. age, department, tenure and rank) predict organizational safety climate.

### **1.5 Significance of the Study**

The researcher worked closely with a representative from the Human Resource Department at TOR because the department developed keen interest in this study and its outcome. This keen interest was stimulated when the researcher explained the purpose of the study to TOR's Human Resource Management team whiles seeking institutional approval to commence data collection. This study's findings has, therefore, not only caught the attention of management of TOR, but has also influenced them to expand their current safety management approach to include how it affect employees' psychological capital.

This study's outcome is also expected to enhance quality of organizational safety climate not only at TOR but the Ghana Gas Company Limited where this study's data collection material was piloted. This is so because the findings indicated among other

things that, a positive organizational safety climate enhances employees' psychological capital and job satisfaction. Therefore, management of TOR and Ghana Gas Company Limited have been encouraged to do whatever it takes to enhance the quality of their organizational safety climate.

In addition, the outcome of this study is expected expand the understanding of stakeholders (e.g. management of TOR, academicians, students, etc.) on the impact of organizational safety climate on the psychological capital and job satisfaction of workers. For instance, this study has outlined specific components of organizational safety climate that predict employees' psychological capital and job satisfaction. This study has also revealed how urgent it is for Management of TOR to take all necessary measures to enhance their organizational safety climate from time to time so as to improve upon their workers' safety practices, psychological capital and job satisfaction.

In addition, it is the wish of the researcher that by reading this study, students and other researchers will be stimulated or encouraged to do further studies in this research area. For instance, future studies could consider doing a comparative study on the oil and gas sector against other high-risk sectors such as the mining sector.

Finally to some extent this study has helped in bridging the research gap in this research area by way of bringing out the specific components of organizational safety climate that directly affects employees' psychological capital and job satisfaction.

## **1.6 Organization of the Study**

This study has five main chapters, with each chapter having their subdivisions. Chapter one which is generally called the "introduction" is subdivided into the

“background of the study”, “statement of the problem”, “purpose of the study”, “objectives of the study”, “significance of the study” and “organization of the study”. Chapter two is also called the literature review and is subdivided into “theoretical framework”, “review of related studies”, “rationale of the study” “statement of hypotheses”, “conceptual framework” and “operational definitions”. Meanwhile, chapter three is called the “methodology”, and is subdivided into the “research design”, “target population”, “sample size and sampling technique”, “profile of Tema Oil Refinery” “data collection instruments”, “validation of instrument”, “data collection procedure”, “pilot study”, “ethical considerations” and data analysis. Chapter four is also called the “results” and therefore, includes the “demographic results”, “preliminary analysis”, “testing of hypothesis”, “summary of results” and “observed model”. Chapter five which was generally known as the “discussion” is subdivided into the “discussion of results”, “limitations of the study”, “contributions of the study” “recommendations of the study” and “conclusion.”

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter presented the study's "theoretical framework", "review of related studies", "rationale of the study", "statement of hypothesis", "conceptual framework" and "operational definitions."

#### **2.1 Theoretical Framework**

##### **2.1.1 Psychosocial Safety Climate Theory**

The psychosocial safety climate theory was propounded by Dollard et al. (2012). As per this theory, psychosocial safety climate involves perceived organizational safety environment that promotes employees' psychological health, wellbeing, and safety. Psychosocial safety climate is predicted by organizational procedures, practices and policies meant to protect employees' psychological health and safety (Dollard et al. 2012). Psychosocial safety climate also reflects top management commitment, organizational participation, and general consultation in relation to stress and accident prevention at the workplace (Dollard & Bakker, 2010).

According to the psychosocial safety theory poor psychological safety climate is caused by unsafe work environment and conditions at the workplace as well as psychological injury (Law, Dollard, Tuckey & Dormann, 2011). In organizations where there is high psychosocial safety climate management, usually go the extra mile or do whatever it takes to protect employees' psychological health. This is usually done by

coming up with pro-safety policies, practices and consistently encourage adherence to high safety standards (Dollard et al., 2012).

The psychosocial safety climate theory has four main components (Hall, Dollard & Coward, 2010). These four components are related to best practices and principles meant to prevent accidents and its related stressors, and offer intervention strategies (Dollard, Dormann, Tuckey & Escartín, 2017; Dollard & Kang, 2007). The first component is the commitment and support of top management, as well as engaging employees so as to put measures in place to enhance the psychological health (Dollard et al., 2012). This component also occurs when top management become proactive when it comes to safety management (Idris, Dollard, Coward & Dormann, 2012). Management is usually seen to be proactive when they take quick and decisive action to address and rectify issues that has the potential to undermine or actually undermines employees' psychological health (Idris et al., 2012).

The second component is when management prioritizes the psychological safety and health of employees over organizational productivity goals/target (Hall et al., 2010). For instance, job demands (e.g. work pressure) could be adjusted to make them more manageable (Hall et al., 2010). Also, management have the discretion to offer an assortment of resources, like social support, autonomy and work flexibility to enable employees to experience reduced work-related stress so as to enhance their psychological health and efficiency (Hall et al., 2010).

The third component is “organizational communication” which has to do with how the leadership of an organization communicates with their workers on issues related to their

psychological health and safety (Dollard et al., 2017; Hall et al. 2010). Communication ought to be two-way where leadership informs employees about what they are doing to enhance their safety, and get feedback from employees on what they want or how they are coping with current health and safety systems (Dollard et al., 2017).

The fourth component has to do with organizational participation and involvement. This is related to employees' concerns, participation and consultation with management in the bid to prevent stress (Idris et al., 2012). Here, employees at all levels within the organization as well as other stakeholders such as health and safety personnel, unions are all involved in the occupational safety and health process (Dollard et al., 2017; Idris et al., 2012).

The combined effect of the aforementioned components of the psychosocial safety climate theory creates a positive organizational safety climate which leads to high psychological capital and job satisfaction among employees. Specifically, components such as top management commitment to high employees' safety, organization's participation in standardized safety practices, and employees' consultation to create a stress-free and hazard-free workplace enhances employees' psychological capital and job satisfaction (Dollard & Bakker, 2010). Therefore, the psychosocial safety climate theory explains how important it is for organizations to come up with better procedures, practices and policies to protect employees' psychological capital and job satisfaction (Dollard, 2012).

Even though the psychosocial safety climate theory is a good theory that explains how organizational safety climate predicts employees' psychological capital and job

satisfaction, the theory has some weakness. For instance, the theory generally sees management of organizations to be mainly responsible for ensuring positive organizational safety climate (Dollard et al., 2017). This may not be entirely true for all organization because employees also play a key role in ensuring a positive organizational safety climate, which also affects their psychological capital and job satisfaction. For instance, irrespective of how practical and robust management and organizational policies and practices on positive safety climate are, they will not achieve their desired result when employees do not fully adhere to them.

Hence, organizational safety climate could be ensured when management together with lower level employees work-hand-in-hand to make it work. One way in which employers can work with their employees is when management engage employees from the policy formulation stage to the policy implementation stage. Also, management ought to ensure that they train and retrain employees on organizational safety standards and practices. Management could also reward employees who are more adherent to the organizational safety practices. Irrespective of the stated weakness in the psychosocial safety climate theory, it is still relevant to this study. This is so because it gives explanations to the antecedents of organizational safety climate (i.e. policies, practices and procedures), and how this predict psychological capital and job satisfaction of employees.

## **2.2 Review of Related Studies**

### **2.2.1 Relationship between Organizational Safety Climate and Job Satisfaction**

Over the years, numerous studies have assessed the relationship that exist between organizational safety climate and job satisfaction (Cox & Cheyne 2000). The findings of these studies have indicated that perceptions of safety climate has a direct impact on employees' job satisfaction (Bergheim et al., 2015; Cox & Cheyne 2000). For instance, according to Bergheim et al. (2015)'s findings a negative perception about organizational safety climate usually leads to reduced job satisfaction. Conversely, a positive employee perception about safety climate increases employees' tendencies to be more satisfied with their jobs (Bergheim et al., 2015). Bergheim et al.'s (2015) finding above reinforced that of Omusulah (2013) whose results revealed among other things that, organizational health and safety climate has a direct influence on employees' job satisfaction (either negatively or positively). Omusulah's (2013) findings strengthens that of Robin and Walker (2000) and Kiruthiga and Magesh (2015) who have also established that positive organizational safety and health practices predict employees' job satisfaction.

Similarly, Mathis and Jackson (2003) explained that a direct link exist between safety climate and employees' job satisfaction. This is because when employees feel safe at work, accidents and its related injuries and trauma are reduced and this increases their likelihood to be satisfied with their jobs (Mathis & Jackson, 2003). It is, therefore, important to create and sustain a positive organizational safety climate so as to reduce the cost involved in persistent accidents at the workplace, the legal ramifications that may come with serious injuries or even death, and the bad image that organizations attains when they become notoriously known for their poor safety climate (Mathis & Jackson, 2003).

Hence, positive organizational safety climate boosts employees' job satisfaction levels (Robin & Walker, 2000; Omusulah 2013).

Mathis and Jackson, (2003)'s findings reinforced that of Robin and Walker (2000) and Kiruthiga and Magesh (2015) who have also discovered a strong relationship exist between pro-safety and health practices and job satisfaction (Kiruthiga & Magesh, 2015). In other words, a positive organizational safety practices leads to higher employee job satisfaction and vice versa (Kiruthiga & Magesh, 2015; Robin & Walker, 2000). Yusuf, Eliyana and Sari (2012) further provided empirical evidence to show that organizational safety climate does not only offer a sense of safety to workers, but also has a direct effect on employees' levels of job satisfaction (Robin & Walker, 2000). When workers are content with the safety climate within at their workplace the rate of work-related accidents is reduced (Mathis & Jackson, 2003).

Furthermore, Gyekye (2005)'s Ghanaian study's findings indicated that a positive correlation exist between employees' adherence to safety management policies and job satisfaction. Specifically, employees who said they were very satisfied with their jobs also had positive perceptions about their organization's safety climate (Gyekye, 2005). Employees who had positive perception about the safety climate at their workplace went the extra mile to adhere safety management practices and were also found to record little or no work-related accidents (Gyekye, 2005). These results are therefore consistent with the claim that positive employees' perceptions about their organization's safety climate buffer against accident involvement among employees (Gyekye, 2005).

In their study, Huang et al. (2014) examined the nature of safety climate at the workplace and to ascertain whether safety climate had a direct effect in the promotion of

pro-safety behaviors and job satisfaction (Huang et al., 2014). At the end results showed that employees' perceptions of safety climate determines how employees behave when it comes to safety, tendency to be injured at work and job satisfaction (Huang et al., 2014). Similarly, Stoilkovska et al. (2015) examined how employees perceived the safety climate at their workplace and how it affects their job satisfaction levels (Stoilkovska et al., 2015). At the end result showed that perceived accident rate and safety inspection frequency directly affect employees' satisfaction with their jobs (Stoilkovska et al., 2015).

Based on the above review it could be said that indeed organization's safety climate has a direct effects of employees' job satisfaction. This is so because the more positive or safe an organization's safety climate is, the more likely it would be for their employees to be satisfied with their jobs. However, most of the aforementioned studies were done in organization not in the oil and gas sector. Nevertheless, this research gap is addressed in this present study which concentrated on the oil and gas extraction and processing sector.

### **2.2.2 Relationship between Organizational Safety Climate and Psychological Capital**

Over the years various studies have been done on the relationship between psychological capital and organizational safety climate (Bergheim et al., 2013). For instance, in their study, Hystad et al. (2014) discovered that workers with high self-efficacy (which is a component of psychological capital) are goal directed and usually have positive mindset about the fact that they can achieve every objective relating to their job (Hystad et al., 2014). In addition, they usually upgrade their safety awareness and go on further to make sure that they work without getting themselves involved in an accidents (Hystad et al., 2014). Similarly, highly resilient employees usually exhibit increased motivation and

stamina for pro-safety practices especially at the workplace. They usually do this in spite of conflicting priorities and temptations to use shot-cuts to save time and avoid hardships related to rigorous pro-safety procedures (Hystad et al., 2014).

Even though the above review has revealed that a direct correlation exist between organizational safety climate and psychological capital, literature backing the connection between these constructs are scanty. What makes this even more serious was the fact that after an extensive research, the researcher found relatively no studies targeting employees or organizations in the oil and gas sector production sector. In addition, the researcher could not find published studies conducted in Ghana or sub-Saharan Africa on how organizational safety climate affects the psychological capital of employees.

The above gap in literature was existent partly because unlike the other variables/constructs psychological capital is a relatively new construct. Hence it is now that researchers especially those in Human Resource Management, Industrial and Organizational Psychology, among others are developing interest in looking at the impact of psychological capital on other organizational behavioral outcomes. This present study, therefore, seeks to find out the relationship between psychological capital and organizational safety climate, specifically in the oil and gas sector.

### **2.2.3 Age, Gender, Job Tenure and Education Level as Predictors of Organizational Safety Climate**

Over the years demographic variables such as age, gender, tenure, etc. have been found to predict employees' perceived organizational safety climate.

**Age and Organizational Safety Climate:** Differences in age have been discovered by quite a number of studies as a predictor of employees' safety risk behaviours (Bayire, 2016). For instance, Salminen (2004) found that in an organization where the safety climate is poor, younger employees were more inclined to be involved in accidents at their workplace than their older counterparts (Salminen, 2004). Also, workers who were older were found to be less predisposed to be seriously injured at the workplace (Bayire, 2016; Salminen, 2004). This trend is not different from what Gyekye and Salminen (2009) discovered in Ghana, specifically, in organizations with poor safety climate employees who were older by age had a lower injury rate when compared to employees who were younger (Gyekye & Salminen, 2009). Furnham, Eracleous and Chamorro-Premuzic (2009) further stated that less workplace accidents were recorded among older employees in comparison to that of younger employees in the same organization (Furnham et al., 2009).

In the bid to explain the above findings, it could be argued that because older employees usually had more experience on-the-job and also had relatively longer number of years in that particular role or profession (Furnham et al., 2009). Similarly, Nasab, Ghofranipour, Kazemnejad, Khavanin and Tavakoli (2009)'s findings showed that employees who were older in high-risk industry behaved more safely and had positive attitudes towards safety unlike their younger counterparts (Nasab et al., 2009). Likewise, high level of positive attitude towards safety was also discovered among older workers in the Chinese construction sector (Siu, Phillips & Leung, 2003).

Working conditions have also been found to play a role as to why younger employees have higher levels of injuries at the workplace (Bayire, 2016). For instance, according to Horwitz and McCall (2005) in organizations where the safety climate is poor,

younger people who work during the night (younger night shift workers) had a higher tendency to get themselves injured (Horwitz & McCall, 2005).

Irrespective of the findings and its related arguments explaining the extent to which age predicts safety climate, some other studies have discovered that employees' age does not affect the way they perceive their organizational safety climate. For example, Pecquet (2013) did not find age to be a predictor of pro-safety behaviours among construction workers (Pecquet, 2013). Meanwhile, Živkovic, Todorović and Markič (2012) found that, older and younger employees in the chemical industry had similar perception, attitude and behaviour towards organizational safety (Živkovic, et al., 2013).

**Gender and Organizational Safety:** According to Bayire (2016) differences in gender is a major predictor of work-related accidents in organizations with poor safety climate. For instance, the risk of work-related accidents and injury among male employees was significantly higher and the severity of injuries was far more serious than that of female employees (Bayire, 2016; Salminen, Saari, Saarela & Räsänen, 1992). Nevertheless, Toscano, Windau and Knestaut (1998) explained that the reason why females had lower levels or severity of work-related accidents may be as a result of the fact that, only a handful of females work in high-risk organizations such as those in the oil and gas processing sector across the globe (Toscano et al., 1998). Taiwo et al. (2009)'s findings reinforced that of Toscano et al. (1998) by revealing that women who worked in high-risk manufacturing industry were less often involved in work-related accidents and injuries than male employees at the same workplace (Taiwo et al., 2009).

**Job Tenure/Field of Experience and Organizational Safety:** Employees' field experience and job tenure have also been implicated for their role in predicting organizational safety and work-related accidents (Bayire, 2016). Number of years spent within an organization as an employee is said to have a direct influence on how employees perceive their organization's safety climate. In that, employees with longer job tenure were more inclined to perceive their organizational safety climate more positively or favorably (Bayire, 2016). This is because as they have spent longer time in their organization they become used their organization's safety climate in comparison to newly employed workers (Barreto, Swerdlow, Schoemaker & Smith, 2000; Bayire, 2016).

**Education Level and Organizational Safety:** Knowing the effect employees level of education has on their perceptions on organizational safety climate is very important (Gyekye & Salminen, 2009). This is so because it guides management in making proper decisions regarding employees' adaptability, general work effectiveness, implementation of management policies on safety, frequency of accidents, and proper management of education-related accident characteristics (Gyekye & Salminen, 2009).

According to Davies, Koehlmoos, Courtice and Ahmad (2011) the higher employees' education or knowledge on the dynamics of work-related accidents, the less likely they are to be injured (Davies et al., 2011). In fact, the mere fact that an individual is educated protects them from work-related accidents and injuries (Davies et al., 2011). For example, the findings of Stojadinovic et al. (2011) revealed that miners who were well educated in the underground coal mines in Serbia had lower work-related injury when compared to less educated miners (Stojadinovic et al., 2011). Similarly, Gyekye and Salminen (2009)'s finding in Ghana's manufacturing industry also found that well

educated workers had less work-place accidents than their less educated counterparts (Gyekye & Salminen, 2009). In addition, well-educated employees were found to be more inclined to have more positive perception about organizational safety climate than their less educated counterparts (Gyekye & Salminen, 2009).

#### **2.2.4 Status of Organizational Safety Climate in Ghana**

In August 2015, the then Minister of Environment, Science, Technology and Innovation, Mahama Ayariga, threatened the closure of companies in Ghana who failed to promote good safety and environmental standards and protect the environment (Times, 2015). This is because staff of most organizations were not provided with the required protective gear needed for their jobs (Times, 2015). In addition, most companies emit harmful gases such as carbon dioxide into the environment, which is detrimental not only to the health of the workers, but also to that of the communities where these companies are stationed (Times, 2015).

According to Sikpa (2011) a major cause of the surge in accidents and health related problems in Ghanaian companies is related to the country's ineffective implementation of occupational health and safety policies (Sikpa, 2011). This deficiency in implementation of policies on workplace safety and health has negative effects on the organization as well as the employees (Sikpa, 2011). Examples of these negative effects includes the cost of damage to material or equipment due to accidents at the workplace, cost of employees' salaries paid for time lost due to injury or trauma, cost of overtime work required as a result of accidents, among others (Sikpa, 2011).

In order to ensure the a healthy and hazard-free environment at the workplace, the workplace in Ghana and other developing and developed countries has become an essential component that ensures that organizations are viable together with labour unions, among others (Yankson, 2012). Ghana joined the International Labour Organization in 1957 (Yankson, 2012). The Constitution of Ghana, 1992, came into force on 7 January 1993 and was amended on 16 December 1996 advocated for a safe and hazard-free working environment (Yankson, 2012). It's Chapter 5 which covered Fundamental Human Rights and Freedoms whereas Section 28 covered the right of minors against undue moral and physical hazards (Yankson, 2012). Similarly, Section 36 subsection 10 safeguarded the health, safety and welfare of all persons in employment (Hodges & Baah, 2006). Similarly, Ghana's Labour Act 2003, Act 651, section 118(I) outlined the responsibility of employers to see to it that their employees work in a healthy and a hazard free environment (Hodges & Baah, 2006).

In recent times, the subject of employee safety is increasingly becoming one of the most important topics in organizations. This is partly because in the current globalized world, the cost of labour is one of the major organizational considerations that drives multinationals to move some of their production plants to developing countries (Haller, 2016). The cost of labour has a direct impact on the extent to which organizations can maximize their productivity and profitability (Haller, 2016). According to Lehtinen (2001) a hazard-free working environment improves employee productivity and job satisfaction (Lehtinen, 2001). Thus, one of the ways in which developing countries are able to compete in the international market is to put measures in place to ensure safety and health is effectively managed at the workplace (Yankson, 2012).

Each and every employee has the right to work in a hazard-free environment but as a result of illiteracy, poverty and high unemployment rates, a lot of people are compelled to work in hazardous environments just to make ends meet (Stranks, 2000). According to the World Health Organization hazard-prone working environment undermined employees' health and safety, thereby, costing countries up to 10-20% of their Gross National Product (Amponsah-Tawiah & Dartey-Baah, 2011). In countries such as Ghana it has been observed that due to the country's fast growing workforce and growing informal sector, employees are increasingly prioritizing their job security and neglecting their right to work in a health and safe environment. In addition, due to financial constraints most organizations in developing countries like Ghana have difficulty in affording standardized organizational health and safety systems (Amponsah-Tawiah & Dartey-Baah, 2011).

Just as some other African countries, Ghana lacks a comprehensive organizational health and safety policy, little funding and poor infrastructure, as well as few professionally certified organizational safety and health personnel (Amponsah-Tawiah & Dartey-Baah, 2011; Muchiri, 2003). In Ghana, the two main statutes that informed the establishment of the Organizational Health and Safety policy are the Offices and Shops Act 1970, Act 328 and the Workmen's Compensation Law 1987, PNDC Law 187 (Amponsah-Tawiah & Dartey-Baah, 2011). The Factories Offices and Shops Act 1970 is meant to ensure that there are necessary improvements aimed at ensuring that organizations adhere to the highest standards safety that is internationally recognized (Amponsah-Tawiah & Dartey-Baah, 2011). This goes a long way to ensure that the welfare, health and safety of employees working in various offices, construction sites, dock work, shops and factories are strictly adhering to internationally required safety standards (Amponsah-Tawiah &

Dartey-Baah, 2011). In addition, the Workmen's Compensation Law 1987 makes provision for the payment of cash as a form of compensation by an organization to workers or their beneficiaries especially when they get injured at the workplace or die (Amponsah-Tawiah & Dartey-Baah, 2011).

### **2.2.5 Assessment of Safety Culture within the Oil and Gas Industry**

Irrespective of the bright prospects that comes with the oil and gas sector, it is said to be one of the most dangerous sectors in any economy. According to Bolu (2011) the oil and gas sector is one of the most risk prone industries. This is due to the high number of work-related hazards and accidents as well as the cost that comes treating injured employees (Kines et al., 2011). For instance, the costs of one just accident in the oil and gas sector like the Piper Alpha disaster led to the loss of more than £2 billion including £76 million indirect insurance payments and the death of 167 people (Health and Safety Executive, 1999; Kines et al., 2011).

The ILO (2005) has projected that, globally, employees suffer about 270 million work-related accidents annually due to poor organizational safety climate (ILO, 2005). Also, work-related accidents and injuries led to over 10 million disabilities and adjusted life years lost (WHO, 2006). In addition, workplace hazards and injuries accounts for the reduction in the capacity of employees to work as their supposed to (WHO, 2006). This, therefore, leads to loss of up to 10 to 20% of Gross National Product (WHO, 2006). Globally, the total cost of death among employees at the workplace as well as work-related diseases is projected to lead to the loss of 4% of country's Gross Domestic Product (Takala, 2002). The World Health Organization (WHO) has as well stated that a significant aspect

of the general morbidity of the human population globally is as a result of hazards at the workplace (WHO, 2006).

Furthermore, the International Labour Organization (ILO), (2019) have estimated that in 2019 about 2.3 million men and women across the globe will be infected with various diseases and work-related accidents. This will led to the death of more than 6000 employees especially those in the extractive industry each and every day across the globe (ILO, 2019). Globally, close to 340 million employees experience some form of accident at the workplace in addition to 160 million illnesses every year (ILO, 2019). When ILO (2019)'s statistics on work-related accidents, injuries and death is compared to that of WHO (2006) it could be concluded that workplace accidents, injuries and death is on the increase (ILO, 2019).

A study conducted at the Tema Oil Refinery by Toseafa (2017) revealed that most employees have a fair idea about the management policies and systems put in place to ensure employees safety (Toseafa, 2017). Nevertheless, management and employees do little to ensure that the standard safety requirements are duly implemented (Toseafa, 2017). Similarly, Probst, (2015)'s findings revealed that the enforcement of pro-safety behaviours by supervisors among low level employees directly influenced employees to report accidents at the workplace (Probst, 2015).

In the bid to mitigate the negative effect of the oil and gas sector, oil producing and processing countries have to take legislation and implementation of those legislation seriously (International Labour Organization, 2017). Also, the oil and gas sector ought to equip itself with technological competencies and skills to improve overall safety operations. In doing this, management must ensure that employees get the right information

and up-to-date knowledge on Organizational Safety and Health legislation and regulations (International Labour Organization, 2017). In addition, employees ought to have the required skills and equipment needed to protect themselves at the workplace against injuries. Furthermore, there is a need for more efficient and effective mechanisms for recording and notification of occupational accidents and diseases (International Labour Organization, 2017).

Similarly, Chauhan (2014) further stated that due to the effect of poor organizational culture on employees and organizations at large there is the need for an effective occupational safety and health management system that integrates safety and health concerns into a daily routine (Chauhan, 2014). In addition, as employees working in Oil and Gas sector are exposed to various risk factors, management should put measures in place to continually monitor their working conditions (Chauhan, 2014). Finally, health protocols and periodic medical checkup should be pre-defined and done for every employee depending on the job and work area type to identify possible deviations from the normal health and to confirm that necessary counteractive actions are taken in advance (Chauhan, 2014).

#### **2.2.6 Profile of Tema Oil Refinery**

The Tema Oil Refinery (TOR) is the first oil refinery to be installed in Ghana. In fact as at the year 1963 TOR was among the first eight oil refineries in Africa (Tema Oil Refinery, 2019). On a daily basis TOR refines a total of 45,000 barrels of crude oil per stream out of the national demand of 65,000 barrels of crude oil per stream. Also, the

14,000 bpsd Residue Fluid Catalytic Cracker Unit converts atmospheric air to higher value finished products (Tema Oil Refinery, 2019).

TOR is located in Tema which is approximately 24 kilometers east of the Greater Accra region in Ghana. Historically, the Ghanaian Italian Petroleum (GHAIP) Company was TOR's original name (Tema Oil Refinery, 2019). The then GHAIP was incorporated as a Private Limited Liability Company under the Companies Ordinance (Cap 193) on December 12, 1960 (Tema Oil Refinery, 2019). This was so because the ENI Group of Italy owned a hundred percent shares. But in April 1977 the then Ghanaian government purchased all the shares of GHAIP and became sole shareholder of GHAIP. Having done that the government changed the name from GHAIP to the Tema Oil Refinery (Tema Oil Refinery, 2019).

### **2.3 Rationale of the Study**

A critical analysis of literature in this research area indicated that a number of research have been done on the relationship between organizational safety climate and job satisfaction (e.g. Huang et al., 2014; Omusulah, 2013), whereas others have looked at the relationship between organizational safety climate and psychological capital (e.g. Bergheim et al., 2013). But hardly were there individual studies like that of Bergheim et al. (2015) and Parthi and Gupta (2016) that investigated the extent to which organizational safety climate predicts psychological capital and job satisfaction all-together. In other words, only a handful of studies have looked into the extent to which organizational safety climate affects the psychological capital and job satisfaction of employees at the same time.

In addition, most studies done in this research area were done in other sectors or industries such as the manufacturing (e.g. Taiwo et al., 2009), mining (e.g. Amponsah-Tawiah & Mensah, 2016), maritime (e.g. Bergheim et al., 2015), construction, chemical (e.g. Bergh et al., 2013), transport (e.g. Huang et al., 2013) and aviation industries (Gao, Bruce & Rajendran, 2015). This means that even though relatively few studies were done in this research area, most of these studies did not target organizations and employees in the oil and gas extraction and processing sector (Bayire, 2016).

Furthermore, most studies done in this area were conducted in Western or European and Asian countries (Toseafa et al., 2016). In fact, after an extensive search for over a year, the researcher found only a handful of Ghanaian based studies that had looked at how safety climate affects employees' psychological capital. Nevertheless, quite a number of these studies examined how safety climate affects employees' job satisfaction. Precisely, most studies done in this research area in Ghana looked at the relationship between safety climate affect employees' performance and or job satisfaction (Mearns, et al., 2003; Sikpa, 2011; Toseafa et al., 2016).

This, therefore, shows that there is a research gap in this research area that ought to be filled/bridged. It is, therefore, important to conduct a study to investigate TOR's organizational safety climate and how it predict employees' psychological capital and job satisfaction.

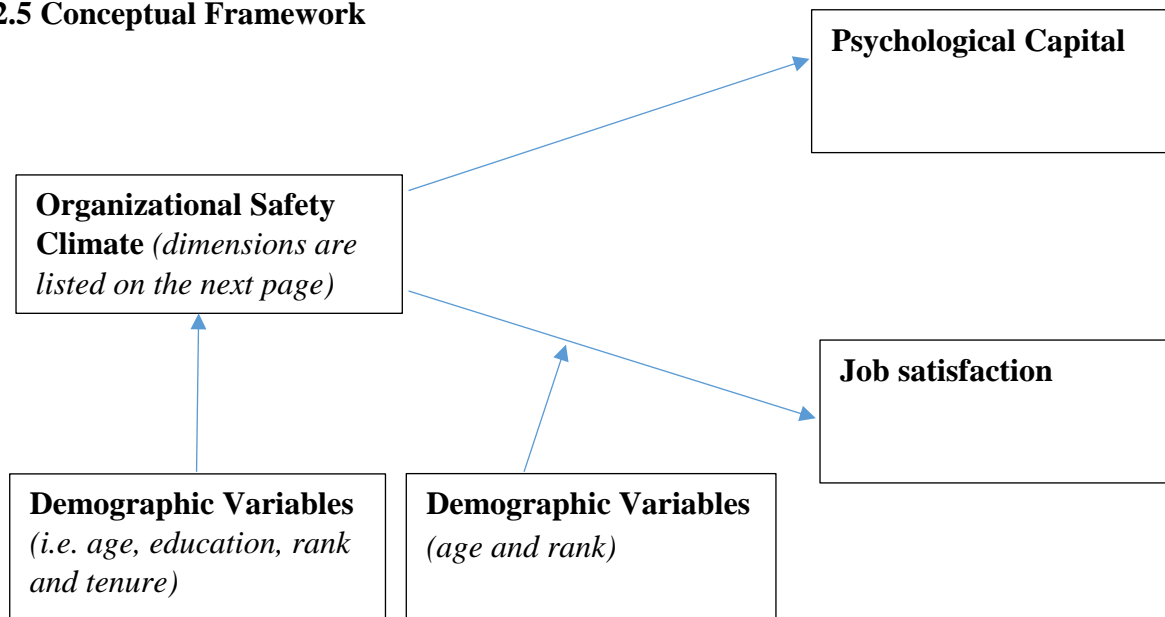
## **2.4 Statement of Hypotheses**

- (i) Organizational safety climate will predict employees' psychological capital.
- (ii) Organizational safety climate will predict employees' job satisfaction.

(iii) Age and rank will moderate the relationship between organizational safety climate, psychological capital and job satisfaction.

(iv) Demographic variables (i.e. age, tenure and rank) will predict employees' perceived organizational safety climate.

## 2.5 Conceptual Framework



**Figure 1: Hypothesized model of the effect of Organizational safety climate on employees' psychological capital and job satisfaction**

*Nordic Occupational Safety Climate Questionnaire's seven subscales: "Management safety priority, commitment and competence", "management safety empowerment", "management safety justice", "workers' safety commitment", "workers' safety priority and risk non-acceptance", "safety communication, learning and trust in co-workers' safety competence", and "workers' trust in the efficacy of safety systems."*

The proposed conceptual framework or model demonstrates that organizational safety climate predicts psychological capital and job satisfaction. Furthermore,

demographic variables (i.e. age, education, rank, tenure and department) predict organizational safety climate. Whereas, age and rank moderate the relationship between organizational safety climate and job satisfaction.

## 2.6 Operational Definitions

**Organizational safety climate:** Organizational safety climate has to do with the perception and expectations that employees' have with regard to how safety is valued or prioritized by both management and other employees at the Tema Oil Refinery.

**Components/dimensions of organizational safety climate:** Organizational safety climate has seven components. These are “management safety priority, commitment and competence”, “management safety empowerment”, “management safety justice”, “workers' safety commitment”, “workers' safety priority and risk non-acceptance”, “safety communication, learning and trust in co-workers' safety competence”, and “workers' trust in the efficacy of safety systems” at the Tema Oil Refinery.

**Psychological capital:** Psychological capital has to do with collective feeling of optimism, resiliency, self-efficacy and hope among employees at the Tema Oil Refinery.

**Job satisfaction:** Job satisfaction has to do with employee at TOR's attitude and contentment with the conditions at the workplace.

## CHAPTER THREE

### METHODOLOGY

#### 3.0 Introduction

This chapter focused on the methodology used by the researcher in conducting this study. This comprised the research design, target population, sample size and sampling technique, profile of Tema Oil Refinery, data collection instrument, data collection procedure, pilot study, ethical considerations, and data analysis.

#### 3.1 Research Design

The research design used in this study was a cross-sectional survey. The researcher sampled and collected data from employees (respondents) across all the sections/ departments at TOR. This was aimed at ensuring that all employees are fairly represented to enable the researcher to generalize the findings of this study. A cross-sectional survey collects data to make inferences about a population of interest (universe) at one specific point in time (Cherry, 2019; Lavrakas, 2008). Cross-sectional surveys allows researchers to look at numerous characteristics (e.g. age, job tenure, marital status, level of education, etc.) of the population being studied all at once and how they correlate with the variables being studied (Levin, 2006). Also, cross-sectional surveys can provide information about what is happening in a current population, and adjusted to suite challenging situations (Creswell, 2014; Levin, 2006; Setia, 2016).

Furthermore, the quantitative research approach was used. Quantitative research focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon (Babbie, 2010; Muijs, 2010). A quantitative research approach is

the most appropriate research approach because all the proposed data gathering instruments (i.e. scales within the questionnaire) are standardized and only allow for inferential statistical analysis. One of the major goals of both quantitative studies and cross-sectional surveys is to generalize research findings to the general population targeted in a study (Creswell, 2014).

### **3.2 Target Population**

The target population for this study were employees at the Tema Oil Refinery in Accra. Tema Oil Refinery (TOR) had a total of 649 full-time employees out of which 579 (89.1%) were males whereas 70 (10.9%) were females as at the 30 day of June, 2019. Meanwhile, casual employees (including interns and National Service Personnel) were 120 in number, out of which 115 were males while 5 were females.

### **3.3 Sample Size and Sampling Technique**

The stratified random sampling technique was used to select 248 respondents. Stratified random sampling was used because the researcher met respondents in groups in their respective departments/sections. Also a lot of employees were shift workers and had different break schedules so it was possible to meet them in small groups (strata) during their break time. Having met employees in their various departments the researcher selected some of them using randomization which gave each respondent the chance of being selected.

Stratified random sampling technique is a probability sampling technique that involves the division of a population into smaller sub-groups known as strata (Hayes, 2019). The strata are formed based on members' shared attributes or characteristics such as department, level of educational, etc. (Hayes, 2019). Therefore, stratified sampling allows researchers to select sample populations that are representative of the entire population being studied.

The inclusion criteria for this study were all full-time junior staff and management staff (senior staff or managers, supervisors and directors) of the Tema Oil Refinery. Thus, all full-time employees irrespective of their position at TOR fell within the inclusion criteria. Meanwhile, the exclusion criteria were all casual workers (e.g. interns, NSS Personnel, contract workers) at the Tema Oil Refinery.

A sample size of 248 respondents were used for this study. Below is a justification for the use of the above sample size in accordance with Yamane (1967)'s formula for calculating sample sizes.

**Yamane (1967)'s formula for calculating sample sizes**

$$n = \frac{N}{1 + N * (e)^2}$$

n - the sample size

N - the population size

e - the acceptable sampling error

*\* 95% confidence level and p = 0.5 are assumed*

Where N=649 and e = 0.05.

Therefore, n = 649 / 1+649 (.05)<sup>2</sup>

= 649 / 1+649 (0.0025), = 649 / 1+1.6225, = 649 / 2.6225, = 247

According to Yamane's (1967) formula for calculating sample sizes, the most appropriate sample size for a population of 649 with a Confidence Level of 95% and Precision Level of 0.5 is 247. A total of 248 respondents were used as the sample size for this study.

### **3.4 Data Collection Instrument**

Data was collected with questionnaire that was subdivided into three sections: Section A, B, C and D. Section A of the questionnaire captured data on respondents' demographic characteristics such as gender, age, marital status, rank, level of education, job tenure and department. Meanwhile, the other sections contained the various standardized scales as indicated as follows:

**The Nordic Occupational Safety Climate Questionnaire (NOSACQ-50):** Section B of the questionnaire contained a standardized questionnaire known as the Nordic Occupational Safety Climate Questionnaire (NOSACQ-50) which was created by Kines, et al., (2011). The NOSACQ-50 was used to test respondents' perception on the organizational safety climate at the Tema Oil Refinery (Kines et al., 2011). The Nordic Occupational Safety Climate Questionnaire is a 50-item diagnostic and intervention tool, used to assess the status and progress organizational safety climate. The NOSACQ-50 has 22-items dealing with three (3) managerial dimensions (Kines et al., 2011). The first managerial dimension was captured under the subtitle "management safety priority and ability" and it comprised 9 items (i.e. items 1, 2, 3, 4, 5, 6, 7, 8, 9) (Bergh, Shahriari & Kines, 2013). Items 1, 2, 4, 6, and 7 were positively formulated items whereas items 3, 5,

8 and 9 were reversed formulated items (Bergh et al., 2013). The second managerial dimension was captured under the subtitle “management safety empowerment” and it comprised 7 items (i.e. items 10, 11, 12, 13, 14, 15, 16) (Bergh et al., 2013). Items 10, 11, 12, 14 and 16 were positively formulated items, whereas items 13 and 15 were reversed formulated items (Bergh et al., 2013). The third managerial dimension was captured under the subtitle “management safety justice” and it comprised 6 items (i.e. items 17, 18, 19, 20, 21, 22). Items 17, 19, 20 and 22 were positively formulated items, whereas items 18 and 21 were reversed formulated (Bergh et al., 2013). Sample items included “management ensures that everyone receives the necessary information on safety,” “management looks the other way when someone is careless with safety”, “management places safety before production,” etc.

The NOSACQ-50’s remaining 28 items focused on employees and their colleagues’ safety dimensions: The first employees’ dimension was captured under the subtitle “workers’ safety commitment” and it comprised 6 items (i.e. items 23, 24, 25, 26, 27 and 28) (Bergh et al., 2013). Items 23, 24 and 27 were positively formulated items, whereas items 25, 26 and 28 were reversed formulated (Bergh et al., 2013). The second employees’ dimension was captured under the subtitle “workers’ safety priority and risk non-acceptance” and it comprised 7 items (i.e. items 29, 30, 31, 32, 33, 34 and 35) (Bergh et al., 2013). Item 33 was positively formulated whereas items 29, 30, 31, 32, 34 and 35 were reversed formulated (Bergh et al., 2013). The third employees’ dimension was captured under the subtitle “peer safety communication, learning, and trust in safety ability” and it comprised 8 items (i.e. items 36, 37, 38, 39, 40, 41, 42 and 43) (Bergh et al., 2013). Items 36, 37, 38, 39, 40, 42 and 43 were positively formulated items, whereas item 41 was

reversed formulated (Bergh et al., 2013). The fourth employees' dimension was captured under the subtitle "workers' trust in the efficacy of safety systems" and it comprised 7 items (i.e. items 44, 45, 46, 47, 48, 49 and 50) (Bergh et al., 2013). Items 44, 46, 48 and 50 were positively formulated items, whereas items 45, 47 and 49 were reversed formulated (Bergh et al., 2013). Sample items included "we who work here try hard together to achieve a high level of safety," "we who work here do not care about each other's safety," "we who work here avoid tackling risks that are discovered," and "we who work here help each other to work safely".

All items in the NOSACQ-50 items were scored on a 4-point likert scale ranging from strongly disagree to strongly agree. Specifically, Strongly Disagree = 1, Disagree = 2, Agree = 3 and Strongly Agree = 4 (Kines et al., 2011). The mean score is calculated for each dimension, and the mean score over 2.5 is generally considered a positive result, while 2.5 and below is a negative score. The Cronbach alpha for the NOSACQ-50 is .87 (Kines et al., 2011). The overall Cronbach alpha for the NOSACQ-50's questionnaire for this present study was .88 which was very high.

**Psychological Capital Questionnaire (PCQ):** Section C of the questionnaire contained a standardized questionnaire known as the Psychological Capital Questionnaire (PCQ). The 24-item Psychological Capital Questionnaire by Luthans, Avolio and Avey (2007b) was used to measure respondents' psychological capital. Psychological capital is a higher order construct, consisting of four sub-scales (efficacy, hope, resilience and optimism) (Avey et al., 2010). Each subscale is measured by 6-items. Sample items included: "I feel confident analyzing a long-term problem to find a solution", "I feel

confident in representing my work area in meetings with management”, “I feel confident helping to set targets/goals in my work area” and “I feel confident presenting information to a group of colleagues” (Avey et al., 2009).

All items in the PCQ were scored on a 6-point likert scale ranging from strongly disagree to strongly agree. Specifically, Strongly Disagree = 1, Disagree = 2, Somewhat Disagree = 3, Somewhat Agree = 4, Agree = 5 and Strongly Agree = 6 (Avey et al., 2009). Each of the four PCQ scale scored by calculating the mean score of all individual items in the scale (Avey et al., 2009). The overall the PCQ score is calculated by taking the mean of all the items in the PCQ. The resulting score represents an individual's level of positive PCQ. Some items are reverse scored (i.e., for these items a “1” is scored as a “6” and a “6” is scored as a “1”; a 2 is a 5 and a 5 is a 2; and a 3 is a 4 and a 4 is a 3) (Avey et al., 2009). Reversed items are marked with “R”. Efficacy: items 1, 2, 3, 4, 5, 6. Hope: items 7, 8, 9, 10, 11, 12 Resilience: items 13R, 14, 15, 16, 17, 18. Optimism: items 19, 20R, 21, 22, 23R, 24 (Avey et al., 2009).

The PCQ had strong internal consistency (Cronbach alpha  $\alpha = .92$ ) (Luthans et al., 2007b). Reliability of each sub-scale: optimism ( $\alpha = .91$ ), resilience ( $\alpha = .89$ ), hope ( $\alpha = .84$ ) and self-efficacy ( $\alpha = .85$ ) (Avey et al., 2009). Meanwhile the overall Cronbach alpha for the PCQ in this present study was .77 which was high.

**The Job Satisfaction Survey (JSS):** The section D of the questionnaire contained a standardized questionnaire known as the Job Satisfaction Survey (JSS). The Job Satisfaction Survey by Spector (1985, 1997) comprised 36-items meant to evaluate perceptions on nine subscales of job satisfaction. The JSS 9 subscales are “Pay”,

“Promotion”, “Supervision”, “Fringe Benefits” and “Rewards”, “Operating Conditions”, “Coworkers”, “Nature of Work”, and “Communication.” the JSS can also be used as a composite scale measuring overall job satisfaction levels.

Sample items in the JSS included “I feel I am being paid a fair amount for the work I do”, “There is really too little chance for promotion on my job”, “My supervisor is quite competent in doing his/her job”, “I am not satisfied with the benefits I receive”, “I like the people I work with” and “I sometimes feel my job is meaningless.”

The JSS was scored on a 6-point likert scale; 1 = very much disagree to 6 = very much agree. Specifically, Disagree very much = 1, Disagree moderately = 2, Disagree slightly = 3, Agree slightly = 4, Agree moderately = 5 and Agree very much = 6. Items are in both positive and negative directions, so some items reflect reverse scoring. The overall scores on each of the nine subscales is based on the 4-items that makes up each subscale, hence, the scores ranged from 4 to 24. Meanwhile, the overall scores which represents general job satisfaction ranged from 36 to 216 because it is based on all 36-items. Here, a higher score represents higher job satisfaction. Some items in the JSS are reversed scored. Below is the step by step procedure for scoring: All items that were negatively worded were reverse scored, and these were items 2, 4, 6, 8, 10, 12, 14, 16, 18, 19, 21, 23, 24, 26, 29, 31, 32, 34 and 36.

The subscales for the Job Satisfaction survey and their correspondents items were Pay (this comprised of items 1, 10, 19 and 28), Promotion (this comprised of items 2, 11, 20 and 33), Supervision (this comprised of items 3, 12, 21 and 30), Fringe Benefits (this comprised of items 4, 13, 22 and 29), Contingent rewards (this comprised of items 5, 14, 23 and 32), Operating conditions (this comprised of items 6, 15, 24 and 31), Coworkers

(this comprised of items 7, 16, 25 and 34), Nature of work (this comprised of items 8, 17, 27 and 35) and Communication (this comprised of items 9, 18, 26 and 36).

The Cronbach's alphas for the Job Satisfaction Survey or JSS for the various subscales ranged from  $\alpha = .60$  to  $.82$ , with a mean of  $.71$  (Spector, 1997). The overall Cronbach alpha for the Job Satisfaction Survey for this present study was  $.80$  which was very high.

### **3.5 Data Collection Procedure**

During data collection the researcher and his research assistant met employees in small groups at various departments and units at the Tema Oil Refinery. This was after a memo was sent to the various department notifying them that a researcher will be visiting them to collect data with a set of questionnaires. Upon meeting employees, the researcher explained the purpose of this research and the positive impact the outcome of this research will bring to TOR. During the researcher's interaction with respondents a lot of questions came up which the researcher duly answered. The researcher also explained the guidelines or instructions respondents are supposed to adhere to when filling the questionnaires. Having done that, selected employees who were willing to participate in the study were given questionnaires to complete and submit them on a later date. The reason why this was so was because the researcher had just less than 15 minutes with each group of participants, moreover, completing the questionnaires was supposed to take about 20 minutes. Out of the total of 260 questionnaires given out to respondents, 248 were fully completed and retrieved from respondents. Collection of data lasted for five weeks.

### **3.6 Pilot Study**

A pilot study was conducted using employees at the Ghana National Gas Company Limited (Ghana Gas) in Tema. The Ghana National Gas Company Limited was used because its operations and work-related risks were similar to that of the Tema Oil Refinery. Ghana Gas is also situated within the same locality together with the Tema Oil Refinery. In July 2011 Ghana Gas was commissioned as a mid-stream gas company. Thereafter, Ghana Gas was then given the responsibility install a plant which will extract, refine, transport and market Ghana's natural gas (Ghana National Gas Company Limited, 2019).

The pilot study was conducted so as to evaluate the feasibility, time, adverse events, and improve upon the study design prior to commencement of the full-scale research project. A total of 20 respondents were used in the pilot study. At the end result indicated that the questionnaire and its standardized subscales were reliable. Specifically, the Cronbach alpha for the Nordic Occupational Safety Climate Questionnaire (NOSACQ-50) was .81, while that of the Psychological Capital Questionnaire (PCQ) was .78, meanwhile, the Cronbach alpha for the Job Satisfaction Survey (JSS) was .86 which was high. Meanwhile, even though respondents complained about the bulky nature of the research questionnaires, they understood the individual items and were able to complete their questionnaires within an average of 20 minutes. Hence, questionnaires were good enough to be used by the researcher to collect data for this study. It was, therefore, feasible to conduct and complete this study within time.

### 3.7 Ethical Considerations

**Ethical clearance:** Ethical clearance was sought from University of Ghana's Ethics Committee for the Humanities (ECH). The ECH reference number given to this study was ECH 06/18-19.

**Institutional approval:** Institutional approval was also sought from the Human Resource Department at the Tema Oil Refinery. This occurred after the researcher submitted an introduction letter to the Human Resource Department of the Tema Oil Refinery.

**Informed consent:** Informed consent was also sought from respondents by attaching an informed consent form to the questionnaires used to collect data. The researcher also explained the purpose of the study to respondents before giving them questionnaires to complete.

**Confidentiality:** In order to ensure confidentiality, the identities of respondents was not extracted by the researcher. Specifically, the questionnaires did not require respondents to produce their names. Other private information (data) that were captured from respondents was assessed solely by the researcher and his supervisor who used it for only academic purposes.

**Right of withdrawal:** In the course of participating in this study (i.e. filling of the questionnaire), respondents were made aware of the fact that they reserve the right to withdraw their input at any stage.

### **3.8 Data Analysis**

Descriptive and inferential statistical tests within the Statistical Package for Social Sciences (SPSS) version 23 application software was used to analyze data. Below are the specific tests that were used to analyze the various hypothesis:

(i) The first hypothesis states that “employees’ perception on organizational safety climate will predict their psychological capital.” This hypothesis was analyzed with the Simple Linear Regression test.

(ii) The second hypothesis states that “organizational safety climate will predict employees’ job satisfaction.” This hypothesis was analyzed with the Simple Linear Regression test.

(iii) The three hypothesis states that “demographic variables (age and rank) will moderate the relationship between organizational safety climate and job satisfaction.” This hypothesis was analyzed with the “PROCESS” macro script Moderation Analysis test

(iv) The fourth hypothesis states that “demographic variables (i.e. age, tenure and rank) will predict employees’ organizational safety climate.” This hypothesis was analyzed with the Simple Linear Regression test.

## CHAPTER FOUR

### RESULTS

#### 4.0 Introduction

This chapter presents results obtained after data analysis. The chapter is subdivided into the following sections: Demographic Results, Preliminary Analysis, Testing of Hypothesis, Summary of Results and Observed Model.

#### 4.1 Demographic Results

**Table 1: Representation of Respondents' Gender, Marital Status, Level of Education and Rank**

GROUPS	FREQUENCY (N)	PERCENT (%)
<b>Gender</b>		
Male	209	84.3
Female	39	15.7
<b>Marital Status</b>		
Married	174	70.2
Unmarried	74	29.8
<b>Level of Education</b>		
Senior High School	42	16.9
HND/Diploma	90	36.3
First Degree	113	45.6
Second Degree	3	1.2
<b>Rank</b>		
Junior Staff	157	63.3
Senior/Management Staff	91	36.7
<b>Total</b>	<b>248</b>	<b>100.0</b>

Table 1 shows that out of the total of 248 respondents used in this study, 84.3% were males while the remaining 15.7% were females. This shows that most respondents used in this study were males. It is further indicated that 70.2% of respondents were married while 29.8% were not married (unmarried). Thus, most respondents used in this study were married. As regards respondents, highest level of education, Table 1 shows that 16.9% of were Senior High School graduates, while 36.3% had Higher National Diplomas or Diplomas, 45.6% had First Degree Certificates while the remaining 1.2% had Second Degree Certificates (Masters degree certificates). Therefore, most respondents used in this study had First Degree Certificates. With regards to respondents' rank it was revealed that 63.3% were Junior Staff while 36.7% were Senior or Management Staff.

**Table 2: Respondents' Age and Tenure**

<b>GROUPS</b>	<b>FREQUENCY (N)</b>	<b>PERCENT (%)</b>
<b>Age</b>		
20-29yrs	72	29.0
30-39yrs	69	27.8
40-49yrs	72	29.0
50-59yrs	23	9.3
<b>Tenure</b>		
Below - 2yrs	40	16.1
3-5yrs	47	19.0
5 - 7yrs	25	10.1
8 - 10yrs	38	15.3
11yrs & above	98	39.5
<b>Total</b>	<b>248</b>	<b>100.0</b>

Table 2 showed that 29% of respondents' were between the ages of 20 to 29 years, 27.8% were between 30 to 39 years, 29% were between the ages of 40 to 49 years while 9.3% were between 50 to 59 years. Table 2 further revealed that 16.1% of respondents had worked at the Tema Oil Refinery for less than 2 years, while 19% had worked for 3 to 5 years, meanwhile 10.1% of respondents also reported that they have been working at TOR for 5 to 7 years. Furthermore, 15.3% of respondents had been working at TOR for 8 to 10 years while the remaining 39.5% of respondents had been working for 11 years and over. Hence, most respondents used in this study have been working at TOR or 11 years and over.

**Table 3: Respondents' Department at the Tema Oil Refinery**

<b>DEPARTMENT</b>	<b>FREQUENCY (N)</b>	<b>PERCENT (%)</b>
Legal Department/IT	17	6.8
HR/ Learning and Development	25	10.1
Accounts/ Finance	19	7.6
Clinic	11	4.4
Procurement/ Utilities	32	12.9
Security	34	13.7
Civil works/ Commerce/ Projects	39	15.2
Inspection Section/ Monitoring	14	5.6
Production/ Power House	41	16.5
Maintenance and Planning/Estate	16	6.4
<b>Total</b>	<b>248</b>	<b>100</b>

Table 3 showed that respondents used in this study were drawn from almost all the department at the Tema Oil Refinery. Specifically, 6.8% of respondents were from the Information Technology and Legal Departments, 10.1% were from the Human Resource/ Learning and Development Departments, while 7.6% were from the Account/Finance Departments. Furthermore, 4.4% were from TOR's Clinic, 12.9 were from the Procurement Department/ Utilities Departments while 13.7% of respondents were from the Security Department. In addition, 15.2% of respondents were from the Civil works/ Commerce/ Projects Departments, 5.6% of respondents were from the Inspection Section/Monitoring Departments, whereas 16.5% were from the Production/Power House Departments. The remaining 6.4% were from the Maintenance and Planning/Estate Departments.

#### **4.2 Preliminary Analysis**

Three main steps were used in the preliminary analysis. The first step involved the descriptive analysis which involves the minimum and the maximum scores together with the means and standard deviations of the various materials and groups. This is followed by the analysis of the normality (which had to do with the skewness and kurtosis). The final step in the preliminary analysis involves the correlation analysis of the key variables.

**Table 4: Descriptive Statistics on Variables**

<b>Variables</b>	<b>Min.</b>	<b>Max.</b>	<b>M</b>	<b>SD</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b><math>\alpha</math></b>
<b>1.</b> Organizational Safety Climate	117.00	191.00	149.88	14.49	.220	.175	.88
<i>2. Management safety priority and ability</i>	19.00	36.00	27.40	3.57	.105	-.224	.69
<i>3. Management Safety Empowerment</i>	11.00	28.00	19.64	2.93	.264	1.088	.67
<i>4. Management Safety Justice</i>	8.00	22.00	16.70	2.62	-.724	.738	.68
<i>5. Workers Safety Commitment</i>	11.00	24.00	18.33	2.45	-.186	.412	.63
<i>6. Workers Safety Priority and Risk Non Acceptance</i>	11.00	26.00	19.57	2.83	-.294	.226	.63
<i>7. Peer Safety Communication Learning and Trusting Safety Ability</i>	16.00	32.00	25.00	2.69	-.171	.301	.65
<i>8. Workers Trust in the Efficacy of Safety Systems</i>	14.00	28.00	23.21	3.43	-.278	-.485	.80
<b>9.</b> Psychological Capital	73.00	121.00	104.80	11.17	-.862	-.109	.77
<b>10.</b> Job Satisfaction	101.00	183.00	138.45	18.27	.300	-.244	.80

Table 4 shows that respondents mean scores (M) together with their corresponding standard deviations (SD) on the main variables used in this study. The main variables used in this study were Occupational Safety Climate and its seven subscales: “Management safety priority, commitment and competence”, “management safety empowerment”, “management safety justice”, “workers’ safety commitment”, “workers’ safety priority and risk non-acceptance”, “safety communication, learning and trust in co-workers’ safety competence”, and “workers’ trust in the efficacy of safety systems.” This is followed by the Psychological Capital and Job Satisfaction.

Observation of the result in the table indicated that all the variables fell within the required range of normality measured in terms of skewness and kurtosis. According to Tabachnick and Fidell (2013) normality is accepted when it falls within -1 and +1. Hence, all variables were normally distributed. The mean scores and standard deviations of the participants on each of the variables have also been presented.

Furthermore, Cronbach alphas ( $\alpha$ ) which represented the coefficient of internal consistency have been presented on the Organizational Safety Climate scale (and its seven subscales), Psychological Capital scale and Job Satisfaction scale. Generally, the measures had satisfactory reliabilities, with alpha values for the main scales ranged from .77 to .88 on the various mother scales. Cronbach alpha that is higher than or equal to .70 is reliable (Nunnally, 1978).

Nevertheless, the Cronbach alphas of some of the seven subscales of the Organizational Safety Climate scale recorded scores as low as .63 which was low. This was partly due to the small number of items that made up those subscales. Nevertheless, as the mother scale (i.e. overall Organizational Safety Climate scale) had high Cronbach alpha it can be accepted that the Cronbach alpha Organizational Safety Climate scale is high.

**Table 5: Inter Correlation Matrix on Variables**

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Org. SafeC	-													
2. MSPA	.75**	-												
3. MSE	.76**	.51**	-											
4. MSJ	.69**	.49**	.54**	-										
5. WSC	.77**	.49**	.48**	.40**	-									
6. WSPRNA	.51**	.23**	.23**	.18**	.50**	-								
7. PCCLTSA	.69**	.35**	.46**	.35**	.50**	.13*	-							
8. WTESS	.69**	.34**	.39**	.32**	.41**	.20**	.52**	-						
9. PsyCap	.17*	.24**	.02	.23**	.03	-.14*	.31**	.16*	-					
10. Job Satis.	.54**	.58**	.45**	.31**	.29**	.25**	.32**	.26**	.02	-				
11. Age	.17*	.13*	.11	-.12	.21**	.33**	.05	.10	-.25**	.19**	-			
12. Education	.02	-.01	.05	.08	-.08	-.15*	.15*	.13*	.12	.19**	.20**	-		
13. Rank	.28**	.13	.21**	.08	.24**	-.01	.28**	.40**	-.02	.06	.33**	.27**	-	
14. Tenure	-.09	-.11	.02	-.28**	-.03	.06	-.14*	-.02	-.43**	-.04	.59**	-.12	.26*	-

\*\* Correlation is significant at the 0.01 level (2-tailed). \* Correlation is significant at the 0.05 level (2-tailed).

Where: Org. SafeC=Organizational Safety Climate, MSPA=Management Safety Priority and Ability, MSE=Management Safety Empowerment, MSJ=Management Safety Justice, WSC=Workers Safety Commitment, WSPRNA=Workers Safety Priority and Risk Non Acceptance, PCCLTSA=Peer Safety Communication Learning and Trusting Safety Ability, WTESS=Workers Trust in the Efficacy of Safety Systems.

The inter correlation matrix as indicated in Table 5 shows that variables such as the Organizational Safety Climate scale and its subscales correlate with Psychological Capital scale and Job Satisfaction scale. In addition, demographic variables such as Age, Level of Education Rank and Tenure correlate with the variables. This therefore shows that there is a correlation between variables used in this study.

### 4.3 Testing of Hypothesis

Below is the presentation of the results obtained after data analysis followed by their interpretations.

#### Hypothesis One

The first hypothesis states that “employees’ perception on organizational safety climate will predict their psychological capital.” Result is presented in Table 6.

**Table 6: Simple Linear Regression Test Result on the extent to which Organizational Safety Climate Predict Psychological Capital.**

Predictors	$\beta$	R	R <sup>2</sup>	p
Management safety priority and ability	.212	.446	.199	.015
Management Safety Empowerment	-.245			.004
Management Safety Justice	.187			.022
Workers Safety Commitment	-.143			.132
Workers Safety Priority and Risk Non Acceptance	-.099			.211
Peer Safety Communication Learning and Trusting Safety Ability	.341			.000
Workers Trusting the Efficacy of Safety Systems	-.025			.763

Table 6 shows that the simple linear regression analysis was used to test whether dimensions of organizational safety climate will predict psychological capital among workers at the Tema Oil Refinery. Results indicated that organizational safety climate explains approximately 20% of variance ( $R^2 = .199$ ,  $F(7, 185) = 6.552$ ,  $p = .000$ ) in psychological capital. Organizational safety climate predict psychological capital. Specifically, dimensions of organizational safety climate such as “Management Safety Priority and Ability” ( $\beta = .212$ ,  $p = .015$ ), “Management Safety Empowerment” ( $\beta = -.245$ ,  $p = .004$ ), “Management Safety Justice” ( $\beta = .187$ ,  $p = .022$ ), and “Peer Safety Communication Learning and Trusting Safety Ability” ( $\beta = .341$ ,  $p = .000$ ) significantly predicted psychological capital. Meanwhile, Workers Safety Commitment ( $\beta = -.143$ ,  $p = .132$ ), Workers Safety Priority and Risk Non Acceptance ( $\beta = -.099$ ,  $p = .211$ ) and Workers Trusting the Efficacy of Safety Systems ( $\beta = -.025$ ,  $p = .763$ ) did not significantly predict psychological capital. This implies that when it comes to organizational safety climate, dimensions such as “Management Safety Priority and Ability”, “Management Safety Empowerment”, “Management Safety Justice”, and “Peer Safety Communication Learning and Trusting Safety Ability” directly affects the psychological capital of employees at the Tema Oil Refinery. Hypothesis one is partially accepted.

### **Hypothesis Two**

The second hypothesis states that “organizational safety climate will predict employees’ job satisfaction.” Result is presented in Table 7.

**Table 7: Simple Linear Regression Test Result on the extent to which Organizational Safety Climate Predict Job Satisfaction.**

Predictors	$\beta$	R	R <sup>2</sup>	p
Management safety priority and ability	.470	.620	.385	.000
Management Safety Empowerment	.202			.014
Management Safety Justice	-.078			.319
Workers Safety Commitment	-.191			.033
Workers Safety Priority and Risk Non Acceptance	.225			.002
Peer Safety Communication Learning and Trusting Safety Ability	.168			.040
Workers Trusting the Efficacy of Safety Systems	-.005			.948

Table 7 shows that the simple linear regression analysis was used to test whether dimensions of organizational safety climate will predict job satisfaction among employees at the Tema Oil Refinery. Results indicated that organizational safety climate explains approximately 38.5% of variance ( $R^2 = .385$ ,  $F(7, 179) = 15.986$ ,  $p = .000$ ) in job satisfaction. Organizational safety climate predict job satisfaction. Specifically, dimensions of organizational safety climate such as “Management Safety Priority and Ability” ( $\beta = .470$ ,  $p = .000$ ), “Management Safety Empowerment” ( $\beta = .202$ ,  $p = .014$ ), Workers Safety Commitment ( $\beta = -.191$ ,  $p = .033$ ), Workers Safety Priority and Risk Non Acceptance ( $\beta = .225$ ,  $p = .002$ ) and “Peer Safety Communication Learning and Trusting Safety Ability” ( $\beta = .168$ ,  $p = .040$ ) significantly predicted job satisfaction. “Management Safety Justice” ( $\beta = -.078$ ,  $p = .319$ ) and “Workers Trusting the Efficacy of Safety Systems” ( $\beta = -.005$ ,  $p = .948$ ) did not predict job satisfaction. This implies that components of organizational safety climate such as “Management Safety Priority and

Ability”, “Management Safety Empowerment”, Workers Safety Commitment, “Workers Safety Priority and Risk Non Acceptance” and “Peer Safety Communication Learning and Trusting Safety Ability” significantly has a direct effect on employees’ job satisfaction at the Tema Oil Refinery. Hypothesis two is accepted.

### Hypothesis Three

The three hypothesis states that “age and rank will moderate the relationship between organizational safety climate and job satisfaction.” Result is presented in Table 8.

**Table 8: PROCESS” Macro Script Moderation Analysis Test Results on the Moderation Effect of Age and Rank on Organizational Safety Climate and Job Satisfaction.**

Variables	$\beta$	R	R <sup>2</sup>	p
Age	-.468	.582	.339	.736
Rank	-37.298			.178
OSC*Age				.580
OSC*Rank				.233

*Where OSC= Organizational safety climate*

Table 8 shows that the Process Macro Script Moderation analysis test was used to test the moderation effect of age and rank on the relationship between organizational safety climate and job satisfaction. Results  $R^2 = .339$ ,  $F(5, 172) = 17.648$ ,  $p = .000$  showed that age ( $\beta = -.468$ ,  $p = .736$ ) and rank ( $\beta = -37.298$ ,  $p = .178$ ) have no moderation effect on the relationship between organizational safety climate and job satisfaction. This implies that age and rank do not have any interaction effect on the extent to which organizational safety climate predict job satisfaction. Hypothesis four is rejected.

#### Hypothesis Four

The fourth hypothesis states that “demographic variables (i.e. age, tenure and rank) will predict employees’ organizational safety climate.” Result is presented in Table 9.

**Table 9: Simple Linear Regression Test Result on the extent to which Demographic Variables Predict Organizational Safety Climate.**

Predictors	$\beta$	R	R <sup>2</sup>	p
Age	.326	.402	.163	.000
Level of Education	.025			.726
Rank	.277			.000
Tenure	-.366			.000

Table 9 shows that the simple linear regression analysis was used to test the extent to which demographic variables predicts workers perception about organizational safety climate at the Tema Oil Refinery. Results indicated that demographic variables explains approximately 16% of variance ( $R^2 = .239$ ,  $F(4, 203) = 9.871$ ,  $p = .000$ ) in organizational safety climate. Specifically, Age ( $\beta = .306$ ,  $p = .001$ ), Rank ( $\beta = .271$ ,  $p = .000$ ) and Tenure ( $\beta = -.369$ ,  $p = .000$ ) significantly predicted perceived organizational safety climate. Level of Education ( $\beta = .040$ ,  $p = .547$ ) did not predict perceived organizational safety climate. This implies that differences in employees’ age, rank and tenure significantly predict organizational safety climate. Hypothesis five is accepted.

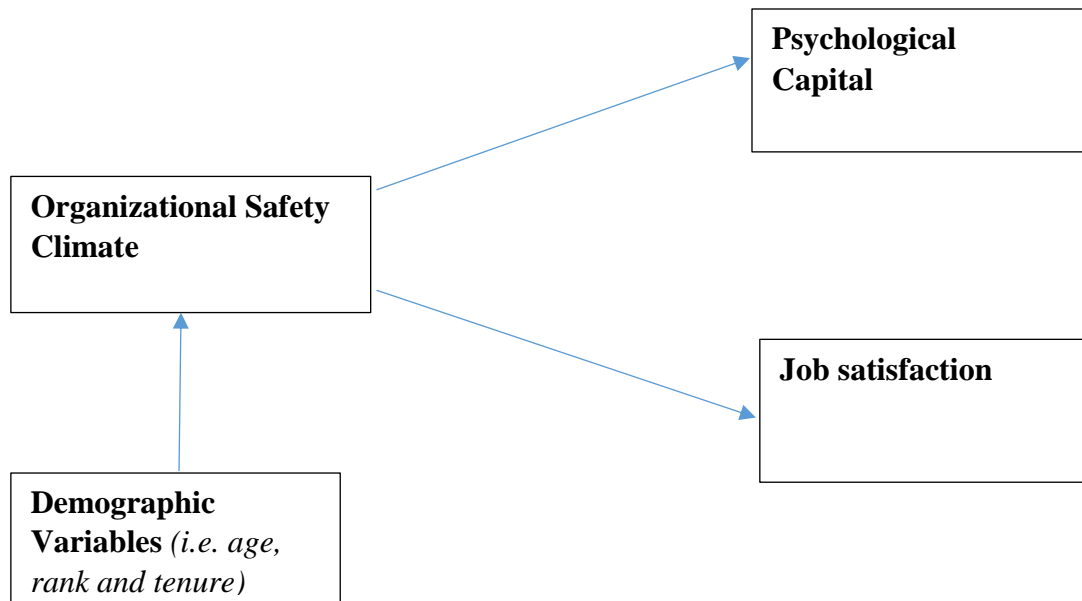
#### 4.4 Summary of Results

After data analysis the first results indicated that organizational safety climate explains approximately 19% of variance in psychological capital. Meanwhile, dimensions of organizational safety climate such as “Management Safety Priority and Ability”, “Management Safety Empowerment”, “Management Safety Justice”, and “Peer Safety Communication Learning and Trusting Safety Ability” significantly predicted psychological capital.

The second results indicated that organizational safety climate explains approximately 38.5% of variance in job satisfaction. Specifically, dimensions of organizational safety climate such as “Management Safety Priority and Ability”, “Management Safety Empowerment”, Workers Safety Commitment, Workers Safety Priority and Risk Non Acceptance and “Peer Safety Communication Learning and Trusting Safety Ability” predicted employees’ job satisfaction.

The third result revealed that age and rank do not have a moderation effect on the relationship between organizational safety climate and job satisfaction. Finally, the fourth result revealed that demographic variables (age, rank and tenure) explains approximately 16% of variance in organizational safety climate. Specifically, Age, Rank and Tenure predict organizational safety climate.

#### 4.5 Observed Model



**Figure 2: Observed model of the effect of Organizational safety climate on employees' psychological capital and job satisfaction.**

The conceptual framework or model as indicated in Figure 3 demonstrates that most dimensions of organizational safety climate predicts psychological capital and job satisfaction. Furthermore, demographic variables (i.e. age, rank and tenure) predict organizational safety climate.

## CHAPTER FIVE

### DISCUSSION, RECOMMENDATIONS AND CONCLUSION

#### 5.0 Introduction

This chapter is the final chapter of this entire study. The chapter is therefore divided into five subsections; discussion of results, contributions of the study, limitations of the study, recommendations of the study and conclusion.

#### 5.1 Discussion of Results

The first hypothesis stated that “employees’ perception on organizational safety climate will predict their psychological capital.” The results showed that organizational safety climate explains approximately 19% of variance in psychological capital. Result indicated that employees’ perception on organizational safety climate predict their psychological capital. Specifically, dimensions of organizational safety climate such as “management safety priority and ability”, “management safety empowerment”, “management safety justice”, and “peer safety communication learning and trusting safety ability” significantly predict psychological capital. This implies that components of organizational safety climate such as “management safety priority and ability”, “management safety empowerment”, “management safety justice”, and “peer safety communication learning and trusting safety ability” directly affects employees’ psychological capital at the Tema Oil Refinery.

The findings for above is consistent with the Maslow’s Hierarchy of Needs theory which espoused that human being have various needs which are arranged in a hierarchy. In the hierarchy, basic needs ought to be met before an individual move on to higher needs

such as need for security, esteem needs (e.g. self-esteem, self-efficacy, etc.), and so on. Needs at the basic level are the most important because the survival of an individual depends on it. Examples of basic needs includes biological needs (such as food, water, etc.), before safety and security needs (e.g. living or working in a hazard-free environment). An individual moves further up when the safety and security needs are met to psychological needs which includes the need for love and belongingness, before esteem needs (e.g. self-esteem, prestige, etc.). Hence, basic needs ought to be met before higher needs such as psychological needs (Akpan, 2011).

By implication, it could be said that employees whose safety and security needs are not met at the workplace due to poor organizational safety climate are likely to have lower self-esteem or self-efficacy, optimism, etc. This is so because their basic need for security and safety are yet to be met. It should be noted that optimism, self-efficacy, resilience and hope for the future are components of psychological capital. Nevertheless, when employees' needs and security needs are met they are able to move further up the hierarchy to meet their self-fulfillment needs (e.g. self-actualization, satisfaction, etc.). Thus, in line with the Maslow's theory of needs, an organization whose safety climate is healthy or positive is likely to have employees with high psychological capital (Akpan, 2011).

Similarly, the psychosocial safety climate theory reinforces the arguments made by the Maslow's theory of needs by espousing that organizational safety climate has a direct effect on employees' psychological capital. According to the psychosocial safety climate theory when management prioritizes and stay committed to their employees' health and safety needs, they will come up with pro-safety policies and ensure that they are well implemented within the organization (Dollard et al., 2017). When these policies are

implemented a positive psychosocial safety climate will be created and this will have a positive psychological effect on employees because employees would work without having to worry about getting involved in a work-related accident and injury. Hence, a positive organizational climate enhances employees' psychological capital (Hall et al., 2010). However, when management makes little or no effort to create a positive organizational safety climate their employees will have poor psychological capital. The psychosocial safety climate theory, therefore, explains the reason why the findings for the first hypothesis was generated by explaining the connection between organizational safety climate and psychological capital. This theory is, therefore, best suited for this study.

It should be noted that the findings from hypothesis one revealed that components of organizational safety climate such as “management safety priority and ability”, “management safety empowerment”, “management safety justice”, and “peer safety communication learning and trusting safety ability” predicts employees' psychological capital. This, therefore, shows that even though employees' involvement is key when it comes to the creation of a positive organizational safety climate, the role of management is much more important. This finding is consistent with that of Dollard et al. (2012) who argued that support and commitment of senior management in creating a positive organizational safety climate is key in predicting psychological capital (Dollard et al., 2012).

Hystad et al. (2014) reinforced the result of this present study by stating that high psychological capital is driven by positive organizational safety climate (Hystad et al., 2014). This is so because employees with higher self-efficacy (which is a component of psychological capital) usually cooperate with management and fellow employees to adhere

to high safety standards (Hystad et al., 2014). As a result of this whenever there are deficiencies in organizational safety standards they will promptly draw management's attention to it for redress without any fear of a backlash. Similarly, highly resilient employees are also committed to positive organizational outcomes, and as a result of this they usually engage in behaviours that promotes positive organizational outcomes such as adhering to high safety standards (Hystad et al., 2014). Specifically, employees who are very resilient are said to be intrinsically motivated and have the stamina to ensure that safe work practices are adhered to (Hystad et al., 2014). They usually do this irrespective of possible conflicting priorities and temptations to use short cuts to save time and avoid hardships associated with more rigorous safety focused procedures (Hystad et al., 2014). It could therefore be said that, indeed, organizational safety climate predicts employees' psychological capital.

Hypothesis two stated that “organizational safety climate will predict employees' job satisfaction.” The results indicated that organizational safety climate explains approximately 38.5% of variance in job satisfaction. Specifically, dimensions of organizational safety climate such as “management safety priority and ability”, “management safety empowerment”, workers commitment to safety, workers prioritization of safety and non-acceptance of risk and “peer safety communication learning and trusting safety ability” significantly predicted job satisfaction. This implies that components of organizational safety climate such as “management safety priority and ability”, “management safety empowerment”, workers safety commitment, “workers safety priority and risk non-acceptance” and “peer safety communication learning and trusting safety

ability” have a direct effect on employees’ job satisfaction at the Tema Oil Refinery. Thus, organizational safety climate predicts employees’ job satisfaction.

The above findings is explained by the Maslow’s Hierarchy of Needs theory which espouses that before people are satisfied with life their “physiological needs”, “security and safety needs,” “esteem needs” among other needs out to be met first (Cherry, 2018). In other words, when psychological needs are met an individual then moves further to self-fulfillment needs (self-actualization). An individual who self-actualizes is satisfied with life because they have achieved their highest potential. As a result of this they do their best to help others around them, among other things. Hence, organizational safety climate has a direct effect on employees’ job satisfaction (Akpan, 2011).

By implication it could be said that whenever employees have negative perceptions about their organization’s safety climate it would be difficult for them to be satisfied at the workplace. On the contrary, when employees have a positive perception about their safety climate their likelihood of being satisfied will be high. Thus, when people have a real or imagined sense of insecurity due to poor safety climate they will try doing whatever it takes to make sure that they are safe. It is after when they feel safe that they will be in the right psychological state to experience some form of satisfaction. Hence, Maslow’s theory explains the above findings and also reinforced the findings that organizational safety climate predict employees’ job satisfaction. The theory is, therefore, confirmed by the findings of this study.

Another theory that supports the findings for the second hypothesis is the psychosocial safety climate theory. According to this theory, four main components form psychosocial safety climate within organizations; “management’s support and commitment

to psychological health through their involvement and commitment”, “management prioritization of employee psychological health and safety over organizational productivity target,” “organizational communication on issues regarding safety” and “organizational participation and involvement” in safety related issues (Dollard et al., 2012). The psychosocial safety climate theory argues that employees can only be satisfied when management ensures that the four requirements stated above are adhered to. The psychosocial safety climate theory is quite practical because when management does not support, prioritize or stay committed to the safety of their employees it will lead to poor organizational safety climate (Dollard et al., 2012).

As indicated above in a poor or unsafe organizational safety climate, work-related accidents and injuries are common. The implication here will be the fact that most employees will not be satisfied because employees who work in an unsafe and hazard-prone working environment are usually dissatisfied with their jobs because they are always on-the-edge that something bad might happen to them (Dollard & Bakker, 2010). The psychosocial safety climate theory, therefore, go a long to explain the fact that real or imagined safety climate at work predicts employees’ job satisfaction.

The findings of hypothesis two is supported by quite a number of empirical studies done in this research area. For example in their studies Bergheim et al. (2013) and Hystad et al. (2014) stated that employees who work in a safe or hazard-free working environment have a higher tendencies to be satisfied with their jobs than those who work in and a hazard-prone working environment (Bergheim et al., 2013; Hystad et al., 2014). This is so because when workers feel safe at the workplace they develop some form of inner peace which creates the right psyche for them to be satisfied with their job. Hence, organizational safety

climate has a direct effect on employees' job satisfaction (Bergheim et al., 2013; Hystad et al., 2014).

Latham (2007) further stated that the extent to which employees could be either satisfied or dissatisfied with their jobs is dependent upon factors such as the safety climate at their workplace (Latham, 2007). Latham (2007)'s argument is supported by Malek et al. (2009) who was of the view that the nature of employees working environment affects their job satisfaction levels (Malek et al., 2009). Avrama et al. (2015) also argued that an actual or imagined high-risk working environment mostly leads to lower job satisfaction among employees (Avrama et al., 2015).

It could, therefore, be said that employees' perceptions about the safety climate at their workplace has a direct effect on their levels of job satisfaction. Bergheim et al. (2015)'s findings supported that of Omusulah (2013) who also found among other things that, the safety climate at the workplace has a direct effect on employees' job satisfaction either negatively or positively (Omusulah, 2013). Thus, organizational safety climate predicts employees' job satisfaction levels (Gyekye, 2005; Huang et al., 2014; Kiruthiga & Magesh, 2015; Stoilkovska et al., 2015).

Hypothesis three stated that "age and rank will moderate the relationship between organizational safety climate and job satisfaction." After data analysis results indicated that age and rank do not have a moderation effect on the relationship between organizational safety climate and job satisfaction. This implies that age and rank do not have any interaction effect on the extent to which organizational safety climate predict job satisfaction.

One of the possible reasons why respondents' age and rank did not have a moderation effect on the relationship between organizational safety climate and job satisfaction was the fact that unlike other organizations where senior management staff were dominated by elderly employees, this is not the case at TOR. For instance, both young and old staff hold various positions (ranks) at all levels at TOR. Thus, the management team of TOR has a fair number of both elderly staff and younger staff members, the same applies to low level employees like those in the security and maintenance departments.

Secondly, all members of TOR are offered similar training and assessment on health and safety without any form of discrimination based on age or rank. Similarly, all employees are subjected to similar organizational safety and health monitoring system. As a result of this, employees of all ages and ranks have developed similar attitudes and behaviors towards organizational safety climate and possible negative outcomes. It is due to the above factors that differences in employees' age and rank does not have a moderation or an interaction effect on the relationship between organizational safety climate and job satisfaction.

Irrespective of the fact that, no interaction effect was found between organizational safety climate and job satisfaction, other studies conducted in this research area have discovered a different result. Specifically, even though only a handful of studies has been done in this research area, demographic characteristics such as age and rank among others have been found to moderate the relationship between organizational safety climate and job satisfaction. One of such studies is Dollard et al. (2012) whose findings revealed that age and rank has a moderation effect on employees' psychological capital. Dollard et al. (2012)'s finding reinforced that of Hall et al. (2010) who also indicated that

age has a moderating effect on the relationship between perceived workplace safety status and levels of job satisfaction. But the unfortunate thing was that fact that both Hall et al. (2010) and Dollard et al. (2012) conducted their studies in non-high-risk organizations.

Similarly, Stoilkovska et al. (2015)'s result also revealed that differences in employees' age moderate the relationship between organizational safety climate and job satisfaction. In other words age had an interaction effect on the relationship between organizational safety climate and employees' job satisfaction levels in high-risk organizations (Stoilkovska et al., 2015).

It could, therefore, be said that even though the findings of this present study has shown that age and tenure had no interaction or moderating effect on the relationship between organizational safety climate and job satisfaction, the findings of other studies such as Dollard et al. (2012) and Stoilkovska et al. (2015) had the opposite result. Nevertheless, the result of hypothesis three could be justified with the argument that it was conducted in Ghana and also in the oil and gas sector which is a high-risk sector and conducted in an organization with a unique organizational culture. For instance, the fact that TOR is a strictly Ghanaian organization, its culture will be different from that of similar organization in western countries such as Dollard et al. (2012) and Stoilkovska et al. (2015).

Hypothesis four stated that "demographic variables (age, tenure and rank) will predict employees' organizational safety climate." After data analysis results indicated that demographic variables explains approximately 16% of variance in organizational safety climate. Specifically, age, rank and tenure significantly predicted organizational safety climate. This implies that differences in employees ages, rank and job tenure plays a role

in influencing employees perception about their organization's safety climate. It could therefore be deduced that even though generally demographic variables explains just a small variance in organizational safety climate, differences in respondents age, rank (i.e. being a junior staff member or a senior staff member) as well as job tenure (which is the length of time an employee has been with their current employer) has a direct effect on the extent to which employees perceive their organization's safety climate.

The above finding is supported by that of Bayire (2016) whose result showed among other things that age, rank and tenure has a direct effect on the safety environment and behaviours within an organization (Bayire, 2016). Bayire (2016)'s findings reinforced that of Salminen (2004) who was of the view that demographic variables such as age predict organizational safety climate. Specifically, employees who were younger had a higher likelihood to get themselves involved in work-related accidents than employees who were much older (Salminen, 2004).

Gyekye and Salminen (2009)'s Ghanaian study further supported that of this present study and Salminen (2004)'s above by arguing that employees who are aged have a lower injury rate when compared to employees who were younger (Gyekye & Salminen, 2009). Furthermore, it was discovered that besides younger employees, workers who had shorter job tenure in high-risk companies in Ghana had higher injury rates than employees who had longer tenure (Gyekye & Salminen, 2009). Thus, there are relatively less workplace accidents among older workers as well as those who have longer tenures (Furnham et al., 2009).

By way of throwing more light on the above findings, Furnham et al. (2009) explained that employees who are older experienced less work-related accidents because

they are more experienced as a result of the longer years they have spent in their profession, and the duration of time they have spent with their current employer (high job tenure). So it is only natural that they make relatively little errors that ends up in work-related accidents and injuries.

Nasab et al. (2009) further stated that employees who are older in high-risk organizations behave engage in more pro-safely attitudes and behaviours when compared to their younger counterparts (Nasab et al., 2009). Thus, older employees' positive perception about organizational safety climate may explain why they behave safely or take safety precautions at the workplace more seriously. It should be noted that various studies such as DeJoy et al. (2004) and Hoffman et al. (2003) have discovered that employees who have a positive perception about their organizations' safety climate have a higher predisposition to strictly adhere to proper safety procedures and practices, and do whatever it takes to avoid work-related accidents (DeJoy et al., 2004).

Irrespective of the fact that the aforementioned studies are of the view that younger employees have higher incidents of work-related injuries and negative evaluation of their organization's safety climate other studies share the opposite view. For instance, according to Pecquet (2013) age does not predict organizational safety climate (Pecquet, 2013). This is so because in his related study findings did not indicate that age predicts employees' behaviours and perception towards safety at the workplace, even though their study targeted employees in the construction sector (Pecquet, 2013). Similarly, Živkovic et al. (2012) also reported that both younger and older employees in the chemical industry had similar attitude, perception and behaviour towards organizational safety (Živkovic et al., 2012).

Bayire (2016) further stated that the number or years spent by an employee with their current employer (i.e. job tenure) predict their perception about their organizational safety climate. This is so because employees' with longer tenure have longer experience with the organizations' safety systems when compared to employees who are new (Barreto et al., 2000; Bayire, 2016). It is, therefore, not surprising that work-related accidents are more prevalent among new and inexperienced workers than their more experienced workers (Barreto et al., 2000).

It could, therefore, be said that even though studies such as Pecquet (2013) and Živkovic et al. (2012) argued that age and job tenure of employees do not predicts organizational safety climate, most related studies such as Barreto et al. (2000) Bayire (2016), Gyekye and Salminen (2010) and Furnham et al. (2009) among others overly support the fact that age and job tenure of employees predicts organizational safety climate. Hence, age and job tenure indeed predicts organizational safety climate.

## **5.2 Contributions of the Study**

One of the things that makes this study unique is the fact that it has shown that organizational safety climate predicts employees' psychological capital (i.e. hope, optimism, resilience and self-efficacy) and job satisfaction not only at the Tema Oil Refinery by other high-risk organizations such as the Ghana National Gas Company Limited (Ghana Gas) in Tema.

This study goes a step further by indicating the specific organizational and employee factors that predicts employees' psychological capital and job satisfaction. For instance the specific organizational and employee factors that predicts employees'

psychological capital are “Management Safety Priority and Ability”, “Management Safety Empowerment”, “Management Safety Justice”, and “Peer Safety Communication Learning and Trusting Safety Ability”.

Meanwhile, the specific organizational and employee factors that predicts employees’ job satisfaction are “Management Safety Priority and Ability”, “Management Safety Empowerment”, Workers Safety Commitment, “Workers Safety Priority and Risk Non Acceptance” and “Peer Safety Communication Learning and Trusting Safety Ability.”

Because the specific factors that directly affects employees’ psychological capital and job satisfaction have been indicated in this study, it will make it easy for management of the Tema Oil Refinery among other organizations in the Oil and Gas sector in Ghana and beyond to know the specific steps to take to enhance their employees’ psychological capital and job satisfaction. Thus, the outcome of this present study will go a long way to help Management of the TOR to improve upon their current safety management strategy so as to enhance employees’ psychological capital and job satisfaction.

To some extent this present study has helped to bridge the research gap in this research area. This is so because this study is one of the first of its kind to be done looking at how dimensions of organizational safety climate affects the psychological capital and job satisfaction of employees at TOR and Ghana’s Oil and Gas Sector at large. This research will, therefore, serve as a major reference material for students as well as academicians who are interested in gaining in-depth knowledge on the effect of organizational safety climate on the psychological capital and job satisfaction of employees.

### 5.3 Limitations of the Study

The first limitation of this study was the fact that the researcher used only the quantitative research method. The combination of both the quantitative and qualitative research methods (i.e. mixed method) would have been more desirable. This is so because the mixed method research design would have given respondents the opportunity to explain their responses given in the research questionnaire into more details. Also, the mixed method research method would have enabled the researcher to ask follow-up questions to understand respondents and their responses better.

According to Aramo-Immonen, (2013) mixed methods designs provide researchers, across research disciplines, with a rigorous approach to answering research questions. Mixed method would have also made multiple data available to the researcher to conduct a more detailed analysis and generate a more comprehensive findings and research implications.

Irrespective of the aforementioned advantages of the mixed method research design the researcher used the quantitative research design due to time constraint. In other words, the researcher had barely six months to complete this study and its related documentation and defense. Hence, resorting to the quantitative research design was the only feasible means with which this study would have been conducted and completed on time. It should be noted that as compared to either the quantitative or qualitative research methods, the mixed method research is more comprehensive and takes more time to complete.

## **5.4 Recommendations of the Study**

### **5.4.1 Recommendations to Management of the Tema Oil Refinery**

As perceived organizational safety climate has been found to predict employees' psychological capital and job satisfaction, the following recommendations are made to management of the Tema Oil Refinery (TOR):

First of all management of TOR are encouraged to work closely together with employees at all levels (e.g. Management staff, supervisors, low level employees' such as laborers, etc.) of the organization's hierarchy so as to enhance TOR's organizational safety climate. This is important because research has shown that without an all-inclusive organizational safety strategy, it will be difficult for an organization to create and sustain a positive organizational safety climate (Gordon, 1998). Practically, an all-inclusive organizational safety strategy can be achieved by engaging employees at the decision making stage and not only at the implementation stage of organizational safety-related policies. Again, Management should also ensure that any vital information about what is being done to enhance organizational safety at TOR is duly communicated to employees and a room is made for a feedback from employees. Doing the above will go a long way to ensure that employees have a positive perception about their organization's safety climate.

Secondly, there should be periodic training programs for management and low level employees on the dynamics of organizational safety climate and its effect on employees' and organizational outcomes. When employees are trained on the benefits of organizational safety climate they will be more inclined to do more to enhance their organization's safety climate. Consequently, when an organization's safety climate is enhanced (positive) it will

positively influence employees to be content with their work, and enhance employees' performance, reduce employees' turnover intentions, etc. (Davies et al. 2011).

#### **5.4.2 Recommendations to Employees of Tema Oil Refinery**

Employees ought to ensure that irrespective of what management does to ensure that the current organizational safety climate at the Tema Oil Refinery is positive, their commitment is key to ensuring a positive organizational safety climate. Hence, they are encouraged to wholeheartedly work with management to create and sustain a positive organizational safety climate.

Employees are also encouraged to prioritize their own safety at all times, and also to take training programs on safety seriously. This is important because irrespective of what management does to enhance organizational safety climate reckless, indifferent and unsafe practices by employees will still undermine organizational safety climate.

#### **5.4.3 Recommendation to Stakeholders**

Stakeholders such as the Ministry of Energy whose core mandate is to formulate, implement, supervise, monitor, and evaluate policies are encouraged to intensify implementation of their core mandate especially at the Tema Oil Refinery among other high risk industries. Doing so will go a long way to keep management of the Tema Oil Refinery on their toes and cause them to continue to adhere to high-level safety standards.

Similarly, the National Labour Commission (NLC) whose core mandate is to create and maintain a harmony and a peaceful industrial relations atmosphere is also encouraged to encourage employers especially those in high-risk industries to continue to adhere to acceptable safety standards so as to make their working climate safe, healthy and pleasant

for employees. This is important because doing so will directly enhance employees' psychological capital (hope, resilience, self-efficacy and optimism) and job satisfaction.

Law enforcement agencies such as Ghana's Environmental Protection Agency (EPA) together the Ghana Police Service and Ghana's Judicial Service are also encouraged to continue to work closely together to arrest and sanction organizations who violate Ghana's organizational safety and employees' health and safety laws. This will go a long way to serve as a deterrent to the leadership of other organizations to strictly adhere to Ghana's organizational safety and employees' health and safety laws.

#### **5.4.4 Theoretical Recommendation**

The findings of this study has indicated that specific components of organizational safety climate such as “management safety priority and ability”, “management safety empowerment”, “management safety justice”, and “peer safety communication learning and trusting safety ability” has a direct effect on psychological capital (hope, resilience, self-efficacy and optimism). Meanwhile, job satisfaction is directly affected by “management safety priority and ability”, “management safety empowerment”, workers safety commitment, “workers safety priority and risk non acceptance” and “peer safety communication learning and trusting safety ability.” As a result of this, further studies should to done in this research area by way of replicating this study in other organizations to either confirm or disprove these finding. But when the findings are conforms a theory could be propounded to show the aspect of organizational safety climate that has a direct effect on employees psychological capital (hope, resilience, self-efficacy and optimism) and job satisfaction.

#### **5.4.5 Recommendations to Academicians and Students**

It is recommended to future researchers to replicate this study at other high-risk organizations in Ghana such as the Ghana National Gas Company Limited (Ghana Gas) where the researcher piloted this study. This is important because doing so will help enhance the generalizability of the findings of this present study to other high-risk organizations, especially if the findings are similar to that of this present study.

Professional researchers and research organizations as well as students researchers in Ghana and beyond are encouraged to conduct more studies in this research area. This is important because it will help to further bridge the research gap in this research area that stimulated this present study.

#### **5.5 Conclusion**

This study investigated the extent to which employees' perceived organizational safety climate predict their psychological capital and job satisfaction at the Tema Oil Refinery in Accra. After testing the stated research hypothesis results revealed that organizational safety climate predicts psychological capital. Results again indicated that organizational safety climate predicts employees' job satisfaction. Results also revealed that employees' age and rank does not have a moderating effect on the relationship between organizational safety climate and job satisfaction. Finally, results indicated that demographic variables (i.e. age, rank and tenure) predict organizational safety climate. It is, therefore, concluded that organizational safety climate predict the psychological capital and job satisfaction of employees' at the Tema Oil Refinery in Accra. This implies that a positive organizational safety climate has a positive effect on employees'

psychological capital and job satisfaction, whereas, a negative organizational safety climate has a negative effect on employees' psychological capital and job satisfaction.

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APPENDIX A

ECH APPROVAL LETTER



UNIVERSITY OF GHANA  
ETHICS COMMITTEE FOR THE HUMANITIES (ECH)

P. O. Box LG 571, Legon, Accra, Ghana

My Ref. No.....

1<sup>st</sup> March, 2019

Mr. Joshua Humphrey  
Department of Psychology  
University of Ghana  
P.O. Box LG84  
Legon

Dear Mr. Humphrey,

**ECH 064/18-19: THE EFFECT OF ORGANIZATIONAL SAFETY CLIMATE ON EMPLOYEES' PSYCHOLOGICAL CAPITAL AND JOB SATISFACTION AT THE TEMA OIL REFINERY, ACCRA**

This is to advise you that the above reference study has been presented to the Ethics Committee for the Humanities for a full board review and the following actions taken subject to the conditions and explanation provided below:

Expiry Date: 01/09/19  
On Agenda for: Initial Submission  
Date of Submission: 19/11/18  
ECH Action: Approved  
Reporting: Quarterly

Please accept my congratulations.

Yours Sincerely,

Prof. C. Charles Mate-Kole  
ECH Vice Chair

Cc: Dr. Benjamin Amponsah, Department of Psychology, UG  
Dr. Kinsley Nyarko, Department of Psychology, UG



APPENDIX B

INTRODUCTORY LETTER TO TEMA OIL REFINERY



**UNIVERSITY OF GHANA**  
**DEPARTMENT OF PSYCHOLOGY**  
**SCHOOL OF SOCIAL SCIENCES**

Ref. No.....PSYC.2/33/03

April 15, 2019

Human Resource  
Tema Oil Refinery  
P. O. Box Co 599  
Tema

Dear Sir/Madam,

**LETTER OF INTRODUCTION**  
**MR. JOSHUA HUMPHREY - ID NO: 10638380**

The above-named student is an MPhil Industry/Organizational Psychology student in the University of Ghana.

In partial fulfillment of the requirement for the award of MPhil degree, Mr. Joshua Humphrey has to write and submit an original thesis. He has selected the topic: **“The Effect of Organizational Safety Climate on Employee’s Psychological Capital and Job Satisfaction”**.

He has received approval from the Department of Psychology Graduate Studies Committee and the Ethics Committee for the Humanities, University of Ghana.

To enable him collect data for his work he would need to administer questionnaires and/or conduct interviews. He has selected Tema Oil Refinery as suitable for his data collection.

Any assistance you may give him would be greatly appreciated.

Yours sincerely,

Prof. Joseph Osafo  
(Head of Department)

COLLEGE OF HUMANITIES

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