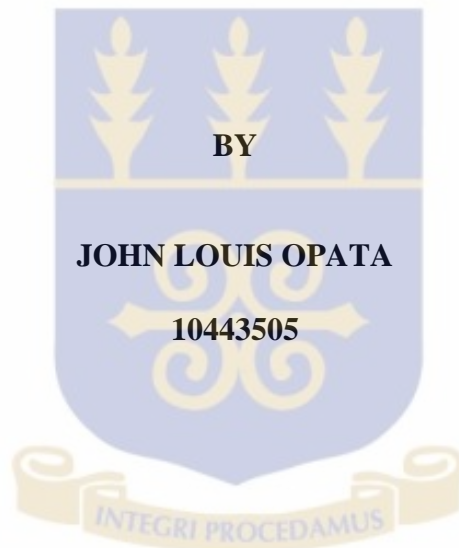


UNIVERSITY OF GHANA

**PRESSURE FOR PRODUCTION AND EMPLOYEE SAFETY BEHAVIOR AMONG
GHANAIAN POWER GENERATION COMPANIES: THE MODERATING ROLE OF
MANAGEMENT COMMITMENT TO SAFETY AND PRIORITY OF SAFETY ON
PLANT.**



**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN
PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MPhil
HUMAN RESOURCE MANAGEMENT DEGREE.**

JUNE, 2015

DECLARATION

I do hereby declare that this work is the result of my own research and has not been presented by anyone for any academic award in this or any other university. All references used in the work have been fully acknowledged.

I bear sole responsibility for any short comings.

JOHN LOUIS OPATA

DATE

10443505



CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down
by the University

DR. KWESI AMPONSAH- TAWIAH

DATE

SUPERVISOR



DEDICATION

To God be the Glory.

This work is dedicated to the author and finisher of my faith, Jesus Christ – my Lord.

I also dedicate this work to my gallant parents – Mr. Llord A. Oyata and Mrs. Elizabeth Oyata.



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I am indebted to my supervisor, Dr. Kwesi Amponsah-Tawiah (The safety expert), I really appreciate his support, encouragement, advice, provision of necessary materials and meticulously guarding and guiding me throughout the work to ensure the success of the work. Special appreciation goes to the appreciate the management of the companies used for the study particularly to Mr. Bright Siayoh and Mr. Augustine Asiamah of the Volta River Authority, Mr Osafo-Kissi of Bui Power Authority for their selfless support towards the success of this study.

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LIST OF TABLES

Table 3.1	Table 3.1: Cronbach Alpha of Instrument (Pilot Study).....	50
Table 4.1	Frequency Distribution of the Gender of Respondents.....	53
Table 4.2	Frequency Distribution of the Ages of Respondents.....	54
Table 4.3	Frequency Distribution of Respondents level of Education.....	55
Table 4.4	Frequency Distribution of Work Tenure of respondents.....	55
Table 4.5	Frequency Distribution of Respondents Terms of Employment.....	56
Table 4.6	Frequency Distribution of the Job Title of Respondents.....	57
Table 4.7	Descriptive Statistics of Study Variables.....	57
Table 4.8	Reliability Analyses for study variable.....	58
Table 4.9	Normality testing of variables using Skewness and Kurtosis.....	60
Table 4.10	Descriptive Statistics of Safety Dimensions within VRA and BPA.....	61
Table 4.11	ANOVA for safety climate dimensions.....	61
Table 4.12	Summary of simple linear regression for relationship between Pressure for Production and Safety Behaviour.....	63
Table 4.13	Summary of simple linear regression analysis for the relationship between pressure for production and safety compliance.....	64
Table 4.14	Summary of simple linear regression analysis between pressure for production and safety participation.....	65
Table 4.15	Summary of simple linear regression for the relationship between management commitment to safety and Safety behavior.....	66
Table 4.16	Summary of simple linear regression for the relationship between priority of safety on plant and Safety behavior.....	67
Table 4.17	Pearson-Product Moment Correlations between the variables in the Study.....	69
Table 4.18	Summary of Hierarchical Multiple Regression for the Moderation Effect of Management Commitment to Safety on Pressure for Production and Employee Safety Behavior.....	72
Table 4.19	Summary of Hierarchical Multiple Regression for the Moderation Effect of Priority of safety on plant on Pressure for Production and Employee Safety Behavior.....	74

LIST OF FIGURES

Figure 2.1	“DUMSOR” SAFETY FRAMEWORK before ANALYSIS.....	41
Figure 5.1	“DUMSOR” SAFETY FRAMEWORK after ANALYSIS.....	89

LIST OF ABBREVIATIONS

OSH:	Occupational Health and Safety
ILO:	International Labor Organisation
WHO:	World Health Organization
VRA:	Volta River Authority
BPA:	Bui Power Authority
MCS:	Management Commitment to Safety
PSP:	Priority of Safety on Plant
PPF:	Pressure for Production

TABLE OF CONTENT

DECLARATION.....	i
CERTIFICATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
LIST OF TABLES.....	v
LIST OF FIGURES.....	vi
LIST OF ABBREVIATION.....	vii
TABLE OF CONTENTS.....	viii
ABSTRACT.....	ix
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	4
1.3 Aim of the Study.....	6
1.4 Research Objectives.....	6
1.5 Research Questions.....	7
1.6 Research Hypotheses.....	7
1.7 Significance of the Study.....	8
1.8 Scope of the Study.....	10
1.8.1 Volta River Authority.....	10
1.8.2 Bui Power Authority.....	12
1.9 Definition of Terms.....	12
1.10 Chapter Disposition.....	13
CHAPTER TWO.....	14
LITERATURE REVIEW.....	14
2.1 Occupational Health and Safety Defined.....	14
2.2 Occupational health and Safety in Africa.....	15
2.3 Occupational Health and Safety in Ghana.....	17

2.4 Global Occupational Health and Safety.....	20
2.5 Theoretical Review.....	21
2.5.1 Social Exchange Theory.....	21
2.5.2 Conservation of Resources Theory.....	24
2.5.3 Organizational Climate.....	25
2.5.3.1 Organizational Climate Formation.....	26
2.5.3.2 Organizational Climate Properties.....	26
2.5.3.3 General and Specific Climate.....	28
2.5.4 Safety Climate.....	29
2.5.4.1 Assessment of Safety Climate – Dimensions.....	31
2.5.4.2 Management Commitment to Safety (MCS).....	33
2.5.4.3 Priority of Safety on Plant (PSP).....	33
2.5.4.4 Pressure for Production (PFP).....	33
2.5.5 Safety Behavior.....	34
2.5.5.1 Safety Compliance.....	35
2.5.5.2 Safety Participation.....	36
2.6 Empirical Review.....	36
2.6.1 Pressure for Production and Safety Behavior.....	36
2.6.2 Management Commitment to Safety and Safety Behavior.....	38
2.6.3 Priority of Safety on Plant and Safety Behavior.....	39
2.7 Importance of Positive Safety Climate in an Organization.....	40
2.8 Conceptual Framework.....	41
CHAPTER THREE.....	42
METHODOLOGY.....	42
3.1 Research Design.....	42
3.2 Population for the Study.....	44
3.3 Sampling & Sample Size.....	44
3.3.1 Sampling Frame.....	45
3.3.2 Sampling Procedure.....	45

3.4 Type and Source of Data.....	46
3.5 Data Collection Instrument.....	46
3.6 Administration of Research Instrument.....	49
3.7 Reliability Analyses for Pilot Study.....	50
3.8 Data Analyses.....	51
3.10 Ethical Consideration.....	51
CHAPTER FOUR.....	53
PRESENTATION OF RESULTS, ANALYSES AND INTERPRETATION.....	53
4.1 Demographic Characteristics of Respondents.....	53
4.2 Descriptive Statistics.....	57
4.3 Measure of Reliability of Variables.....	58
4.4 Testing of Research Hypotheses.....	59
CHAPTER FIVE	76
DISCUSSION OF FINDINGS.....	76
5.1 Summary of Findings.....	76
5.2 The Socio-Demographic Analysis of the Data.....	77
5.3 Findings on Hypotheses Testing.....	79
CHAPTER SIX.....	90
SUMMARY, CONCLUSION AND RECOMMENDATIONS.....	90
6.1 Summary of Findings.....	90
6.2 Conclusion.....	91
6.3 Limitations of the Study.....	92
6.4 Recommendations.....	93
REFERENCES.....	96
APPENDIX.....	113

ABSTRACT

The most part of safety literature indicates that employees fashion their safety related behaviors in accordance with the perceived climate. This present study examined three dimensions of safety climate (management commitment to safety, priority of safety on plant and pressure for production). The aim of the study was to examine whether the pressure placed on the power generation companies in Ghana as a result of the erratic power supply ('Dumsor') has implications for employees' safety behavior and whether management commitment to safety and safety priority on plant play a role in the relationship. The sample consisted of 214 technical workers from two major power producing companies in Ghana. A 5-point Likert scale questionnaire was used to collect data. Simple linear regression and hierarchical multiple regression analyses were carried out to test the direct effect of the three safety climate dimensions on safety behavior and the moderating roles of management commitment to safety and priority of safety on plant on the relationship between pressure for production and employee safety behavior respectively. The results showed that pressure for production was negatively related to employee safety behavior whereas management commitment to safety and priority of safety on plant were positively related to safety behavior. Moreover, management commitment to safety and priority of safety on plant when introduced as moderators indeed reduced and changed the direction of the negative relationship between pressure for production and employee safety behavior respectively. It was therefore recommended that management commitment to safety must be evident in the priority of safety on plant through actions and policies such as zero tolerance for non-compliance and non-

participation of employees in safe behaviors in spite of the level of production pressure being experienced.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter introduces the reader to the background of the study, the main problem the study seeks to find solutions. The research aim, objectives, research questions, hypotheses behind the study, and the scope within which the study was conducted are also elucidated together with the significance of the study.

1.1 Background of the Study

Occupational Health and Safety (OHS) challenges continue to remain rampant across several industries such as the mining (Adutwum, 2010), off-shore exploration (Mearns, Whitaker, & Flin, 2003), construction (Cigularov, Lancaster, Chen, Gittleman, & Haile, 2013; Owusu-Danso, 2010), energy (Flin, Mearns, O'Connor, & Bryden, 2000) industries regardless of extensive efforts to ensure continual improved safer operations. Amponsah-Tawiah and Dartey-Baah (2011) postulates that occupational health and safety encapsulates the mental and physical wellbeing of the worker in relation to his work. It thus makes the entire health and safety of the employee a vital discipline leading to the success of every organisation. Every individual in life whether employed or not, at the workplace or outside the workplace has the intrinsic need to be safety bound (Neal, Griffin & Hart, 2000).

The International Labor Organization (ILO) in a recent publication revealed that 860,000 everyday occurrence of occupational accidents have either a direct or indirect costs of occupational illnesses and accidents at work estimated at \$2.8 trillion worldwide.

According to Seo, Torabi, Blair and Ellis (2004) industries, especially those in developing countries are suffering enormous economic and personnel costs as a result of injuries and diseases related to work. Indeed, Amponsah-Tawiah and Dartey-Baah (2011) had indicated that a substantial contributory portion of the general indisposition of the global populace is related to work. And this has been confirmed by the ILO that about 2.3 million of the world's populace lose their lives annually as a result of occupational illnesses and accidents at work (ILO, 2014).

In order to stimulate sustainable change in the safety situations in the power generation industry (for the purpose of the study), evidence from other similarly hazardous conditions such as mining companies (Adutwum, 2010), offshore oil and gas companies (Fleming, 2001; Rundmo, 2000; Mearns, Whitaker, & Flin, 2003) and nuclear reprocessing plants (Findley, Smith, Gorski, & O'Neil, 2007) had indicated that, the creation and maintenance of a positive safety climate must be of utmost priority and a necessity.

The safety climate at a workplace is often referred to as the general perceptions common to employees regarding the safety policies, procedures, practices and behaviors and the prominence accorded safety in their workplace as against other priorities like work speed (Bosak, Coetseeb, & Cullinane, 2013; Morrow, McGonage, Dove-Steinkamp, Walker, Marmet, & Barnes-Farrell, 2010; Neal & Griffin, 2006). In other words it symbolizes the overall psychological framework that employees in relation to how safety is prioritized in everyday organization activities (Adutwum, 2010).

All through the safety literature numerous safety dimensions such as safety knowledge, safety training, communication, safety policy, safety system (Bosak et al., 2013; Cox & Cheyne, 2000; Hon, Chan, & Yam, 2014) have been used to measure safety climate across

many industries. However three safety climate dimensions specifically have been recognized to “capture both competing organizational domains and consistency between policy and practice” (Bosak et al., 2013, p. 257) and have been frequently examined in safety climate studies. They are; management commitment to safety, perceptions of the priority of safety on plant, and pressure for production (Bosak et al., 2013; Cooper & Phillips, 2004; Mearns, Flin, Fleming, & Gordon, 1998; Zohar, 2002).

The current study adopts these definite safety dimensions due to their continual use in safety researches in addition to proof confirming their relevance in predicting safe behavior as compared to other dimensions (Hon et al., 2014).

Ghana’s power situation alongside the numerous difficulties confronting its citizenry in gaining access to continuous and dependable electricity supply for both domestic and industrial purposes gives indication of a huge deficit in the supply of power in the nation (Acheampong & Ankrah, 2014). As at December, 2013, the nation had a total installed and operational capacity of 2,814 and 2,492 megawatts (MW) from the Volta River Authority (VRA) and other power agencies respectively (Volta River Authority, 2015). Recent generation problems has plunged the nation into a regime of erratic power supply (Dumsor Dumsor) thereby necessitating a load shedding regime since January 2014. It was reported by the Ghanaian local media that the power distribution company – the Electricity Company of Ghana had to reduce its supplies due to restraints from Ghana Grid Company (GRIDCo), the network and transmission company. All these were as a result of the reduction in generation from the Bui power plant, low gas pressures from VRA plants at Tema and operational issues at Takoradi Thermal plant forced about 200MW of electricity to be shed on January 10, 2014.

These and other related power generation problems invariably has placed an intense pressure on power generation companies in Ghana especially, the Volta River Authority (VRA) and the Bui Power Authority (BPA) which remain the two largest suppliers of power in the country.

The VRA has been commended for its high level of occupational safety and giving top priority to the safety of its staff at all its facilities (Volta River Authority, 2015). A firm's existing safety climate has been a useful construct to improve safety in the past few decades (Zohar, 2010). Indeed, some safety studies have indicated that there exist a relationship between the safety climate and safety behavior of employees in a firm (Chan, Wong, Yam, Chan, Ng, Tam, 2005; Han et al., 2014; Mohamed, 2002).

With both the VRA and BPA's safety mission of maintaining the highest standard of safety while producing and supplying reliable electricity, and these companies under intense pressure to produce more to meet the growing power deficit, will the pressure for production predict the safety behavior of its employees? How will safety specific dimensions such as management commitment to safety (Han et al., 2014) and priority of safety on plant (Bosak et al., 2013) moderate this relationship?

1.2 Statement of the Problem

The most part of safety literature have indicated that, workers fashion their safety related behaviors in accordance with the perceived climate (Adutwum, 2010; Bosak et al., 2013; Zhu, Fan, Fu, Clissold, 2010,). It therefore presupposes that any foreseen advantage of sustaining a strong climate for safety would be a result of an industry's capacity to increase the worth of safe work behaviours (Zohar, 2008). This, invariably will result in employees

conforming to safety principles (safety compliance) and undertaking safety ingenuities more rewarding for workers as well as expected among themselves (safety participation).

Earlier studies from industries such as manufacturing, health and construction have indicated that positive safety climate is linked with increased compliance with safety standards (Clarke, 2006; Seo, 2005) and employees' voluntary involvement in non-mandatory safety enhancing activities (Griffin & Neal, 2000; Pousette, Larsson, & Torner, 2008). These notwithstanding, some studies (Glendon & Litherland, 2001; Neitzel, Seixas, Harris, & Camp, 2008) have failed to support such relationships. Furthermore, all these studies have been conducted in advanced economies like the USA, UK, China and Australia with little or no evidence in Sub-Saharan Africa, specifically Ghana. Hence, the need to examine the relationship between these safety dimensions in relation to employee safety behavior.

Again, studies have indicated that often time employees tend to compromise on safety standards when they perceive that attaining production targets is of paramount importance to management (Landford, Rowlinson, & Sawacha, 2000). Pressure for production as a dimension of safety climate (Bosak et al., 2013) thus ultimately results in greater psychological stress leading to employees disregard for safety behavior (Karasek & Theorell, 1990; Seo, 2005). In light of these empirical evidences and the intense pressure on Ghana's Volta River Authority and Bui Power Authority to meet the growing deficit in electricity supply vis-à-vis their own safety mission of maintaining the highest standard of safety while producing and supplying reliable electricity, will the pressure for production predict the safety behavior of their technical workers who are known to be most prone to hazardous conditions in power generation?

1.3 Aim of the Study

The aim of the study was to find out whether the pressure placed on the power generation companies in Ghana as a result of the current power crisis ('Dumsor') has implications for employees' safety behavior and whether management commitment to safety and safety priority on plant plays a role in the relationship.

1.4 Research Objectives

The main objective of the study was to examine the relationship between pressure for production and employee safety behavior. Specifically, the study sought;

1. To assess the safety climate within the Ghanaian Power Generation Industry.
2. To determine the relationship between pressure for production and safety behavior (safety compliance and safety participation) among technical staff of power generation companies in Ghana.
3. To determine the relationship between management commitment to safety and safety behavior among technical staff of power generation companies in Ghana.
4. To determine the relationship between priority of safety on plant and safety behavior among technical staff of power generation companies in Ghana.
5. To determine whether management commitment to safety moderates the relationship between pressure for production and safety behavior among technical staff.
6. To determine whether priority of safety on plant moderate the relationship between pressure for production and safety behavior among technical staff.

1.5 Research Questions

1. What is the safety climate in Ghana's power generation industry?
2. Is Pressure for Production a predictor of safety behavior among technical staff of power generation companies in Ghana?
3. Is management commitment to safety a predictor of safety behavior among technical staff of power generation companies in Ghana?
4. Is priority of safety on plant a predictor of safety behavior among technical staff of power generation companies in Ghana?
5. Is the relationship between pressure for production and employee safety behavior moderated by management commitment to safety?
6. Is the relationship between pressure for production and employee safety behavior moderated by the priority of safety on plant?

1.6 Research Hypotheses

It is hypothesized that:

H1: There is a positive safety climate in Ghana's power generation industry.

H2: There is a significant negative relationship between pressure for production and employee safety behavior.

H2a: There is a significant negative relationship between pressure for production and safety compliance.

H2b: There is a significant negative relationship between pressure for production and safety participation.

H3: There is a significant positive relationship between Management Commitment to Safety and safety behavior.

H4: There is a significant positive relationship between Priority of Safety on Plant and Safety Behavior

H5: Management commitment to safety will moderate the relationship between pressure for production and safety behavior.

H6: Priority of Safety on Plant will moderate the relationship between pressure for production and safety behavior.

1.7 Significance of the Study

The significance of the study could be viewed along three (3) strands; research, practice and policy. In the area of research, this study goes ahead of current studies on safety climate by examining pressure for production as a predictor of technical staff safety behavior. It goes further in the literature to expound on how this relationship is moderated by Management Commitment to safety and Priority of Safety on Plant. Indeed, literature on pressure for production as a predictor of safety behavior is non-existent in Ghana and arguably Sub-Saharan Africa. 7% of variation in behavior was predicted by pressure for production.

In relation to practice, the study would provide guidelines to power generation companies on the influence of production pressure on the safety behavior among their technical staff on plant, bringing to light the moderating role of management commitment to safety and/or

priority of safety on plant in the relationship. The study would again aid the development and subsequent implementation of Occupational Health and Safety strategies that could attract skilled personnel in the Ghanaian power generation industry by means of the safety climate instrument. This is because Amponsah-Tawiah and Dartey-Baah (2011) had suggested that Ghana as a country is yet to have a comprehensive OHS policy which serves as a framework for OHS practices and enforcement. It is worth mentioning that both occupational health and employee safety behavior remain vital issues lately, and any effort and means to enhance them will be considered an important ingredient in the effort of advancing employee loyalty and commitment whiles reducing the occurrence of industrial injuries and accidents in the power generation sector. Practically, this research will further contribute to the growing effort of creating conducive safety climate that fosters employee safety behavior for effective and efficient power generation in Ghana and other geographical settings at large.

In the area of policy, the research will provide feedback on policies driving employee safety behavior with specific attention to pressure for production in the power generation industry especially in these times of “Dumsor Dumsor” or worsening load shedding exercise. This is because it remains critical for both local and international stakeholders and partners who have much interest in supporting occupational health and safety worldwide. The results of the study may also influence and shape the existing Occupational Health and Safety Policy in power generation companies, and by extension other similar institutions nationwide, and the Ministry of Power in Ghana in particular. These contributions to practice would indeed become essential to the development of more precise or effective safety systems in the energy generation sector.

1.8 Scope of the Study

The study focused on the issues of pressure for production and employee safety behavior in the power generation industry in Ghana, specifically, The Volta River Authority and Bui Power Authority. Particularly, it concentrates on how pressure for production relates to positive safety behavior. The study focused on two major power generation companies in Ghana not considering their specific location. These companies were suitable for the research to be conducted because Volta River Authority is the largest supplier of power in Ghana and has in recent times come under intense pressure to produce more power to meet the growing demands of the Ghanaian economy (Acheampong & Ankrah, 2014). The Bui Hydro Authority is also the second largest generator of hydro-electric power in Ghana with a generating capacity of 400MW.

1.8.1 Volta River Authority

The Volta River Authority (VRA) was established on April 26, 1961 under the Volta River Development Act, Act 46 of the Republic of Ghana, as a body corporate with the mandate to operate mainly as a power generation, transmission and distribution utility. In 2005, following the promulgation of a major amendment of the VRA Act in the context of the Ghana Government Power Sector Reforms, the VRA's mandate has now been largely restricted to generation of electricity. The amendment has a key function of creating the requisite environment to attract Independent Power Producers (IPPs) onto the Ghanaian energy market.

The Authority operates a total installed electricity generation capacity of 1,970MW. This is made up of two hydroelectric plants on the Volta River, with installed capacities of

1,020MW and 160MW at the Akosombo and Kpong Generating Stations respectively, and complemented by a 330MW Combined Cycle thermal plant at Aboadze, near Takoradi. A further 220MW Thermal Plant, Takoradi International Company (TICO) is owned as a joint venture with TAQA, from Abu Dhabi in the United Arab Emirates. Additional development of 132MW (T3) Magellan plant at the same site at Aboadze was commissioned in 2012.

The VRA has developed a number of plants in Tema. These include a 110MW Tema Thermal 1 power Plant, an 80MW Mines Reserve Plant, both commissioned in 2008. A 50MW Tema Thermal 2 Power Plant commissioned in 2010; additional development of a 200MW Thermal Plant located at Kpone, near Tema commissioned in 2014.

Vision

Setting the standard for public sector excellence in Africa.

Mission

To produce electricity to power economies and raise the living standards of the people of Ghana and West Africa.

Values

The VRA's core values are; Commitment, Integrity, Trust, Teamwork and Accountability

1.8.2 Bui Power Authority

The Bui Power Authority is responsible for effective operation and administration of the Bui Generating Station, Ghana's second largest hydroelectric generating station, located on the boundary between the Northern and Brong-Ahafo Regions.

The Bui Hydro Dam has an installed capacity of generating 400 megawatts of electricity to the national grid. It is built on the Black Volta River at the Bui gorge at the southern end of the Bui National Park.

Mission Statement

To build and operate a most efficient hydroelectric plant that will generate electricity at base price to spur industrial and agricultural revolution in Ghana impacting the lives of millions.

Vision Statement

To adopt effective and strategic management practices which will yield the best results at the most competitive cost.

1.9 Definition of Terms

Safety climate in the current study is defined as ‘individuals’ perceptions of safety policies, procedures, practices and behaviors in the work environment that indicate the true priority given to safety relative to other organizational goals’ (Bosak et al., p. 256).

Pressure for Production in the present study is defined as employee’s perception that the organization encourages him or her to work around safety procedures in order to meet production quotas, keep up with the flow of incoming work, or meet important deadlines (Brown, Willis, & Prussia, 2000; Bosak et al., 2013).

‘Dumsor’ in the present study is a term used to describe erratic power supply in Ghana.

1.10 Chapter Disposition

This thesis comprises of six chapters that seeks to discuss various aspects of the study.

Chapter One of the study introduces the reader to the thesis. It consists of the background to the study, research problem, research aim, research objectives, research questions, hypotheses behind the study and scope of the study. The significance of the study was also outlined in this chapter. Chapter Two then addresses and fully discusses all the various papers that have been published in the area of change and change reactions in the organisation. Theoretical and empirical studies relevant to the research, published by authors in peer reviewed journals, books and credible websites have been critically examined. The conceptual framework of the research is also outlined in this chapter. Chapter Three of the study was the methodology. This chapter discusses the method that was adopted for the study. This deals with the research design, population of the study, sampling technique and sample size, instrumentation and mode of data collection. Concise information on how the gathered data was analyzed is also given. Chapter Four presents the results that were generated from the data analysis. Chapter five discusses the findings of the study. The results generated from the hypotheses tested are discussed based on relevant literature of published works with similar objectives. Chapter six finally presents the Summary of the study, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter examines critically, empirical and theoretical literature in relation to the study variables. The chapter specifically focuses on the understudy of occupational health and safety issues with particular reference to the study country Ghana and further narrows down to the specific issues of pressure for production as an element of safety climate and its association with safety behavior, specifically compliance and participation as espoused in extant literature.

2.1 Occupational Health and Safety Defined

The World Health Organization (WHO) which is a governing body with the mandate of promoting global health issues has established that the nonexistence of diseases does not imply health but rather, “the state of complete physical, mental and social well-being” (WHO, 1986). According to Amponsah-Tawiah and Dartey-Baah (2011), the most part of an individual’s active lifespan is spent at the workplace. Hence, the state of health at the workplace has a lasting impact on the health of a worker. The International Labor Organization (ILO) and the WHO have mutually validated the definition of occupational health and safety (OHS) as:

“Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst works of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to

health; the placing and maintenance of the workers in an occupational environment adapted to their physiological and psychological capabilities; and, to summarize: the adaption of work to man and of each man to his job” (WHO, 1995:3).

Extant literature has suggested that occupational health and safety has steadily progressed from being a monodisciplinary to a more comprehensive and multidisciplinary concept. Therefore, as a comprehensive concept, Amponsah-Tawiah and Dartey-Baah (2011 p. 120) defined occupational health and safety as “encapsulating the mental, emotional and physical well-being of the worker in relation to the conduct of his work.”

Additionally, previous studies indicates that the existing safety and health of a work environment leads to the formation of overall safety perceptions by employees pertaining to their organization. This phenomenon has is conceptualized in extant safety literature as safety climate (Zohar, 1980; Neal, Griffin & Hart, 2000). A positive safety climate has been established to result in safety behaviors of employees such as strict adherence to safety policies, standards and procedures and voluntarily looking out for the safety of their co-workers (Adutwum, 2010).

2.2 Occupational Health and Safety in Africa

The attitude towards occupational health and safety issues in most African countries is seen in the little attention given to OHS issues by industries, individual employees and the governments at large. Many international and non-governmental organisations may find it difficult to comprehend why many countries on the African continent are in a fix as to how OHS can be encouraged in the work environments. A report by the Regional Committee for Africa (2004) has stated that countries in Africa have limited commitment to OHS.

Quite paradoxically, much attention has been channeled towards increased profits and production in most African economies at the detriment of safety at workplaces (Meredith, 1986). There is a gradual phasing away of the era of agriculture to industrialization in the African continent and this could be attributed to the proliferation, participation and contributions from the private sector.

However, in the light of these development of several industries, it is important for African leaders to commit large resources in the development of OHS, thus, productivity would invariably increase if the health and safety of employees are a top class priority. This is justified by Puplampu (2012) who suggests that, even though many countries in Africa are confronted with major financial limitations, the creation of a safe continent for foreign direct investments will help in making the continent competitive. The ILO, (2005a) and World Economic Forum (2002) has also suggested that most competitive countries or continents are also the safest.

Findings by Amweelo (2000) showed that employees' reckless behavior towards occupational health and safety was a major cause of industrial accidents and occurrences at Namibian workplace. Again, Bell (2007) has suggested that over 300,000 industrial occurrences happen annually in South Africa, thus, giving the indication of an increase in health and safety risk workers face each day.

Although these benefits are present in extant literature for the perusal of policy makers' on the African continent, the issue of health and safety has been relegated to the background. OHS issues are always sacrificed for other issues which they deem important. In view of this, Nuwayhid, (2004) concluded that, occupational health and safety remains abandoned in emerging countries in Africa because of contending national issues and challenges in

areas such as poverty eradication, large scale unemployment, and the struggle to meet up with growing economic competition from the developed world.

2.3 Occupational Health and Safety in Ghana

Ghana as a country has some national agencies which are responsible for the health and occupational safety of employees. These regulations unfortunately do not emphasize on mechanisms to sanction defaulters of any of the regulations.

According to Clarke (2005), there are two main statutes in Ghana that have charted the course for the provision of services over the years. These are the Factories, Offices and Shops Act 1970, Act 328 and the Mining Regulations 1970 LI 665 which have driven the implementation in the Labour and mining sectors, respectively. There is also the Labor Act of 2003, Act 651. Quite unfortunately the Labour Act, (Act, 2003) of the Republic of Ghana does not spell out any established provision that seeks to promote occupational health and safety programs for the employers as human rights obligations to their employees. Even though, section 15 of the Labour Act 651, 2003, covers Occupational Safety, Health and Environment which is based on the tenets of ILO Conventions Nos. 155 and 161 which the country has not yet ratified.

The Ministry of Employment and Labor relation is responsible for the administration of occupational health and safety of workers. This is done through the Department of Factories Inspectorate and the Labour Department. Other statutes that have a bearing on OHS are the Workmen's Compensation Law 1987, Environmental Protection Agency Act 1994, Act 490, and the Ghana Health Service and Teaching Hospitals Act 1999, Act 526.

Currently, Ghana cannot boast of any comprehensive health and safety policy which would provide standards or guide to be adhered to by industry. There are only some legislation and regulations such as the Environmental Protection Agency Act (Act 490), Mining Regulations Act 1970 LI 665 and Factories, Offices and Shops Act, LI 328 which are sector focused and therefore cannot be enforced across board, however, considering the year of enactment, these legislations are even out of date.

Areas such as the food and beverage industry, construction, mining and transport sectors and now the oil industry are fast growing in Ghana. However, as these sectors keep increasing, the private sector in Ghana as well as the SME's and Multinational Companies operating in Ghana are not left out. With all these developments in progress, there are still no national agency, policy, effective and vibrant procedure and framework or guidelines that see to establishing and implementing occupational health and safety in the country.

According to Annan (2010) although there are the Environmental Protection Agency Act 1994 (Act 490), Mining Regulations Act 1970 LI 665 and Factories, Offices and Shops Act, LI 328, Ghana Labour Act 2003, Act 651 and other fragmented safety guidelines are in existent, they have not been effectively implemented.

In view of all these loopholes, Anang (2008) emphasized that, the safety climate situation in Ghanaian industries is very appalling. She further recounted that, the citizenry would only get to wake up to it when there is a major disaster or accident, which is mostly fire related. And this has been justified in the recent June 3, 2015 Fire Disaster at a Goil Petrol Station through which over 150 lives were lost and dozens injured (<http://www.myjoyonline.com>, assessed on 4/06/2015). Organisations blatantly ignore

safety rules and expose their employees to lots of hazards thereby breaching their “duty of care” to the employees.

Also, individual employees due to one reason or the other compromise their own safety at work place by acting ‘unsafely’ usually with the fear of losing their job. Most organisations do not have health and safety facilities and though there may be some laws binding Occupational Safety and Health, the establishment of enforcement mechanisms and sanctions regime made it very difficult to adhere to. In the wake of these fast growing industries, if the country’s developmental agenda is to be realized, then there will be the need to have a safety culture standard that is proactive and holistic in nature (Anang, 2008).

Furthermore, according to Clarke (2005), the current legal provisions on OHS legislation in Ghana has many shortcomings. An instance, is the Factories Act and Mining Regulations which over the many years have sought to establish the framework for OHS implementation is very inadequate in its span of coverage. Industries such as the informal sector, construction, and agriculture been either completely or partially neglected. Again, although there are some provisions, they are inadequate in terms of prevention strategies. Specific approaches like medical surveillance, assessment of risk and hazard control are not provided for.

There are no clear differences in specific functions of legislative bodies empowered to oversee OHS in the nation. An instance is the mandating of both the Environmental Protection Agency (EPA) and Inspectorate of Factories by both the EPA Act and Factories Act to enter and inspect factories. A discrepancy also exist between the Factories Inspectorate and the Mines Inspectorate pertaining to the examination of explosive supplies of which both inspectorates are authorized for (Factories, Offices and Shops Act, 1970).

Finally, there are no specific benchmarks against which the operations of services are to be assessed. There is no relationship between the level of risk workers are exposed to and the compensation they are to benefit coupled with no specific explanation on the mechanisms of funding for OHS as to whether it pertains to either or both the public or private sectors of the country.

2.4 Global Occupational Health and Safety

The health of employees all over the world is of prime concern to some international bodies. Therefore, there are several international bodies which see to promoting occupational health and safety of employees in all spheres of their work environment. The very key ones are the International Labor Organization (ILO), the World Health Organization (WHO). Indeed, issues pertaining to occupational health and safety has also been of prime concern to the United Nations Conference on Environment and Development (UNCED).

The International Labour Organization (ILO) as a member of the United Nations organisations seeks to promote safe and decent work in all countries of the world. It is responsible for the formulation of international labour standards in the form of conventions and recommendations. Since 1919, the International Labour Organisation has approved and published nearly 190 Conventions, which are statements of legally binding international treaties related to various issues regarding work and workers. Hogstedt and Pieris (2000) identified the major objective of the ILO in relation to occupational safety and health as enabling countries extend social protection to all groups in society and to improve working conditions safety and health at work through its “In Focus Programme” which covers working conditions. The objectives of the Safe Work Programme of the ILO

as identified by Hogstedt and Pieris (2000) is to create worldwide awareness of the dimensions and consequences of work-related accidents, injuries and diseases, also to promote the goal of basic protection for all workers in conformity with international labour standards and finally, to enhance the capacity of member states and industry to design and implement effective preventive and protective policies and programs that ensure a safety-free working environment. Notwithstanding this the ILO provides for the adoption of a national occupational safety and health policy. The ILO Occupational Health Services Convention 1985 (No. 161) and Recommendation (No. 171), also provide for the establishment of occupational health services which will contribute to the implementation of the occupational safety and health policy that promote the health and safety of employees. Within the ILO are also the International Safety and Health Information Centre (CIS) in Geneva, Switzerland, bodies responsible for the effective establishment and implementation of occupational health and safety. The CIS has the primary commitment to the gathering and dissemination of information on the prevention of occupational accidents and diseases (OHS Convention, 1985).

2.5 Theoretical Review

This section consists of concepts and their definitions as well as reference to relevant scholarly literature, existing theory used for this study. The theoretical underpinnings used demonstrate an understanding of theories and concepts that are relevant to this research. In whatever industrial setting or geographical context that safety behavior has been examined, some theoretical explanations have sought to explain the behavior of workers relative to the climate they perceive. Three of such include, Blau's (1964) social exchange

theory and Hobfoll's (1989) Conservation of resources theory. These serve as the theoretical underpinnings of the current study.

2.5.1 Social Exchange Theory

Social exchange theory was propounded by Blau (1964) and posits that as that if one party acts in a way that benefits another, an implicit obligation to reciprocate is created. This implicit obligation overtime results in actions undertaken to benefit the initiating partner (Adutwum, 2010; Niskanen, 2012). Within the work environment there exist a high possibility that workers may tend to return the benefits they enjoy by undertaking their core responsibilities at the highest standards and again engage in organizational citizenship activities and behaviors (Tsui et al., 1997).

Whereas no institution go in into business for the primary reason of safety, it is anticipated that the overall safety of workers be given at least the same priority as other issues such as profitability. However, recent international and national legislative frameworks such as European Union Occupational Health and Safety Legislation (OHS), Labor Law of Ghana, (Act 651) etc. is making it mandatory for employers to seek the safety of their employees.

As indicated earlier, safety climate is grounded in ratified safety standards, policies and procedures. Perceiving these standards, policies and procedures, employees are able to determine the level to which their safety is of prominence to their management, supervisors and colleagues. Hence, on the theory of social exchange, they in turn reciprocate safety related exchanges like strict adherence with safety rules and standards as well as actively caring for the safety of their co-workers. Furthermore, Niskanen, Naumanen, and

Hirvonen, (2012) recognized that these “give and take” exchanges are determined by both normative and cognitive orientations that define satisfactory and acceptable conducts.

According to Mearns et al., (2003), as a result of the mutual exchanges between an institution and its workers, it is expected that the workers of these institution who overtly invest in their health and safety would be involved in less safety violations and engage in increase adherence to safety standards.

Translating this understanding to safety at the workplace, once management have showed their unflinching support and dedication for safety issues, it is expected that their workers engage in behaviours like engaging in safe work practices and suggestions (DeJoy, Della, Vandenburg, & Wilson, 2010). Ferris et al., (2009) establishes that the vitality present in all organizational relationships are as a result of the social exchanges.

Furthermore, The psychological contract in cooperation of workers’ and employers’ OHS representative’s stands in contrast to other types of contracts (i.e. legal) in that it is based on an individual-level perception, it focuses on mutual obligations, and it offers an explicit description of the social exchange relationship between the workers and the employers. Mearns et al. (2003) also considered the social exchange perspective and they concluded that investment by an organization in the health and well-being of its workforce might be reciprocated by employees through compliance with safety rules that benefit themselves and the worksite as a whole. Perceived organizational support was also recognized as an important factor in the work of DeJoy et al. (2010) on safety climate and organizational commitment.

2.5.2 Conservation of Resources Theory

The Conservation of Resources Theory (COR) propounded by Hobfoll (1989), which postulate that human beings by our very nature will want to conserve resources other than deplete them. Since safety participation requires the use of personal resources (time and energy), it will be difficult to find employees participating in safety when they have competing demands for their limited resources (time and energy).

Among a sample of hospital workers, Neal, Griffin and Hart (2000) found support for a positive and significant relationship between perceptions of overall safety climate and workers need drive to act safe as well as learn about safety. Climate perceptions were also found to be related to self-reported participation in safety activities like voluntarily carrying out tasks to improve safety. Similarly, Cheyne, Cox, Oliver, and Tomas (1998) reported a positive relationship between climate perceptions and employee safety involvement.

Using a more direct measure of behaviour Glendon and Litherland (2001) found a weak non-significant relationship between safety climate factors and the observed safety compliance among maintenance and construction workers (explaining 5.9% of the variance). Other studies (Wills et al, 2006; Clarke, 2006a) have however reported a significant positive relationship between safety climate and safety compliance. Also climate has been found to influence the propensity of workers to report injuries as well as to voice out their safety concerns (Kath, Marks, & Ranney, 2010). Safety climate has also been reported to correlate negatively with safety outcomes like accident and injury rates (Clarke, 2006; Johnson, 2007; Zohar, 2000). These linkages may be moderated by behaviour and they provide support for the validity of safety climate as a construct that is able to reflect and influence the level of industrial safety.

2.5.3 Organizational Climate

According to Adutwum (2010), the word “Climate” usually used in climatic studies refers to the predominant ‘weather’ condition over a specific geographical location over a period of time. Although a meteorological term, it was introduced into the social sciences by Lewin (1951) to explain how the behavior of people within a social unit are affected by shared psychological conditions (Arvidsson, 2006).

The term ‘climate’ is currently being used by many social scientist and organizational psychologist as the shared perceptions of employees concerning the psychologically relevant facets of their work environment (Amjad & Patnaik, 2014). In other words, the shared descriptions and measurable characteristics of what employees perceive to be happening to them in their workplace. According to Adutwum (2010), Climate as a perception gives indication to what it is the organizational members consider valued hence channel their strength and capabilities in attaining those valued outcomes. Thus, climate in itself plays the role of an intermediary between the working environment of employees and their resulting responses.

2.5.3.1 Organizational Climate Formation

Across several definitions in the literature of organizational climate as a construct, one key feature that is predominant is its ‘sharedness’ (Warr & West, 2004; Zohar, 2003; Adutwum, 2010; & Amjad & Patnaik, 2014). Theoretical explanations have been given from literature on how these “sharedness” is cultivated among employees - the structural perspective and the interactionist perspective.

Originally made mentioned by Ashworth (1985), the structural formation of climate originate as a creation of the prevailing characteristics or dimensions of an organization. These prevailing characteristics may include the degree of centralization, the size of the organizational, and even the basis for unit and subunit groupings. Adutwum (2010) further suggested that such structures have the inherent ability to inhibit employees from expressing their individual differences regarding their descriptions of their organizational situation so much so that a contact to similar context results in similarity in perceptions. This harmoniously is in line with Dejoy, Schaffer, Wilson, Vandenberg and Butts' (2004) study that relationship between certain prevailing characteristics within an institution and the prevailing psychological views of its members to an extent supports the structural perspective formation.

Evolving from the symbolic interactionism concept (Ashworth, 1985; Blumer, 1969), the interactionist perspective postulates that people within an organization realize they share similarities in characteristics it develops into likening and regular interactions amongst them. These then grows into the exchange of experiences which often results in each member tending to modify their idiosyncratic meanings they might as individuals attached to various organizational events. As time elapses, people begin to develop collective connotations regarding some organizational features and occurrences. It is these collective values that results in a consensual contract among employees regarding what it is that is cherished in their organization. In a nutshell, Adutwum (2010) citing Zohar and Luria, (2005) described the interactionist perspective of climate perceptions as “socially construed’ by individuals in their attempt to understand their organization and their roles within it”.

2.5.3.2 Organizational Climate Properties

According to Bosak, Coetseeb and Cullinanea, (2013) there is a growing debate among climate researchers on which level should safety climate be conceptualized and subsequently analyzed. Evidence from previous studies suggests the need to conceptualize and investigate climate either as a shared or group construct or individual employee's construct (Rousseau, 1985; Zohar, 2003). Christian, Bradley, Wallace, and Burke, (2009) posits that climate studied at individual employees' level is termed psychological safety climate while Zohar, (2003) also postulated that when the unit of analysis is at levels higher than the individual level such as group, department, and organization level it is termed organizational climate.

According to Beus, Bregman and Payne, (2009) organizational climate because of their shared nature, possesses two essential attributes namely, level and strength. Level signifies "the quality of a climate as positive or negative" (p. 1431). Thus the level of climate refers to the mean of individual members' perceptions on whatsoever is considered relevant to the group, business unit, organization or industry. In this context, the perception of safety climate whether it is positive or negative. Previous studies has related the level of climate in an organization to a number of safety-related outcomes such as safety compliance (Goldenhar et al., 2003; Neal and Griffin, 2006), and near misses (Goldenhar et al., 2003).

Beus et al., (2009) further explained that the instability of individual safety perceptions also termed climate strength which specifies the 'sharedness' of a climate is a source of inconsistencies in employee behavior (Dickson, Resick & Hanges, 2006). Schneider, Salvaggio and Subirats (2002) elucidated that a strong climate irrespective of the level of the climate must be consistent in predicting group behavior than a weak climate. In other

words, the behavioral outcomes of a workgroup or unit with more similarly connected perceptions should be easily predictable than the behavioral outcomes of a workgroup less similarly connected perceptions due to the fact that individualistic perceptions in a strong climate will each be more related. Lindell and Brandt (2000) explained the inconsistencies in climate perceptions as “climate consensus” and established that greater consensus was associated with likeness in behavior among group members.

2.5.3.3 General and Specific Climate

According to Adutwum (2010), organizational climate is the perception of employees regarding some facets of their job environment which they consider to be important. Studies shows that quite a sizable number of such facets or aspects are present within an organization and may stem for existing policies to practices. However, because often than not institutions seek to achieve numerous strategies and specific policies and practices are typically established to outline the methods to attaining each of them, it is likely to result in workers developing multiple climate perceptions.

Bearing in mind this, Adutwum (2010) citing Schneider (1975, 1990) suggested that rather than investigating climate from a universal viewpoint which integrates all likely facets of the workplace, studies must be purposefully focused. Hence, investigators are to strategically concentrate on specific goals of the organization and examine a climate for that instead of an all-inclusive organizational climate construct. The purpose of investigating climate in a facet specific manner is because each specific aspect of climate would be predict results which are related to its domain in a much better way. For example, a specific climate construct concentrating on ethics is anticipated to significantly predict workers behavior than a more general one.

As such, several specific aspect of climate studies are now seen in literature. For instance; safety climate (Zohar 1980; 2000; Beus, et al., 2011), service climate (Schneider, 1990; 2002), ethical climate (Grojean, 2004; Peterson, 2002) and innovation (Arvidsson et al, 2006). Although some climate researcher still research on climate as a general construct, the present relevance of the facet specific climate has resulted in organizational climate seen as a concept rather than as a construct when used in literature (Adutwum, 2010).

2.5.4 Safety Climate

Originally cited by Zohar (1980) when he applied the concept of behavioral climate and produced a seminar paper on safety climate. Until now, safety climate has been extensively conceptualized and used in many settings (Hon et al., 2014). It is referred to as that specific aspect of organizational climate which strategically focuses on occupational health and safety within the work environment. Zohar (1980, p. 96) defined it as “ a summary of the molar perceptions that employees share about their work environments, and a frame of reference for guiding appropriate and adaptive task behaviors.” It speaks of the real psychological value and importance of safety within an organization. Again, Zhu, Fan and Clissold, (2010) had postulated that safety climate is a construct which has been used across studies to serve as a tool or framework in evaluating safety at work environments.

Adutwum (2010) postulated that safety climate is a group level variable and could be explained as workers shared perceptions regarding their organizations safety policies, practices and procedures. As a shared perception, Zohar (2003) explained that it may be categorized into two, the former being, the formally stated safety policies, practices and procedures which are often times in explicit statement or written documents and the latter, the enacted types which are enforced in the workplace during the day to day activities of

the organization. Hence safety climate as examined in these sections of the study refers to either enacted or enforced safety policies and practices within the power generation companies.

Often times through observation, employees tend to be acquainted with these enacted practices and policies by the way organization people relate with each other in terms of workplace safety. These may be in the form of how management are committed to safety (Hon et al, 2013), the extent to which worn-out personal protective equipment are replaced and strict adherence to safety rules and procedures (Zhu et al., 2010) to mention but a few. These then informs employees on the relevance of safety in their organization relative to other priorities like work speed (Neal & Griffin, 2000). It then gives the individual worker an indication vis-à-vis which safe behaviors are expected, supported, and rewarded thus cueing employees on the likely consequences of their own safety behaviors (Adutwum, 2010). In other words, the perceived safety climate hints them on the extent to which safe behaviours are supported, acknowledged either in monetary or non-monetary forms.

Safety climate have been explained in previous studies as synonymous to safety culture. However, Mearns, Gordon & Fleming, (2001) argues that it is rather the “current-state reflection” or a “snapshot” of the safety culture within the work environment. Again, further studies have established that the two constructs are unique and separate though they are closely related (Neal & Griffin, 2000; Guldenmund, 2000). These authors explained that safety climate originates from organizational climate whereas safety culture has its root in anthropology. Safety climate is integrated in safety culture which is a wider construct which has added constructs such as attitudes and values. The inability of researchers to assess these constructs distinctly from each other had resulted in use of some

safety climate items which relates to other facets of safety culture. For instance, skepticism and risk justification which relate to safety attitude have been stated in literature as dimensions of safety climate (Williamson, Feyer, Cairns & Biancotti, 1997).

2.5.4.1 Assessment of Safety Climate - Dimensions

Assessing the existing safety climate which is considered as a ‘snap shot’ of the state of safety within a work environment serves a sign signifying the need for variations in the manner at which safety is prioritized in the workplace (Gadd, 2002). All through the safety literature, the assessment of safety climate had been through the use of a questionnaire survey wherein respondents are required to specify the degree to which specific safety climate dimensions suitably describe how safety is handled in their organizations. Zohar (1980) was first to make use of such questionnaire survey. He developed and administered a 49-item questionnaire on a pilot scale to a sample of 120 Israeli workers. After which, factor analysis was performed and eight specific dimensions were extracted. As cited by Adutwum (2010) they were; perceived relevance of safety training programs, attitude of management towards safety, effect of safety conduct on promotion, risk level at workplace, effect of mandatory work pace on safety, safety officer’s status, effect of safe conduct on social status and safety committee status.

Theoretically, the frequent interchanging of safety climate and safety culture by researchers often times have had a negative consequence on the safety climate construct in terms of its validity. Clarke (2006) have reported that several studies show lower criterion validity in relation to safety outcome variables. Safety researches by Zohar (2003) and Neal and Griffin (2002) sought to address the challenge of validity, suggested that instruments for assessing safety climate must not mixed with items related to aspects of safety culture.

Instead, these facets of safety culture must be addressed as idiosyncratic variables that impacts health and safety uniquely. Accordingly, this present study was conceptualized and conducted with a clear separation between safety climate and safety culture under consideration.

Till today, empirical evidence have indicated that there is no agreement pertaining to the key dimensions which make up the safety climate construct. Nonetheless, it is important to indicate that its multidimensional characteristic has constantly been supported.

Despite the earlier stated assertion, some common dimensions have been used constantly across previous related studies. These include; management commitment to safety (Adutwum, 2010; Bosak et al., 2013; Cox & Cheyne, 2000; Lin et al, 2008; Vinodkumar & Bhasi, 2009; Wills et al, 2005; Zohar, 1980), Supervisor safety (Hayes, et al. 1998; Lu & Shang, 2005; Mearns et al, 1997), co-worker safety (Diaz & Cabrera, 1997; Hayes, et al. 1998; Varonen & Mattila, 2000; Zohar, 1980) and communication (Glendon & Litherland, 2001; Mearns et al, 1997; Wills et al, 2005;) to mention but a few.

However, according to a recent publication by Bosak et al., (2013 p. 257), showed that three climate dimensions specifically inculcates “competing organizational spheres” and consistency between policy and practice and have enjoyed continuous inclusion in safety climate studies. They are; management commitment to safety, perceptions of priority of safety in the workplace, and pressure for production sometimes referred as work pressure (Bosak et al. 2013; Cooper & Phillips, 2004; Hon et al., 2014; Mearns et al., 1998; Zohar, 2002). Furthermore, these specific dimensions have been proved to predict employee safety behavior beyond alternative dimensions.

2.5.4.2 Management Commitment to Safety (MCS)

Previous studies have established that perhaps, MCS may be the best safety climate dimension (Cigularov et al., 2013; Flin et al., 2000; Seo, et al., 2005; Zohar, 1980, 2003). It signifies how far management recognizes the primary worth of safety within the organization and handles matters of safety with all urgency. Literature indeed has linked the commitment of management towards safety to same safety outcomes, such as, greater levels of safety (Jaselskis et al., 1996), safety behaviors (Adutwum, 2010; Bosak et al., 2013), and the readiness of employees to participate in improving safety performance (Langford et al., 2000).

2.5.4.3 Priority of Safety on Plant (PSP)

Extant literature has described this dimension at the extent to which employees perceive their safety as a major concern in their workplaces (Bosak et al., 2013; Naveh et al., 2005). A greater safety priority at the workplace implies that safety is identified as a vital subject which must be accorded their highest form of precedence irrespective of other challenging demands like increased productivity and work speed (Fleming, 1999).

2.5.4.4 Pressure for Production (PFP)

The last dimension of safety climate considered in this current study is pressure for production. According to Brown et al., (2000), employees from many work environments in different sectors are always in dilemma of either strictly adhering to safety standards or meeting production targets or demands (Ray et al., 1993; Brown, 1996).

Flin et al., (2000) posits that the rising global trend of growing competition, cost minimization and institutional restructuring largely induce pressure for production which

in turn influence the safety climate at the work place since time and resources are overstretched. This therefore has necessitated the relevance of including pressure for production in the evaluation of safety climate within an organization.

Hence, this present research, defines pressure for production as the perception of workers regarding how their institutions encourages them to work around safety standards, practices and procedures so as to attain job demands, production quotas, attain important deadlines or continue the systematic flow of work (Brown et al., 2000; Bosak et al., 2013).

2.5.5 Safety Behavior

Previous studies has suggested that the safety linked behavior of workers is often programmed to suit the existing safety climate they perceive within their work environment (Adutwum, 2010). Hence, any expected profit from ensuring a positive safety climate culminates from organizations ability to promote the worth of employees engaging in safe behaviors (Zohar, 2008). Thus promoting the need for employees in compliance with safety rules and engaging in safety initiatives from their own volition more rewarding.

Zin and Ismail, (2012) defined behaviour as all of an individual's actions and conducts which are visible and quantifiable. Mahmood, (2010) conceptualized safety behavior as all actions and conducts that promotes the practices of safety. These included actions such as the provision of safety training and strict adherence to safety policies, practices and procedures.

According to Johnson (2003), safety behavior is fundamental in reducing if not eliminating completely accidents and injuries within the work environment.

In this current study, safety behavior is theorized and operationalized as all-inclusive actions, conducts and activities embarked on by employees in their workplaces to guarantee their individual safety, the safety of their colleagues and the entire institution as a whole.

Burke, Sarpy and Smith-Crowe (2002) in their studies postulated that safety behavior is a measurement of the safety performance within an organization. They recognized four specific constituents of safety behavior, namely, the use of Personal Protective Equipment's (PPE's), involving in Practices that Reduce Risk (PRR), Communication of Health and Safety Information (CHS) and Exercise of their Rights and Responsibilities (ERR).

However, the extant literature has seen safety behavior being conceptualized and operationalized under two main constructs; Safety compliance and Safety participation, sometimes referred as initiatives (Aduwum, 2010; Bosak et al., 2013; Dahl & Olsen, 2012; Neal, Griffin, & Hart, 2000)

Christian et al., (2009) again in their meta-analytical study also conceptualized safety behavior (performance) as a metric for safety-related behaviors of individual behaviors specifically compliance and participation.

2.5.5.1 Safety Compliance

Safety compliance “involves adhering to safety procedures and carrying out work in a safe manner” (Neal et al., 2000, p. 101). They conceptualized safety climate as those strict obligatory action, conducts which employees need to undertake to ensure safety at their workplaces. Often times, these actions ensure the direct individual protection of the worker, such as obeying safety rules and regulation and the appropriate use of PPE's.

In the off-shore study by Dahl and Olsen, (2012) revealed that human risk management systems in that industry allows a greater responsiveness to employee safety compliance. Reason being that the entire work activities and operations in controlled by stringent rules and regulations. Furthermore, results from most offshore accidents constantly revealed the disregard for non-compliance with regulations as the central contributing factor (PSA 2005, 2007, 2011b). However, Hopkins (2011), has indicated that these results are not just limited to offshore accidents rather a regular verdict in all general occupational accident inquiries.

2.5.5.2 Safety Participation

Neal and Griffin (2002), further explained safety participation as all actions, conducts and activities which may indirectly not result in the personal safety of the individual worker, rather may contribute in creating a work environment that encourages safety. These actions are mostly voluntary thus undertaken by the workers own discretion. Hence, are most often termed ‘safety specific citizenship behaviors’ (p. 68). These actions may include the identification and voluntary reporting of hazards, giving submissions to develop workplace safety, and correcting co-workers when they engage in unsafe conducts or activities.

2.6 Empirical Review

2.6.1 Pressure for Production and Safety Behavior

Extant literature have indicated that often time employees tend to compromise on safety standards when they perceive that attaining production targets is of paramount importance to management (Langford et al., 2000). Furthermore, perceptions of pressure for

production such as time pressures, higher work pace and excessive workload have been identified a contributing factor to both workplace injuries and accident and unsafe work behavior (Brown, et al., 2000; Christian et al., 2009; Goldenhar et al., 2003; Hofmann and Stetzer, 1996; Wright, 1986). However, Rundmo (1998) argued that the perceived pressure for production may not by itself result in industrial accidents and injuries but employees perceived pressure to disregard safety standards and procedures. He found out that the attitude of workers to accept rule violation of safety standards and procedures was the strongest predictor of risk behavior.

According to Fernandez-Muniz, Montes-Peon and Vazquez-Ordas, (2011) pressure for production ultimately results in causing greater psychological stress among employees. Seo's, (2005) study of machine-paced line workers in the grain industry suggested that bearing in mind their "low decision latitude" (p.42), employees' perceived pressure to produce would likely lead to an increase in psychological stress among them (Karasek and Theorell, 1990), which may, in turn, increase the probability of engaging in unsafe behaviors. Li, Jiang, Yao and Li (2012) also supported this, stating that under production pressure employees might utilize more 'short cut' work methods once they perceive that there is not enough time to follow safety procedures and this in-turn may result in higher frequency of unsafe behavior.

Findings from Wills, Biggs and Watson (2005) indicated that pressure for production and safety standards were significant in predicting safety behavior among occupational drivers and construction workers. Their conclusions were consistent with the findings of Mearns, Flin, Gordon and Fleming's (1997) off-shore study where unsafe behavior was significantly predicted by the perceived pressure for production.

2.6.2 Management Commitment to Safety and Safety Behavior

It has been confirmed in the safety literature that the activities of management play a key role in the formation of a safer workplace (Shannon et al., 2001) and that how safe the job environment is has an effect on the behavior of employees (Thompson et al., 1998). In explaining this effect, McLain and Jarrell (2007) in Bosak et al., (2013) explained that commitment of management results in employees trust in management which in turn results in (a) a decrease in workers divided attention while executing assigned responsibilities while watching out for hazards, and (b) more information being communicated on safety and safe activities within the organization. The actions of management often times gives indications on which customs, standards and conducts within the work environment have the tendencies to be reinforced and or appreciated in monetary or non-monetary terms (Morrow et al., 2010). Hence, contribute to formation of the safety climate perceptions among workers. It is therefore imperative that within all the echelons at the workplace, supervisors must take practical steps to exhibit highest forms of commitment to safety which must be seen in their conducts. These actions and conducts could include open communication on safety matters, investing resources in developing a safe job environment, allowing for workers involvement in safety issues and discussions, and inculcating safety concerns during job design (Clarke & Ward, 2006; Geller, 2001; Hon, et al., 2014; Zohar, 2002). According to Zohar and Luria (2005), MCS must simultaneously be seen in both policy and procedural steps of the high and mighty (senior managers, supervisors, shop-floor managers) within the organization and then confirmed in by lower level supervisors. However, it is not clear from the literature the level at which

MCS is measured irrespective of the extant variations in their responsibilities and perceived effect on employee behavior (Bosak, et al., 2013; Clarke, 2010; Flin, et al., 2000).

Hence, the present study is based on the perceptions of employees on the commitment of senior management to workplace safety. This is because senior management “undoubtedly set the tone and tempo for organizational atmosphere, establish priorities and allocate resources” (Flin et al., 2000, p.186) in addition to their conducts, standards and policies playing a vital role in benchmarking the degree of freedom of supervisors in terms of policy implementation (Zohar & Luria, 2005).

2.6.3 Priority of Safety on Plant and Safety Behavior

It has been established that the more safety is a priority at the workplace, it possibly stimulates workers to take greater possession and accountability for safety which compels them to conduct themselves in manners that do not endanger themselves and others (Bosak et al., 2013). However, a lower priority of safety signifies that safety-related standards, policies and actions are seen mere pretense or rhetoric's giving the implication that none adherence to safety rules and standards can be ignored without any punishments (Falbruch & Wilpert, 1999). In an off-shore study by Fleming in 1999, it was revealed that 19% of the variance in safety self-reporting behavior of subordinates was explained by the priority of safety on the rig and the behavior of supervisors. Another related study by Dedobbeleer and Beland (1999) also revealed that the attitude of employees relative to the practices of safety such as propensity of risk taking were predicted by employees' perceptions of management priority for their health and safety.

2.7 Importance of Positive Safety Climate in an Organization

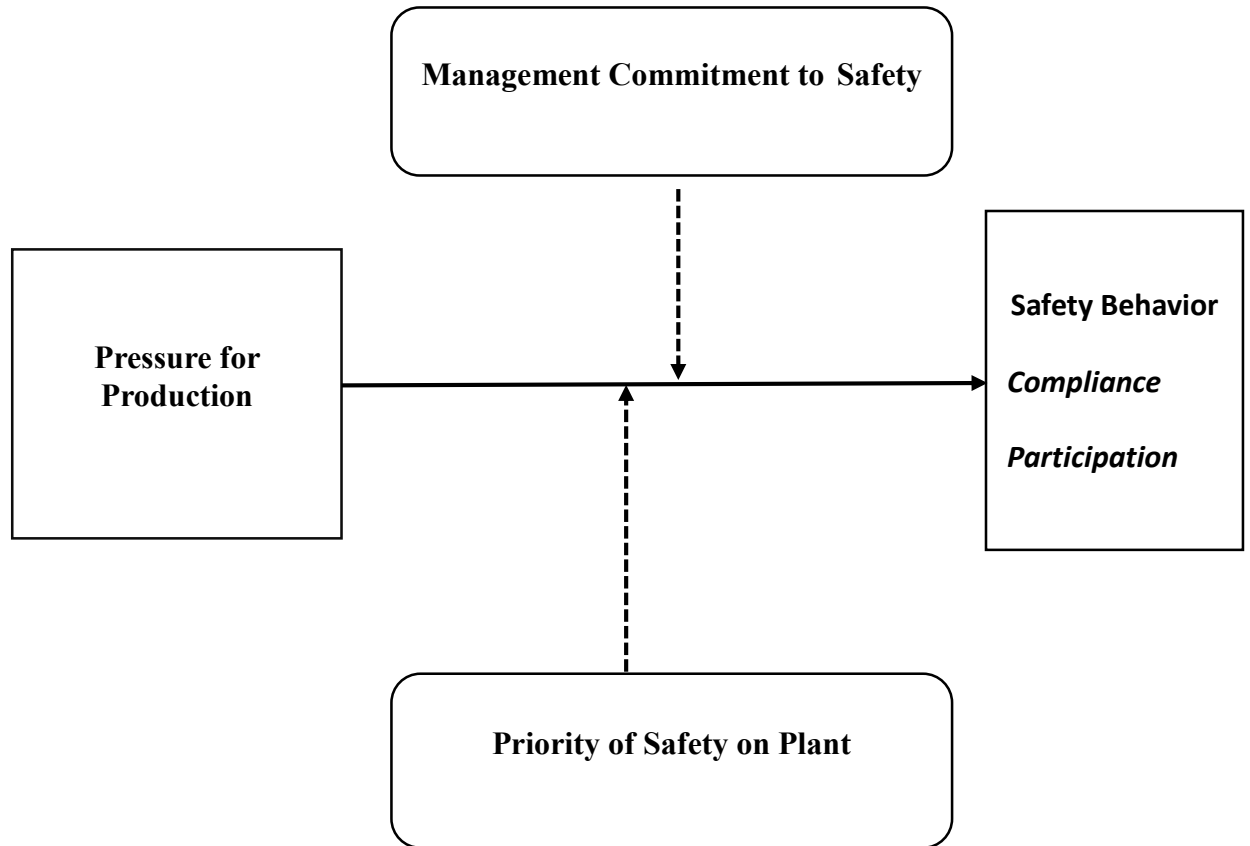
In almost every kind of hazardous work, it is possible to identify typical accident patterns, for that reason, the relevance of safety climate to safe operation is therefore not disputed (Cox & Flin, 1998). It is very difficult to build and sustain a strong safety climate within an organization, however, organizations with strong positive safety climate have employees who behave positively towards safety practices. Indeed, most safety literature has confirmed that safe behavior is the fruit of a positive safety climate at the workplace (Christian et al., 2009).

It could then be concluded that, efforts to improve occupational health and safety performance will not be effective until the occupational safety and culture is improved (Misnan et al., 2006). According to Amponsah-Tawiah and Dartey-Baah (2011), safety at the workplace and a healthy place part of the indispensable assets of employees, society and the nation at large.

For instance, a survey conducted among nineteen organizations confirmed that an effective health and safety management system led to lower absenteeism, higher productivity, reduction in occupational accidents and ligations, enhanced employee confidence and relations (Health and Safety Executive, 2004a).

2.8 Conceptual Framework

Figure 2.1 “DUMSOR” SAFETY FRAMEWORK before ANALYSIS



From the conceptual framework, safety climate focused on pressure for production, management commitment to safety and priority of safety on plant and safety behavior on safety compliance and safety participation. The basis for the hypotheses is asserted by a number of empirical studies that have demonstrated relationships between safety climate dimensions and safety behavior (Bosak et al., 2013; Zohar, 1980; Niskanen et al., 2014). In addition, there has been a call for the examination of management commitment to safety and priority of safety on plant as moderators between the established relationship between pressure for production and employee safety behavior (Brown, 2000).

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter describes the approaches, procedures and techniques used to gather the data needed to achieve the research objectives. According to Saunders, Lewis and Thornhill (2007), research is carried out with the intent to find out things in a systematic or methodical manner, thus increasing knowledge. Hence, research is grounded on logical relationships and not just beliefs (Ghauri & Gronhaug, 2005). This chapter considers the research design, sources of data, target population, sample size, sampling procedure, data collection instrument, and data analysis.

3.1 Research Design

According to Dawson (2002), a research design is the conceptual framework within which study would be conducted. Its main import is to provide for the collection of pertinent facts and figures with marginal expenditure of effort, time and money. Usually, research design gives direction and guidelines that leads to relevant sites and materials and the collection and analysis of this information paramount to the study (Zikmund, 2000).

The study was quantitative in nature because the researcher sought to find out the relationship between certain variables within the industry selected for the study. Aliaga and Gunderson (2000) describe quantitative research as explaining phenomena by collecting numerical data that are analyzed using mathematically based methods especially in statistics. The objective for this type of research was to measure the incidence of various views and opinions in a chosen sample and to obtain conclusive findings. Quantitative

design also allows the hypotheses outlined to be tested using appropriate statistical methods and inform the researcher whether to accept or reject the stated hypotheses. Yauch and Stendel (2003) suggests that quantitative research design results are independent of the researchers as it entails rigorous procedures and processes that limits the influence of the researcher thereby depicting the true state of affairs of the phenomenon under study. Dudwick, Kuehnast, Jones and Woolcock (2006) argue that findings are more accurate and reliable due to its rigorous nature and can be generalized to represent the view of the entire population. They further suggest that quantitative research design is often suitable for studies with large number entities. Indeed the above justifications formed the basis for the researcher's choice of a quantitative research approach.

The study also made use of the cross-sectional survey approach because data was collected over a short specified period, (specifically between November, 2014 and January, 2015). A cross-sectional survey produces a 'snapshot' of a population at a particular point in time (Cohen, Manion & Morrison, 2005). A survey was used to assess the safety behavioral reactions of technical workers following the increasing pressure to produce power by the Volta River Authority and the Bui Power Authority. Zikmund, (1999) had emphasized that the most common method of generating primary data is through survey, hence defining a survey as a research technique in which information is gathered from a sample of people through a questionnaire. Thus, because of the need to generate primary data to achieve the objectives of this study, survey method was adopted for the study. This research design was employed in carrying out the study in Ghana's largest energy generation company and the second largest hydro generation plant, Volta River Authority the Bui Power Authority respectively.

3.2 Population for the Study

The population of a study can be described as the number of all units of the phenomenon to be investigated that exists in the area of investigation (Kumekpor, 2002). A description earlier stated by Nachmias and Nachmias (1996) that population is the aggregate of all cases that conform to some designated set of specifications. The study population consisted of technical employees of power generation companies in Ghana. The foremost selected criterion for the power generation companies was that it should be a major power generation company in Ghana.

3.3 Sampling & Sample Size

Sampling refers to the statistical process of selecting a subset of a population of interest for purposes of making observations and statistical inferences about that population (Bhattacharjee, 2012). It is extremely important to choose a sample that is truly representative of the population so that the inferences derived from the sample can be generalized to the population of interest (Creswell, 2012). Bartlett, Kotrlik and Higgs (2001) suggest that a sample size needs to be determined by either direct calculations through statistical formulas appropriate to the study or by making reference to tables with recommended sample sizes based on the population under consideration. Considering the population under study, different sampling techniques were used.

The sample size was obtained from Krejcie and Morgan's (1970) table for determining sample size from a given population. No calculations are needed to use Krejcie and Morgan's (1970) table for determining sample size from a given population. For example, one may wish to know the sample size required to be representative of the opinions of 1000

civil servants relative to merit pay increases. To obtain the required sample size, enter table at population size (N) = 1000. The sample size (S) representative of the civil servants in this example is 278. The table is applicable to any defined population.

Therefore, out of a population of a total population of 750 technical staff of both the Volta River Authority and Bui Power Authority, a sample size of 254 were obtained. The sample size obtained for the study constituted all technical staff that had a direct link with the generation of power.

3.3.1 Sampling Frame

According to Kumekpor (2002) sampling frame can be conceived as description of all the sample units that make up a universe. A careful selected portion of the universe or population which is considered to be representative of the total population reference to the aspect to be examined and enumerated is necessary (Kumekpor, 2002). The Volta River Authority is the largest power generation company in Ghana (Acheampong & Ankrah, 2014). The Bui Hydro generation plant is the second largest hydro generation plant in Ghana. The VRA had a direct plant technical staff strength of seven hundred and six (706), comprising 223 for Hydro Generation, 118 for Thermal Generation and 365 for engineering. Whiles the Bui Hydro Plant had a direct plant technical staff of 50. Thus the total population for the study was seven hundred and fifty-six (756). The sampling frame for the study consisted of all the technical staff of both VRA and BPA.

3.3.2 Sampling Procedure

The key reason for being concerned with sampling is that of validity—the extent to which the interpretations of the results of the study follow from the study itself and the extent to

which results may be generalized to other situations with other people (Shavelson, 1988). The sampling procedure which was adopted for this study was the non-probability sampling technique specifically the purposive sampling technique was used to select the technical staff of these companies who according to McManus (2011) are considered to be the most at risk group in power generation. Stratified Random sampling techniques was then employed to select the respondents from the technical workers. The technical workers were divided into smaller groups or strata based on their departments. The questionnaires were then administered randomly within each stratum.

3.4 Type and Source of Data

Primary sources of data were drawn for the study. Primary data were collected from power plants at Akosombo, Akuse, Aboadze, Kpone, Tema and Bui of the study companies and this was data being collected for the first time. Primary data was obtained through a well outlined questionnaire that cut across the safety climate dimensions and safety behavior concepts used in the study.

3.5 Data Collection Instrument

According to Kumekpor (2002), a questionnaire is a document containing a number of questions on a particular theme, problem, issue or opinion to be investigated. In the current study a questionnaire was used as a tool for data collection because it involved the identification and explanation of a number of variables that provided insight into safety climate and safety behavior. As observed by Twumasi (1986) the questionnaire is an efficient method in the sense that many respondents can be reached within a short space of time.

Earlier proven measures of each of the study variables were used thus structured survey instruments were adapted and used in gathering quantitative data. All scales were rated on a 5-point scale, 1= strongly disagree to 5= strongly agree. Ideally, the Cronbach's alpha coefficient of a scale should be above 0.7 (Pallant, 2001). The structured survey questionnaire was an adaptation of Neal and Griffen (2008) safety climate scales, Bosak et al., (2013) safety climate scales and the safety behavior scales by Neal and Griffin (2008). These scales were adapted for the study in that the items had direct relation with the objectives of the study and hence were appropriate scales to address the research objectives.

The structured survey questionnaire had four sections. Section 1 gathered biographical data on respondents. This covered six (6) questions. The first was on respondents' age groups with five intervals; from 20 years to 50 years and above. The second question was on gender of respondents. Question 3 gathered data on the educational level attained by respondents with five intervals; from secondary to postgraduate. However, provision was made for other qualifications not specified. The fourth question gathered data on length of service with five intervals; from less than 1 year to more than 20 years. Question 5 gathered data on terms of employment with 5 intervals; from casual worker to full time worker. The sixth question gathered data on respondents' job title; from laborers to others.

Section 2 was organized into six (6) sub-sections.

This construct was an adaptation of Neal and Griffen's (2008) General Safety climate scale which covered questions on communication, training, Physical Work Environment, Safety Systems, Knowledge and Motivation and was composed of twenty-five (25). Some of the

items in this section included; ‘There is frequent communication about safety issues in this workplace’, ‘Employees have sufficient access to workplace health and safety training programs’, ‘Employees are frequently exposed to risky situations’, ‘The safety procedures and practices in this organization are useful and effective’. This construct which was piloted had a Cronbach’s alpha coefficient of 0.940.

Section 3a which was a modification of Bosak et al.’s, (2013) safety climate scale on Management Commitment to Safety (MCS) and covered five (5) questions. Some of the items included; ‘If you say too much about safety they might fire you’, ‘My Company will stop work due to safety concerns, even if it means they are going to lose money.’ These items measured respondents’ opinions on management commitment to safety in their respective institutions. The construct had a Cronbach’s alpha coefficient of 0.600 and therefore was a reliable scale for measuring management commitment to safety.

Section 3b which was a modification of Bosak et al.’s, (2013) safety climate scale on Priority of Safety on Plant and covered five (5) questions. Some of the items included; ‘There are frequent checks to see if workers are all following safety rules’, ‘I am allowed to stop work if I feel the job is unsafe.’ These items measured respondents’ opinions on priority of safety on Plant in their respective institutions. The construct had a Cronbach’s alpha coefficient of 0.952 and therefore was a reliable scale for measuring priority of safety on plant.

Section 3c which was a modification of Bosak et al.’s, (2013) safety climate scale on Pressure for Production and covered five (5) questions. Some of the items included; ‘People in this plant are sometimes under pressure to put production before safety;’, ‘Whenever we fall behind schedule and we are not achieving daily targets, my supervisor

wants us to work faster rather than by the rules.’ These items measured respondents’ opinions on Pressure for Production on Plant in their respective institutions. The construct had a Cronbach’s alpha coefficient of 0.939 and therefore was a reliable scale for measuring Pressure for Production on Plant.

Section 4 gathered responses on respondent’s safety behavior. This was assessed using twelve (12) items that measured the extent to which respondents engaged in various safety-related practices such as ‘wearing PPE’; ‘I attend safety meetings and briefings’; ‘I find it worthwhile to be involved in the development of safety standards’; ‘I report colleagues who break safety rules to supervisor’, etc. Ratings were done on a four point Likert scale ranging from Never (1) to Very Often (4). This construct which was piloted had a Cronbach’s alpha coefficient of 0.927.

3.6 Administration of Research Instrument

A cover letter was presented for appointment on specific dates for administering survey questionnaires. The safety engineer of Volta River Authority and the Resident Plant engineer of Bui Power Authority were responsible for distribution and data collection. Following the data collection, completed survey questionnaires were returned in bulk to the researcher for data entry and analysis. Respondents answered fifty-two (52) questions in all which cut across seven sections captured as sections A, B, C, and D. An initial time interval of one month for the data collection was extended to two months due to some administrative processes in approving the study by the institutions as well as the busy nature of respondents’ schedule at work.

3.7 Reliability Analyses for Pilot Study

The questionnaire was pre-tested on a small sample of respondents to measure the reliability (internal consistencies) of the scales and also to identify the tailbacks that may have caused major impediments during the data collection. The analysis was based on data gathered from a total of 15 respondents from the Volta River Authority. It favorably turned out that, all the constructs had Cronbach's alpha values which were greater than 0.70 with the exception MCS section which had a Cronbach's alpha of 0.600.

Table 3.1: Cronbach Alpha of Instrument (Pilot Study)

Construct	Valid Cases	No. of Items	Cronbach Alpha
General Safety Climate	15	25	0.940
Management Commitment to Safety	15	5	0.600
Priority of Safety on Plant	15	5	0.952
Pressure for Production	15	5	0.939
Safety Behavior	15	12	0.927

Source: Field work, 2014

In effect, any analyses performed with responses from these questions were thus highly reliable. The Statistical Package for the Social Sciences (SPSS) software version 20 was then used to compute the Reliability scores for each section. Reliability and consistency tests were conducted on each of the variables so as to ensure a high sense of reliability or otherwise of the analysis.

3.8 Data Analyses

The raw data obtained from data collection is considered inoperable unless such data is transformed into useful information for decision making (Emory & Cooper, 1991). As such, data collected from respondents were coded by assigning numerical values and subsequently analyzed using the Statistical Package for the Social Sciences (SPSS) software, Version 20. Various statistical tests in the SPSS were used to test the hypotheses.

Both descriptive (such as frequency tables) and inferential statistics (such as regression analysis) were used for the analyses of data. The researcher used descriptive statistics to analyze the respondents' demographic data. Descriptive statistics according to Pallant (2011) shows the characteristics of any study's sample through the provision of summary statistics such as mean, median or standard deviation for continuous variables, or frequencies on how many people gave each response for categorical variables.

For the inferential statistical outputs, p-values greater or equal to the level of significance ($\alpha = 0.05$) indicated a non-significant difference, correlation or association. On the other hand, p-values less than the level of significance would mean a significant difference, relationship or association between or among the variables under consideration.

3.10 Ethical Consideration

To ensure acceptability, a cover letter was presented for appointment for administering survey questionnaires. Information included in the cover letter was the name, educational institution, the research topic and the intentions of the researcher. This was to make known exactly what the organisation was being asked to do before agreeing to be part of the study so as to avoid any coercion and manipulations.

Also, respondents anonymity and privacy was maintained by the exclusion of respondent's name, telephone number and social security number and any other personal details on the research instrument. This was enforced Babbie and Mouton (2001) affirmation that to ensure confidentiality in the use of questionnaires, details such as names and addresses must be excluded on the questionnaire. Respondents were also provided with box for them drop in their responded questionnaire.

CHAPTER FOUR

PRESENTATION OF RESULTS, ANALYSES AND INTERPRETATION

4.0 Introduction

This study sought to determine pressure for production and employee safety behavior, and to examine further if management commitment to safety and safety priority on plant mediated this relationship. By way of meeting the objectives of this study and answering the research questions that were posed, six hypotheses were stated and tested. Raw data from the questionnaires administered were processed and analyzed using SPSS version 20. This chapter presents a summary of the results of the study after the various analyses.

4.1 Demographic Characteristics of Respondents

This section of the chapter shows the frequency distribution of the gender, age, level of education, tenure (number of years worked in the organization) and job title of the respondents.

Table 4.1: Frequency Distribution of the Gender of Respondents

Gender	Frequency	Percentage (%)
Male	170	79.4
Female	44	20.6
Total	214	100

Source: Field Data, 2015

Table 4.1 above presents the gender distribution of respondents. It could be deduced from the table that majority of the respondents were males constituting 79.4% while females

formed the minority, representing 20.6% of respondents. The wide variation between males and female distribution could be attributed to the intensity and nature of work demand that characterizes the power generation industry.

Table 4.2: Frequency Distribution of the Ages of Respondents

Age	Frequency	Percentage (%)
Below 21 years	9	4.2
21-30 years	60	28.0
31-40 years	63	29.4
41-50 years	48	22.4
51-60 years	34	15.9
Total	214	100

Source: Field Data, 2015

Table 4.2 above presents the age distribution of respondents. According to table 4.2, majority of the respondents in the study were between the ages of 31-40 (29.4%). Respondents between the ages of 21-30 years represented 28.0% of respondents. 22.4% of the respondents were between the ages of 41-50 years while 15.9% of respondents were between the ages of 51-60 years. 4.2% of the respondents were below 21 years. With a greater concentration of the workforce between 21-40 years, it gives indication of a high youthful passion, zeal, sturdiness that respondents would exhibit towards work.

Table 4.3: Frequency Distribution of Respondents level of Education

Educational Level	Frequency	Percentage (%)
SSSCE/WASSCE	48	22.4
High National Diploma	93	43.5
1 st Degree	47	22.0
2 nd Degree	26	12.1
Total	214	100

Source: Field Data, 2015

Table 4.3 above presents a distribution of the levels of education of respondents.

From table 4.3 above, it could be inferred that, majority of the respondents were HND holders (43.5%). 22.4% of the respondents were WASSCE/SSSCE graduates while 22.0% were first degree holders. 12.1% of the respondents were 2nd Degree holders. Higher National Diplomas are awarded by polytechnics which are better known for the provision of technical expertise and education.

Table 4.4: Frequency Distribution of Work Tenure of respondents

Length of Service	Frequency	Percentage (%)
Below 1 year	20	9.1
1-5 years	117	54.7
6-10 years	28	13.1
11-15 years	25	11.7
16 years and above	24	11.2
Total	214	100

Source: Field Data, 2015

Table 4.4 above shows the distribution of respondents in terms of their length of service.

As shown in table 4.4, majority of the respondents had served their organization for a period of 1-5 years (54.7% of the sample). 13.1% of the respondents had served in their organization for a period of 6-10 years. 11.7% of respondents had served their organization for a period of 11-15 years while 11.2% of respondents had served their organization for more than 16 years. 9.1% of respondents had served their organization for less than 1 year. The summary results clearly shows that majority of the various technical workers were fairly new to their organization.

Table 4.5: Frequency Distribution of Respondents Terms of Employment

Terms of Employment	Frequency	Percentage (%)
Casual Worker	20	9.3
Contract Worker	54	25.2
Part-time Worker	8	3.7
Consultant	8	3.7
Full time Worker	124	57.9
Total	214	100

Source: Field Data, 2015

Table 4.5 above shows the distribution of respondents in relation to their terms of engagement. From table 4.5, it could be deduced that, majority of respondents were full time workers (57.9%). 25.2% of the respondents were contract workers. 9.3% of the respondents were casual workers while 3.7% of respondents were consultants and part-time workers respectively.

Table 4.6: Frequency Distribution of the Job Title of Respondents

Job Title	Frequency	Percentage (%)
Technician	115	53.7
Technician Engineer	50	23.4
Engineer	49	22.9
Total	214	100

Source: Field Data, 2015

Table 4.6 above shows the distribution of the various job titles of the sample. As shown in table 4.6, majority of the respondents were technicians representing 53.7%. 23.4% of the respondents constituted Technician Engineers while 22.9% were Engineers. Indeed, all the respondents were technically inclined thus serving as the exact representation the researcher sought for. This is because technical staff are considered as the most prone to industrial pressures and unsafe behaviors (Bosak et al., 2013).

4.2 Descriptive Statistics

Table 4.7 Descriptive Statistics of Study Variables

Variable	N	Mean	SD
Management Commitment to Safety	214	2.2084	.907
Priority of Safety on Plant	214	4.0597	.862
Pressure for Production	214	1.9014	.955
Safety Behavior	214	3.2932	.623

Source: Field Data, 2015

Table 4.7 above shows the descriptive distribution of each of the variables used in the present study. From the table, management commitment to safety had a mean of 2.2084 with a SD = .907 while priority of safety on plant recorded a mean of 4.0597 with a SD = .862. Again pressure for production had a mean of 1.9014 and a SD = .955. Additionally the safety behaviors of employees had a mean of 3.2932 and an SD of .623. The mean values of each of the study variables represents the gravitational center of the distribution of responses with the SD values showing how far the individual responses vary from the mean.

4.3 Measure of Reliability of Variables

A reliability test was conducted to measure the internal consistencies of the instrument used to measure each of the interested variables. Ideally, the Cronbach's alpha coefficient of a scale should be above 0.6 to be considered good for use (Cronbach, 1951).

Table 4.8 below shows the reliability values for each of the variables under the study.

Table 4.8 Reliability Analyses for study variable

Variable	Alpha Value	Number of Items
Safety Climate Scale	.97	25
Pressure for Production	.87	5
Management Commitment to Safety	.68	5
Priority of Safety on Plant	.81	5
Safety Compliance	.961	5
Safety Participation	0.88	7

Source: Field data (2015)

From table 4.8 above, it was only management commitment to safety that had a Cronbach alpha coefficients of less than .70. All the other variables had Cronbach values above .70. Sekeran (2003) posits that reliabilities in the range of .70 are acceptable, those above .80 are considered as good, but those less than .60 are considered poor. Therefore, the instruments used to measure safety climate, pressure for production, management commitment to safety, priority of safety on plant, safety compliance and safety behavior were reliable for the study.

4.4 Testing of Research Hypotheses

The study sought to address six main hypotheses. To do this analyses were done using divers statistical tests such as one-way ANOVA, the simple linear regression and hierarchical multiple regression.

In order to ensure that the variables used for the study qualify for parametric statistics, it was important to subject them to normality testing using Skewness and Kurtosis to ensure that they meet the normality assumption.

Table 4.9 below presents the normality of variables used in the study

Table 4.9 Normality testing of variables using Skewness and Kurtosis

Variables	Skewness	Kurtosis
Communication	-.367	-1.199
Training	-.471	-.617
Physical Work Environment	.011	-.807
Safety Systems	-1.088	.076
Knowledge	-1.254	.398
Motivation	-.456	-1.006
Management Commitment to Safety	1.058	.698
Priority to Safety Plant	-.970	.221
Pressure for Production	.907	-.157
Safety Behaviours	-.650	-.429
Safety Compliance	-.906	-.361
Safety Participation	-.646	-.440

Source: field data (2015)

According to Tabachnick and Fidell (1996), the normality of data is achieved when kurtosis and skewness are between -2 and +2. From table 4.9 above, all the variables fall within the ranges for skewness and kurtosis. Hence, all the variables used were normally distributed in terms of skewness and kurtosis for appropriate conclusions of findings.

4.4.1 Hypothesis One

The researcher sought to assess the safety climate within the power generation companies in Ghana. To do this, the following hypothesis was proposed:

H1: There is a positive safety climate within the power generation companies of Ghana.

To examine this, the one-way analysis of variance was employed. The result is presented in table 4.10 below;

Table 4.10 Descriptive Statistics of Safety Dimensions within VRA and BPA

Score	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
					Communication	214		
Training	214	3.87	.863	.062	3.74	3.99	2	5
PWE	214	3.46	1.021	.070	3.32	3.60	1	5
Safety Systems	214	4.10	1.030	.071	3.96	4.24	1	5
Knowledge	214	4.20	1.013	.069	4.07	4.34	2	5
Motivation	214	3.99	.878	.062	3.87	4.11	2	5
MCS	214	2.21	.907	.062	2.09	2.33	1	5
PSP	214	4.06	.862	.061	3.94	4.18	2	5
PFP	214	1.90	.955	.065	1.77	2.03	1	5

Table 4.11 ANOVA for safety climate dimensions

	Sum of Squares	df	Mean Square	F
Between Groups	1219.565	8	152.446	169.188*
Within Groups	1684.050	1869	.901	
Total	2903.615	1877		

*P<0.01

Table 4.10 above presents the means and standard deviations of the various dimensions of safety climate within the organizations. Table 4.11 explains the one-way ANOVA, indicating a statistically significant difference in the means of the 9 dimensions of Safety Climate ($p < 0.01$).

The results invariably implies that all the dimensions of safety climate can be considered independent of each other. Hence the hypothesis was supported that indeed there is a significant difference among the dimensions of safety climate pertaining in the power generation companies.

The one-way analysis of variance (ANOVA) is used to compare means of three or more samples since two-group variances can be tested using a t-test (Gosset, 1908). This justifies the use of this method since there were 9 variables in this present study.

Again, from table 4.10, safety knowledge had a mean of 4.20 (SD=1.013) being the highest dimension Safety Systems recorded a mean value of 4.10 (SD=1.030). Priority of Safety on Plant recorded the third highest mean of 4.06 (SD=.862). Safety Motivation had a mean of 3.99 (SD=.878). Safety Training recorded the fifth highest mean of 3.87 (SD=.863). Safety communication recorded a mean of 3.59 (SD=.981). Again, Physical Work Environment had a mean of 3.46 (SD=1.021). Additionally, Management Commitment to Safety recorded a mean of 2.21 (SD=.907). Finally, Pressure for production reported the least mean of 1.90 (SD=.955) which is quite expected per the researcher's speculation. With specific dimensions as safety knowledge, safety systems and priority of safety scoring the highest means, it is not out of place to suggest that indeed there is some level of

seriousness given to safety within these power generation companies thereby resulting in technical workers forming these perceptions.

4.4.2 Hypotheses 2

The second objective of the research was to examine the effect of pressure for production on employee safety behavior. Thus the researcher hypothesized as follows;

H2: There is a significant negative relationship between pressure for production and safety behavior

Using the simple linear regression to test the hypothesis, the results are tabulated in Table 4.12 below;

Table 4.12: Summary of simple linear regression for relationship between Pressure for Production and Safety Behaviour

Model	Unstandardized Coefficients		Standardized Coefficients	t	
	B	Std. Error	Beta		
1	(Constant)	43.448	1.083	40.120**	
	PFP	-.476	.117	-.270	-4.076**

a. Dependent Variable: Safety Behaviours

b. Note: $R^2 = 0.07$

c. ** $p < 0.05$

As shown in Table 4.12 above, there is a significant negative relationship between pressure for production and safety behavior ($\beta = -.270$, $p = .000$). 7% of the variation in safety behavior was explained by pressure for production. The hypothesis was therefore

supported. The result implies that as technical workers perceive the pressure on production to be high, they in turn work around safety procedures and practices to get the work done, thereby engaging in unsafe behaviors.

Having examined the effect of pressure for production on employees safety behavior measured on a composite scale, the researcher further examined the effect of pressure for production on the safety behavior of employees using the facets of the safety behavior scale (i.e., Safety compliance and Safety participation). Thus the researcher further hypothesized as follows:

H2a: There is a significant negative relationship between Pressure for Production and Safety Compliance.

A simple linear regression was used to test the above hypothesis as presented in Table 4.13 below;

Model	Unstandardized Coefficients		Standardized Coefficients	t	
	B	Std. Error	Beta		
1	(Constant)	18.096	.527	34.311**	
	PFP	-.160	.057	-.190	-2.823**

a. Dependent Variable: Safety Compliance
 b. R²= .036
 c. **p< 0.05

Table 4.13 shows a significant negative but weak relationship between pressure for production and safety compliance ($\beta = -.190$, $p = .018$). The table shows an R² of .036 indicating that approximately 4% of the variation in safety behavior specifically, employee

safety compliance is explained by Pressure for production. Hence the hypothesis was supported. The rather minimal variation in safety behavior of 4% in relation to respondents' compliance to safety gives indications that respondents indeed may be hesitant in going contrary to safety guidelines and procedures within the power generation companies.

The researcher tested the effect of pressure for production on employee safety participation. Thus the researcher further hypothesized as follows:

H_{2b}: There is a significant negative relationship between pressure for production and safety participation.

A simple linear regression was used to test the above hypothesis as presented in Table 4.14 below;

Model	Unstandardized Coefficients		Standardized Coefficients	t
	B	Std. Error	Beta	
1	(Constant)	25.351	.699	36.253**
	PFP	-.315	.075	-.276

a. Dependent Variable: Safety Participation
b. R² = 0.076
c. **p < 0.05

Table 4.14 shows a significant negative relationship between pressure for production and safety participation ($\beta = -.276$, $p = 0.00$). The table further depicted an R² of .076 depicting that approximately 8% of the variation in safety behavior, specifically safety participation

was explained by pressure for production. Hence the hypothesis was supported. The results gives the indication that as employees perceive an increase in pressure to produce, they tend to reduce their “safety specific citizenship” behaviours with examples such as identifying and reporting hazards, making suggestions to improve safety and correcting colleagues who engage in unsafe acts.

4.4.3 Hypotheses 3

The third objective of the study was to find out the effect of management commitment to safety on employees safety behaviors. Thus the researcher hypothesized as below:

H3: There is a significant positive relationship between Management Commitment to Safety and safety behavior

To test for the hypothesis, a simple linear regression was employed. The results are tabulated in table 4.15 below;

Table 4.15: Summary of simple linear regression for the relationship between management commitment to safety and Safety behavior					
Model	Unstandardized Coefficients		Standardized Coefficients	t	
	B	Std. Error	Beta		
1	(Constant)	44.146	1.307	33.765**	
	MCS	.419	.110	.254	3.825**

a. Dependent Variable: Safety Behaviours
b. R²= 0.065
c. **p< 0.05

Table 4.15 above shows a significant positive relationship between MCS and SB ($\beta = .254$, $p = .000$). The table further depicts that, 6.5% of the variation in safety behavior was explained by management commitment to safety. Hence the hypothesis was therefore supported. The results point out that as employees perceive management to be committed to safety they in turn engage in safe behaviors (compliance and participation) within their companies.

4.4.4 Hypothesis 4

The researcher further examined the effect of priority of safety on safety behavior as hypothesized below;

H4: There is a significant positive relationship between Priority of Safety on Plant and Safety Behavior

A simple linear regression was undertaken to establish the effect of priority of safety on employee safety behavior as presented in table 4.16 below;

Table 4.16: Summary of simple linear regression for the relationship between priority of safety on plant and Safety behavior				
Model	Unstandardized Coefficients		Standardized Coefficients	t
	B	Std. Error	Beta	
1	(Constant)	23.812	1.586	15.011**
	PSP	.794	.077	.577

a. Dependent Variable: Safety Behaviours
b. $R^2 = .333$
c. ** $p < 0.05$

Table 4.16 shows a significant positive relationship between MCS and SB ($\beta = .577$, $p = .000$). The table further depicts that, 33% of the variation in safety behavior was explained by priority of safety on plant. Hence the hypothesis was supported. This invariably implies that as respondent perceive the priority of safety on plant to be high they tend to exhibit positive safety behaviors (safety compliance and safety behavior).

Hypotheses 5 and 6

Again, the research sought to examine the moderating effects of MCS and PSP on the relationship between PFP and SB respectively. To this end the following hypotheses were proposed;

H5: Management Commitment to Safety will moderate the relationship between Pressure for Production and Safety Behavior.

H6: Priority of Safety on Plant will moderate the relationship between Pressure for Production and Safety Behavior.

Moderation Analysis

Two major statistical tests were used to analyze hypotheses 5 and 6. These were the Pearson's Product-Moment correlation coefficient test and the Hierarchical Multiple Regression. Specifically, the procedure proposed by Baron and Kenny (1986) was used to test for the moderation effects. The interrelationships between the independent variables, moderators and criterion variables in the study were explored using the Pearson's Product-Moment correlation coefficient test. The results are presented in table 4.17 below.

Table 4.17 Pearson-Product Moment Correlations between the variables in the Study

		Pressure for Production	Management Commitment to Safety	Safety Behaviors	Priority of Safety
Pressure for Production	Pearson Correlation	1			
	N	214			
Management Commitment to Safety	Pearson Correlation	.234**	1		
	N	214	214	214	
Safety of Behaviors	Pearson Correlation	-.270**	.254**	1	
	N	214	214	214	
Priority of Safety	Pearson Correlation	-.280**	-.193**	.577**	1
	N	213	213	213	213

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

Results from Table 4.17 indicate that almost all the independent variables related significantly with the dependent variable. Thereby providing the basis for the possibility of a moderation analyses. With the Pearson's Product-Moment correlation coefficient test whenever it was necessary to interpret the magnitude of findings presented as correlation coefficients, the descriptors developed by Davis (1971) were used as follows:

- .70 or higher indicated very strong association
- .50 - .69 indicated substantial association
- .30 - .49 indicated moderate association
- .10 – .29 indicated low association
- .01 - .09 indicated negligible association.

Moderation occurs when a variable changes the relationship between an IV and a DV. This means that the moderator variable (MV) interacts with the IV to create change and this change is dependent on the level of the moderator. The moderation model puts to test that a continuous variable Y (DV) is a linear function of continuous variable X (IV), but that the slope for the regression of Y on X varies across levels of a moderator variable (MV). Simply put, moderator effects are indicated by the interaction of IV and the MV in explaining the DV. The moderator hypothesis is supported if the interaction term is significant. For a moderation effect to occur, a significant relationship between the predictor variable and the criterion variable must be established (Kenny, 2009). Hierarchical Multiple Regression analysis was employed to test for the significance of the increment in criterion variance explained by the interaction term beyond the variance accounted for by the main effect variable. It was used to test for the moderation effects of management commitment to safety and priority of safety on plant on the relationship between pressure for production and the safety behaviour of technical workers.

The procedures proposed by the earlier researchers in moderation analysis were employed in this study since it is the most valid and reliable in attaining required effects. According to Baron and Kenny (1986), testing for moderation effects requires four steps as follows:

1. Centre (standardize) both the predictor & the moderator. Centering is a linear transformation method which eliminates problems associated with multicollinearity. It is achieved by subtracting the mean value for a variable from each score for that variable (Aiken & West, 1991; Lingard & Francis, 2006).

2. Calculate the interaction term (i.e. predictor X moderator) using the standardized values.
3. Regress the outcome variable on the predictor, moderator, and their interaction. That is, in the hierarchical regression analysis, the predictor should be entered in the first block, the moderator(s) in the second block and the interaction terms in the third block.
4. If the interaction effect is significant (i.e. if β of predictor X moderator is significant), then there is a moderation effect. However, if the interaction term is not significant, there is apparently no moderation.

H5: Management Commitment to Safety will moderate the relationship between Pressure for Production and Safety Behavior.

Hierarchical multiple regression was conducted on this and the results are presented in Table 4.18 below.

Table 4.18 Summary of Hierarchical Multiple Regression for the Moderation Effect of Management Commitment to Safety on Pressure for Production and Employee Safety Behavior

	<i>B</i>	<i>Seβ</i>	<i>B</i>	<i>F</i>	<i>P</i>
Step 1					
Constant	43.448	1.086			
Pressure for Production	-.476	.117	-.270*	-4.066	.000
Step 2					
Constant	46.438	1.451			
Pressure for Production	-.392	.118	-.222	-3.330	.001
Management Commitment to safety	.333	.110	.202*	-3.026	.003
Step 3					
Constant	47.756	2.782			
Pressure for Production	-.562	.327	-.318		
Management Commitment to safety	.445	.229	.270	1.944	.000
Pressure for Production x Management Commitment to safety	.014	.025	-.135*	.556	.000

Note. $R^2 = .073$, $.111$ and $.113$ for steps 1, 2, and 3 respectively, $\Delta R^2 = .073$, $.039$ and $.001$ for steps 1, 2, and 3 respectively. $p < .05^*$

Pressure for Production has a significant negative relationship with employee safety behavior as shown by the table ($\beta = -.270$, $p = 0.000$). Following this it was hypothesized that management commitment to safety will moderate the relationship between pressure for production and employee safety behavior. This prediction is accordingly supported by the data. The interaction term between pressure for production and management commitment to safety on employee safety behavior was statistically significant [$\beta = -.135$, $p = .000$]. The

interaction term accounted for 11.3% ($R^2 = .113$) of the variance in the criterion variable (i.e. employee safety behavior). Thus, although MCS did not necessarily change the direction of the relationship between PFP and SB ($\beta = -.270$, $p=0.000$), it reduced the effect of pressure for production on safety behavior ($\beta = -.135$, $p=0.000$).

The last objective of the study was to find out the moderating effect of priority of safety on plant on the relationship between pressure for production and employee behavior. The researcher hypothesized that;

H6: Priority of Safety on Plant will moderate the relationship between Pressure for Production and Safety Behavior.

To test for hypothesis 6, a hierarchical multiple regression was employed as presented in table 4.19.

Table 4.19 Summary of Hierarchical Multiple Regression for the Moderation Effect of Priority of safety on plant on Pressure for Production and Employee Safety Behavior

	<i>B</i>	<i>SEβ</i>	<i>B</i>	<i>F</i>	<i>P</i>
Step 1					
Constant	43.448	1.086			
Pressure for Production	-.476	.117	-.270*	-4.066	.000
Step 2					
Constant	26.416	2.035			
Pressure for Production	-.207	.103	-.117	-2.019	
Priority of Safety	.749	.080	.544*	9.364	.000
Step 3					
Constant	21.948	3.220			
Pressure for Production	.276	.289	.156		
Priority of Safety	.986	.155	.717	6.362	.000
Pressure for Production x Priority of Safety on plant	-.027	.015	.235*		.018

Note. $R^2 = .073, .346$ and $.356$ for steps 1, 2, and 3 respectively, $\Delta R^2 = .073, .273$ and $.010$ for steps 1, 2, and 3 respectively. $p < .05^*$

Pressure for Production has a significant negative relationship with employee safety behavior as shown by the table ($\beta = -.270, p = 0.00$). Following this it was hypothesized that priority of safety will moderate the relationship between pressure for production and employee safety behavior. This prediction is accordingly supported by the data ($\beta = .235, p = 0.018$). The interaction effect between pressure for production and priority of safety on

employee safety behavior was statistically significant [$\beta = .235, p = .018$]. The interaction term accounted for 35.6% ($R^2 = .356$) of the variance in the criterion variable (i.e. employee safety behavior). This implies that, although there existed a negative relationship between PFP and SB ($\beta = -.270, p = 0.000$) the introduction of PSP as a moderator changed the changed the direction to a positive relationship ($\beta = .235, p = .018$).

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.0 Introduction

The previous chapter presented details on the statistical analyses carried out on the study with interpretation of the results. This chapter presents further discussion on the study results in line with the study objectives and within the context of the existing relevant literature.

5.1 Summary of Findings

The study was aimed at finding the effect of the pressure placed on the power generation companies in Ghana as a result of the current power crisis ('Dumsor') on employees' safety behavior and whether management commitment to safety and safety priority on plant play relevant roles in the relationship.

Relationships were tested at the individual as well as the group level. Results from the analyses performed showed a significant difference among the dimensions of safety climate examined within Ghana's power generation companies. Again, there was a significant negative relationship between the pressure for production and employee safety behavior including compliance and participation. In addition, there was also a significant positive relationship between the two moderating dimensions – management commitment to safety and priority of safety on plant - and employees' safety behavior. That is to say as employees perceived their management's commitment to safety and priority of safety on plant to be on the higher side they tend to exhibit positive safety behaviors (compliance and participation in safety activities).

It was also identified that, although there existed a strong positive safety climate within these companies, the perceived pressure for production had a negative effect on the safety behavior of employees. This negative relationship continued to be present when management commitment to safety was introduced as a moderator. However, when safety priority on plant was introduced as a moderator the direction of the relationship was changed from negative to positive.

5.2 The Socio-Demographic Analysis of the Data

According to a Ghana Statistical Service report on the 2010 population and housing census, out of a total population of about 24 million, there are more females than males. The number of females totaled, 12, 633,978 representing 51.2% while males totaled 12,240,845, which also represented 48.8% of the total population.

Drawing from the above information, it could be anticipated to see females domination in all sectors of the economy, but ironically this is not the case and especially among the technical workers of the power generation industry in Ghana.

However, the wide disparity in percentage between males and females could be attributed to the intensity and the nature of the work and the kind of life threatening dangers that technical employees are daily exposed to. It could also be for the fact that, society in itself dictate or put into categories the type of work suitable for both men and women. The African and Ghanaian society see women or females as the weaker sex, perhaps as a result of the misinterpretation of the Holy Bible (1 Peter 3:7) and therefore do not encourage women to engage in certain kinds of labor intensive work, for which the power generation

industry is no exception. A recent survey in the United Kingdom revealed that young females drop academic subjects or barely struggle to pass subjects needed to study engineering such as math and physics. This invariably had resulted in the remarkably low rate of females working in the industry, with only 8% of British engineers being females (Rankin, 2014).

From the data gathered most of the respondents were aged between 21-40 years with the majority of the respondents having been employed in the industry for one to five years. It could be asserted from the data that although youthful passion, vigor and exuberance would be an indispensable asset in such an industry where production demand is high and work is intensive, greater safety measures however must be taken by management considering that most of the workers were young (57.4%). The justification for this assertion is seen in previous studies which show a high rate of unsafe behavior among young workers resulting in injuries and accidents (Breslin & Smith, 2005; Hall, Gerard & Toldo, 2011).

Another interesting finding on the length of service of the respondents indicated that majority of the respondents (over 50%) were new to their companies having served between 1-5 years. It can be said that since they are new to their organization, they may be at the early stages of adapting to existing safety work rules, cultures and practices. This could imply that, there is the possibility of them compromising on safety when they perceive production pressures. It is also interesting to note that, it is among such 'green horns' that management is likely to get a high level of compliance to safety policies and practices (Bosak et al., 2013) once they perceive that management is committed to their safety and wellbeing.

Again, it is not surprising to discover from the data gathered that majority of respondents were HND holders from the polytechnics. It is because these institutions were specifically established to train highly technical-skilled and middle-level professionals to drive technical advancement in the country and beyond. Thus, having most of them feature in the study organizations (VRA and BPA) two technical organizations is not eccentric.

5.3 Findings on Hypotheses Testing

The study sought to address six main hypotheses which were the following:

Hypothesis 1 predicted that, there would be a positive safety climate within the power generation companies in Ghana. This hypothesis was tested using the one-way ANOVA after the means and standard deviations as well as the differences in variances among nine safety climate dimensions have been ascertained. The findings showed that all the safety dimension had positive means and there indeed existed a significant difference amongst them with Safety Knowledge having the highest mean. This was followed by safety systems and Priority of safety on plant. This hypothesis was thus supported. The three leading dimensions of safety climate from the study have all through literature been suggested to be positive indicators of a healthy safety climate. Safety Knowledge was identified by Neal, Griffen and Hart, (2000) to have a stronger relationship with compliance among Australian hospital workers. They identified that an employee must comprehend how to perform work safely and must adequately have the skill to be able to do it in order to comply with safety procedures. Invariably it presupposes that how much an employee knows about safety will result in how they behave safely. With a high mean of 4.20,

respondents tend to allude to the fact that they are well knowledgeable on safety matters. Safety seminars and training ($x = 3.87$) may have resulted in this. Christian et al., (2009) also confirmed a correlation between safety knowledge and safety compliance. Again, according to Flin et al., (2000), the safety system of an organization encompasses aspects of the organization's safety management system, including safety committees, safety officers, safety equipment and safety policies. These are all visible and operational in especially the Volta River Authority which had been commended for its high level of occupational safety and giving top priority to the safety of its staff at all its facilities (vraghana.com/news-07 assessed on 26/02/2015). Gard, (2002) posits that to a larger extent safety committees can be seen as an indirect measure of management commitment towards safety and a measure to which safety communication flows between workers and management (Cooper, 1998). It was however observed that management commitment to safety when measured separately scored a low mean of 2.21. This could be due to the assumption that employees rather see the safety systems (as a 'snapshot') separately from the commitment of management to safety issues on the plant (Niskanen et al., 2012). Providing support for this assumption is the commitment of management to having a dedicated resident safety officer in all their plants. The safety officer is responsible for coordinating all safety briefings, hazard identification, etc. The rather low mean score for MCS is not to say that management is at fault or that managers intentionally act to undermine safety issues (Gadd, 2002) rather management may have had little health and safety training which has resulted in they having limited understanding of their legal and corporate responsibilities within the area (Fuller, 1999). Most often, safety officers do not wield much authority and influence to improve health and safety issues on their own. Hence

managers would need to be made cognizant of how they can undermine any health and safety initiative through their obdurate behavior. Again, it could be that the current pressure on management to ensure reliable and constant has caused their attention to be focused on production and not on safety.

Hypothesis 2 predicted that, there would be a significant negative relationship between pressure for production and employee safety behavior. This hypothesis was analyzed using simple linear regression and it revealed a significant negative relationship between pressure for production and safety behavior. This hypothesis was thus supported. The finding supports earlier studies by Bosak et al., (2013) who postulate that work pressure has an effect in predicting employee safety behavior. A study by Dickety et al., (2002) within the foundry industry revealed that work pressure as they termed it resulted in workers exhibiting unsafe behaviors such as cutting corners and committing unsafe acts. A common practice identified was the lifting of heavy castings manually thereby exposing workers to strain injuries as some felt that using mechanical lifting devices were too cumbersome and slowed down production and non-attainment of job quotas. It is quite interesting to note from the previous hypothesis that though there exist a high positive safety climate within these institutions, the perceived pressure for production leads to employees' unsafe behaviors.

The study results indicated a significant negative but weak relationship ($\beta = -.198, p < .05$). This may not necessarily imply that these technical workers of the study institutions have habitual unsafe behavior. However the perceived pressure for production is a causal factor in their unsafe behavior. Seo's, (2005) study of machine-paced line workers in the grain

industry suggested that bearing in mind their “low decision latitude” (p.42), employees’ perceived pressure to produce would likely lead to an increase in psychological stress among them (Karasek and Theorell, 1990), which may, in turn, increase the probability of engaging in unsafe behaviors. Li et al., (2012) also supported this, stating that under production pressure employees might utilize more ‘short cut’ work methods once they perceive that there is not enough time to follow safety procedures and this in-turn may result in higher frequency of unsafe behavior.

In another vein, the negative weak relation could be explained by the social learning theory (Bandura, 1977) which states that people learn by cognitively processing observed actions and information (Stride et al., 2012). This suggests that workers may not necessarily be prone to unsafe behaviors when under pressure however, when they witness their co-workers behaving in an unsafe way at their own peril, they are likely to infer that such a behavior may be necessary to complete work tasks resulting in disregard for following safety rules (safety compliance) and improving safety at work (safety participation). This may also give indications to the existence of unsafe sub-cultures existing within work groups or teams (Gadd, 2002). Perhaps, having a youthful workforce noted for adventure exuberance with their macho attitude may ignore safety issues under pressure. Also with majority of the participant’s haven stayed in the organization for a shift period, they must have learnt these from senior colleagues.

Recent demands from the Ghanaian organized labor tend to suggest that the reasons for the erratic power outages (‘dumsor’) is as a result of ‘incompetent’ engineers and technicians within the power generation companies. In a bid to clear up these accusations, management of the power generation companies are under pressure to generate more power to meet the

energy demands for both domestic and industrial consumers. The pressure on management has been transferred unto employees through the implementation of overtime hours for technical staff. Seo (2005) citing Leigh (1986) suggests that people who worked overtime had roughly 50% greater chance of experiencing accident or industrial injuries as a result of their high tendencies to work around safety procedures to meet quotas. This was affirmed by Lusa et al.,'s (2002) study which showed a high rate of unsafe behavior among firefighters in Finland who worked overtime. Thus the pressure put on power generation companies to meet the energy requirements of the nation is increasingly leading to reduced effort in the area of safety and hence of unhealthy safety behaviors in supposed organizations with positive safety climate.

Hypothesis 2a predicted that, there would be a significant negative relationship between pressure for production and safety compliance. This hypothesis was tested using simple linear regression and the result showed a significant negative relationship between pressure for production and safety compliance. Thus, the hypothesis was supported. Ray et al., (1993) and Brown, (1996) postulate that across several industrial settings, employees are always at the crossroad in deciding on compliance with safety rules and support for production quotas. A study in the steel industry by Brown et al., (2000) suggest that workers felt that if they followed safety procedures they would not be able to meet production bonuses, or even the security of their jobs may be on the line. Indeed, it is well documented that the various personal protective equipment (PPE) used in most organizations sap a lot of energy. Thus, under time pressure, which seem to be the case

with power generation companies in Ghana, employees are more likely to do away with their PPE's just to conserve some energy to meet the time pressure.

It may be argued that being under pressure could get employees to lose their sense of cognition or reasoning hence they not complying with safety regulations.

Hypothesis 2b predicted that, there would be a significant negative relationship between pressure for production and safety participation. This hypothesis was tested using simple linear regression and it revealed a significant negative relationship between pressure for production and safety participation. Thus, the hypothesis was supported. This is further explained by Clarke and Cooper's (2004) study which identified that pressure to meet production target resulted in employees deviating from safety rules that impede their progress or executed tasks with less care. These workers again, gave no reasonable care to the safety of their colleagues on site.

Again, using the Conservation of Resources Theory (COR) propounded by Hobfoll (1989), which postulated that human beings by our very nature will want to conserve resources other than deplete them. Since safety participation requires the use of personal resources (time and energy), it will be difficult to find employees participating in safety when they have competing demands for their limited resources (time and energy).

Hypothesis 3 predicted that, there would be a significant positive relationship between management commitment to safety and employee safety behavior. This hypothesis was tested using simple linear regression and it showed a significant positive relationship

between management commitment to safety and employee safety behavior. Hence the hypothesis was supported. This is not surprising as literature shows that management commitment to safety is key in predicting safety behavior (Cheyne et al., 1998; Griffin & Neal, 2000). This is in consonance with Zohar's (2002) assertion that the effect of perceived managerial practices and support for safety is an important determinant of safety behavior and hence creating a safe work environment. McLain and Jarrel (2007) have explained this effect by suggesting that management commitment to safety results in employee trust in management which in turn leads to reduction in the need for employees to divert attention to safety hazards while performing assigned duties and a greater information sharing about safety and safety actions. Actions of management such as provision of Personal Protective Equipment's (PPE's), 'walking the safety talk', investing resources in creating a safe work environment send cues to employees as to which behaviors are likely to be supported and those which are not (Bosak et al., 2013; Morrow et al., 2010). Grosch et al., (1999) also found that management commitment to safety was one of three safety climate dimensions (along with job hindrances and feedback/training) that was positively associated with nurse's compliance with universal precautions. In the construction sector Sawacha et al., (1999) sought to pinpoint factors which influence safety. They found "top" management's attitudes towards safety to be a significant factor in safety behavior as measured by their accident record on sites. Indeed, safety citizenship behavior which is no different from safety participation has been found to emerge as a result of management commitment to safety.

These could be explained based on the theory of social exchange; workers who perceive that management are concerned about their safety would reciprocate in safety related

exchanges like complying with established safety standards – compliance - as well as actively caring for the safety of their colleagues - participation (Adutwum, 2010; Blau, 1964).

Hypothesis 4 predicted that, there would be a significant positive relationship between priority of safety on plant and employee safety behavior. This hypothesis was tested using simple linear regression and it revealed a significant positive relationship between priority of safety on plant and employee safety behavior. Hence the hypothesis was supported. The finding is in consonance with Naveh et al.'s (2005) assertion that a high priority of safety within an organization results in a positive safety behavior. Again the finding is confirmed by Fleming's (1999) study among offshore workers which revealed that 19% of the variance in employees' safety behavior was explained by the priority of safety in the work environment. Bosak et al. (2013) had established that a high priority of safety on plant is likely to stimulate employees to take superior possession of and responsibility for their personal safety and that of others.

Indeed, priority of safety, which is a demonstration of management commitment to safety sends a clear signal to employees as to the safety tolerance levels of management and hence encourages positive safety behavior.

Hypothesis 5 predicted that, Management commitment to safety will moderate the relationship between pressure for production and employee safety behavior. This hypothesis was tested using hierarchical multiple regression and it revealed that indeed

Management commitment to safety did moderate the relationship between pressure for production and employee safety behavior. This prediction was accordingly supported by the data. The interaction term between pressure for production and management commitment to safety on employee safety behavior was statistically significant [$\beta = -.135$, $p = .000$]. The interaction term accounted for 11.3% ($R^2 = .113$) of the variance in the criterion variable (i.e. employee safety behavior).

This implies that indeed Management commitment to safety has a diminishing effect on the relationship between pressure for production and safety behavior. This current findings supports earlier studies by Fernandez-Muniz et al., (2011) in which they indicated; the more committed management are to safety, the more likely they will reward workers' safety behavior and transmit the information workers need to be able to do their work with maximum safety, thereby reducing the level of work pressures workers will face in completing their work quickly. Thus in the face of pressure for production, management commitment to safety is a surety to either eliminate the unsafe behaviors that comes with pressure of production or reducing it to the barest minimum.

Indeed assessing the capacity of employees and making realistic demands of them is in itself a demonstration of management commitment to safety which has the potential of reducing employees' unsafe behaviors. Showing commitment to safety by providing the needed training, PPE's and insisting in safe practice even in the face of pressure is likely to reduce unsafe behaviors (Dedobbeleer & Beland, 1991) in the face of pressure of production if not eliminate it entirely.

Hypothesis 6 predicted that, Priority of safety on plant will moderate the relationship between pressure for production and employee safety behavior. This hypothesis was analyzed using hierarchical multiple regression and it revealed that indeed the safety priority on plant did moderate the relationship between pressure for production and employee safety behavior. This prediction is accordingly supported by the data. The interaction term between pressure for production and priority of safety on employee safety behavior was statistically significant [$\beta = .235, p = .018$]. The interaction term accounted for 35.6% ($R^2 = .356$) of the variance in the criterion variable (i.e. employee safety behavior). In the present study, this could be as a result of some inherent activities organized by the power generation companies such as Mid-week safety seminars, Annual safety week celebrations among others. This would have cued workers on the preeminence of safety as against other pressing factors such as productivity by supervisors and management. Supporting this assertion, DeJoy et al., (2010) in a Finnish survey postulated that, institutions where control-based methods and implementation strategies are highly prioritized always achieved good safety behaviors. Mearns et al., (2010) using the theory of exchange relationships, explained that as employees perceive and conclude that their organizations are investing in the health and well-being of workforce, they tend to reciprocate compliance (behavior) with safety rules that benefit themselves and the worksite as a whole. Indeed, as these generation companies invest heavily in the safety and wellbeing of employees, it sends a clear message of the extent to which safety is prioritized on the various plants. Hence, eliminating unsafe behaviors amongst the employees.

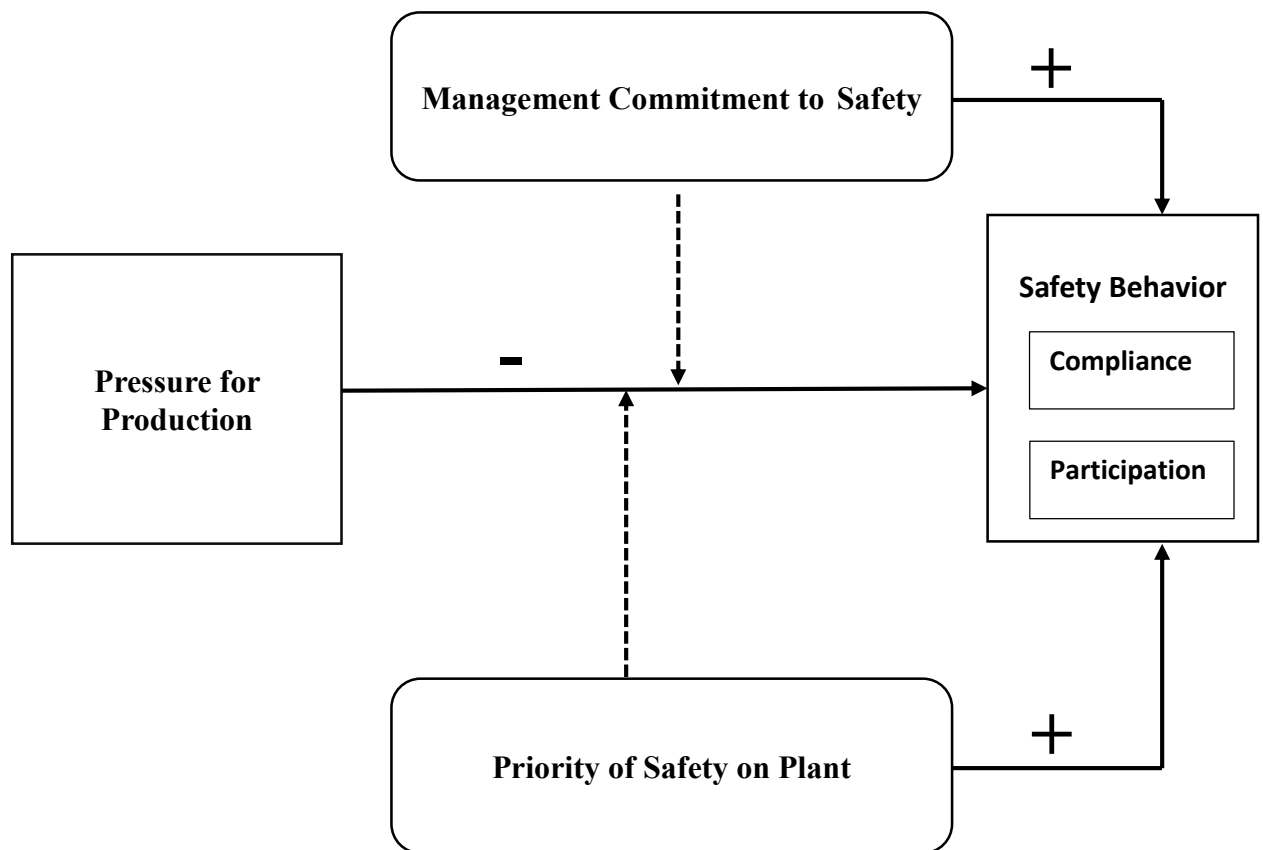
Figure 5.1 “DUMSOR” SAFETY FRAMEWORK after ANALYSIS

Figure 5.1 above shows the framework of findings after analysis. It shows a direct negative relationship between pressure for production and employee safety behavior which were categorized as safety compliance and safety participation. The commitment of management to safety and the priority of safety on plant both had a positive relationship with the safety behavior of employees. Again, both the priority of safety on plant and the commitment of management to safety moderated the negative relationship between pressure for production and safety behavior. Management commitment to safety reduced the negative relationship while safety priority on plant changed the direction of the relationship to a positive one.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter provides a summary of the findings. The chapter further gives the conclusion, recommendations and limitations of the study and suggestion for future research.

6.1 Summary of Findings

The study examined the safety climate within two power generation companies in Ghana (Volta River Authority and Bui Power Authority). It also investigated whether the erratic power supply in Ghana and its attendant pressure on power generation companies to produce affected employee safety behavior. Again it checked whether management commitment to safety and the priority of safety on plant played a role in the relationship. A total of 214 respondents participated in the study. The summary of findings is presented below.

It was observed that 79.4% of the respondents were males and this was ascribed to the labor intensive work that largely characterize the technical and engineering profession which was the focus of the study. Also, the study showed that most of the respondents held higher national diploma awarded by polytechnics which was expected. Furthermore, it was observed that a large number of the respondents were “youth”, and over 50% of the respondents had spent less than 5 years in their respective organizations.

In this study, the relationship between pressure for production and employee safety behavior among technical workers was tested. The findings showed that pressure for

production had a significant negative effect on employee safety behavior. Again, it was evident that when safety behavior was examined on a facet scale – safety compliance and safety participation; pressure for production had a significant negative effect on each of them.

Furthermore the relationship between management commitment to safety and employee safety behavior was also tested and the results was as predicted, management commitment to safety had a significant positive effect on employee safety behavior.

More so, the study examined the influence of priority of safety on plant on employee safety behavior. Again as was predicted, there existed a positive relationship between priority of safety and employee safety behavior.

The study finally examined whether the introduction of management commitment to safety and priority of safety on plant as moderator variables would influence the effect of pressure for production on employee safety behavior. Findings indicated that the two dimensions of safety climate moderated the relationship when tested individually with MCS reducing the negative relationship and PSP changing the negative relationship into a positive one.

6.2 Conclusion

The importance of safety climate for workers safety behavior has indeed been acknowledged all through the safety literature. It is with this notion that this research was conducted to examine whether the pressure placed on the power generation companies in Ghana as a result of the current power crisis (‘Dumsor’) has implications for employees’ safety behavior and whether management commitment to safety and safety priority on plant play relevant roles in the relationship.

There exist a strong positive safety climate within the power generation companies with safety knowledge, safety systems and priority of safety on plant as the highest dimensions.

Pressure for production had a negative relationship with employee safety behavior which comprised safety compliance and safety participation. This meant that as technical workers perceived pressure from management to produce, they tend to work around safety procedures to get the job done. Thus positive safety behavior is more likely to suffer in the face of increased pressure for production.

It was also observed that management commitment to safety and Priority of safety on plant all had a significant positive relationship with employee safety behavior. Thus as management showed commitment to the safety of employees on the plant it led to them exhibiting safe behaviors. On the other hand, as workers perceived a high precedence for safety rather than work speed and productivity, they in turn exhibited positive safety behaviors.

Management commitment to safety and priority of safety on plant when introduced as moderators indeed reduced and changed the negative relationship between pressure for production and employee safety behavior respectively.

6.3 Limitations of the Study

A limitation of the study is that data were collected in a single survey and from the same set of respondents during the time of erratic power supply; indicating the potential for the observed relationships to have been inflated or deflated by common variance method.

Another limitation was the composite nature in which the study variables were examined among the technical workers although they operated from different forms of power

generation (hydro, gas, thermal and steam). They all may have particular safety issues and concerns which would not come to bear when studies together. Thus, a comparative study among the forms for power plants would have best catered for the various safety concerns per plant.

6.4 Recommendations

Based on findings in the study, the following recommendations were made.

6.4.1 Recommendations for Management and Practice

In the value chain of power generation, all technical workers are major stakeholders playing critical roles in the primary activities of the Volta River Authority and the Bui Power Authority. Thus, management must effect changes in the perceived generation pressure by clearly communicating priorities and keeping safety visible during times of difficulties in power generation as the nation is experiencing now. This according to Bosak et al., (2013) would send signals to workers that management are indeed committed to their safety thereby building trust and encouraging positive exchange behaviors.

The safety literature suggest that safety-focused training is a key safety intervention (Huang et al., 2007). It is therefore imperative that management considers the potentially important role of job autonomy in promoting safety (Li et al., 2012). This is because job autonomy focuses on workers personal perceptions about one's latent control over the current task (Karasek, 1979). This would enable workers recognize their capacities and thereby curtail stress levels which is a known cause of unsafe behavior.

The Ghana Labor Law 2003 (Act 651), 118 (1) enjoins the employer to ensure that every worker employed by him or her works under satisfactory, safe and healthy conditions. As

long as the employer has this in place, it then behooves on him/her to ensure stringent reward and punishment structures to ensure workers comply with safety standards no matter the perceived pressure. This would instill a sense of discipline in the workers safety behavior.

There should be commitment from management to safety through training, provision and replacement of worn out PPE's and including safety as a performance measure which has been found to trigger positive safety behavior.

Management should demonstrate safety as a priority by instituting measures and policies on zero tolerance for unsafe behaviors. This should not just be in words but be reflected in their actions.

Management should assess the capacity of individuals and assign responsibilities that matches their capacities thus helping to eliminate the perceptions of pressure.

Finally, management should introduce a safety buddy system in which workers observe colleagues' safety behavior in routine tasks or establishing a forum for peer communication about their safety practices as this can be very strategic in ensuring safety behavior especially compliance among technical workers.

6.4.2 Recommendations for Future Research

The study focused on safety climate and was limited to three main dimensions based on prior studies of Bosak et al., (2013), Cooper and Phillips, (2004), Mearns et al., (1998) and Zohar, (2002). Future studies could consider other variables such as safety leadership (Lu & Yang, 2010), preventive planning (Fernandez-Muniz et al., 2007) and supervisor

management (Flin & Yule, 2004). Studies show that these dimensions play key roles in the attainment of positive safety behaviors amongst employees.

Future research could seek to explain how the safety climate dimensions influence safety performance outcomes, such as accidents or injuries.

The findings reflected the situation regarding safety at a particular moment in time ('dumsor'). Future studies might be conducted using the longitudinal approach to investigate the short and long term effects of pressure for production on employee safety behavior after the erratic power outages are over.

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APPENDIX A

SAMPLE QUESTIONNAIRE

Questionnaire

**University of Ghana Business School
Department of Organizational and Human Resource Management**

Dear Respondent,

This questionnaire aims at soliciting information for an MPhil thesis being undertaken to establish whether “Pressure for Production influences employees’ safety behaviour?” Your opinion is of most importance to the study and any information provided will be treated as **confidential** and for **academic purposes only**. This questionnaire will take less than 5 minutes to complete. There are **FOUR** sections. **Section 1** comprise Demographic Background; **Section 2**: General Safety Climate Scale (SCS) **Section 3**: Specific Safety Climate Scales (*Management Commitment to Safety, Priority of Safety on Plant, Pressure for Production*); **Section 4**: Safety Behaviour (*Safety Compliance and Safety Participation*) Thank You.

Email: johnlouisopata@ymail.com

Section 1: Demographic Background

1. Please tick your age

Below 21yrs [] 21 – 30yrs [] 31 – 40yrs []

41 – 50yrs [] 51 – 60yrs []

2. Gender:

Female [] Male []

3. Highest level of education achieved:

SSCCE/WASSCE/Technical Certificate [] High National Diploma []
] First Degree [] 2nd Degree []
] Other(s) [] Please specify:

4. How long have you been working with your company?

Below 1 years 1-5years 6-10years 11-15years
 More than 20years

5. Terms of Employment

Casual Worker Contract Worker Part-time Worker
 Consultant Full-Time Worker

6. What is your Job Title?

Labourer Technician Technician Engineer Engineer
 Other Please specify:

Section 2

Listed below are a number of statements that could be used to describe a variety of factors relating to the general safety climate within your workplace. Please read each statement carefully and indicate the extent to which you AGREE with each statement by ticking the appropriate number on the following scale.

1- Strongly Disagree 2-Agree 3-Not Sure 4-Agree 5-Strongly Agree

		1	2	3	4	5
a) Communication						
1	There is frequent communication about safety issues in this workplace					
2	Employees are able to discuss their concerns about safety issues with line management					
3	There is sufficient opportunity to discuss and deal with safety issues in meetings					
4	There is open communication about safety issues within this workplace					
5	Employees are regularly consulted about workplace health and safety issues					
b) Training						
1	Safety issues are given a high priority in training programs					
2	Workplace health and safety training covers the types of situations that employees encounter in their job					

3	Employees have sufficient access to workplace health and safety training programs					
4	Employees receive comprehensive training in workplace health and safety issues					
c) Physical Work Environment						
1	There are significant dangers inherent in the workplace					
2	The physical work environment is safe					
3	Employees are frequently exposed to risky situations					
d) Safety Systems						
1	Safety procedures and practices are sufficient to prevent incidents occurring					
2	The safety procedures and practices in this organization are useful and effective					
3	There are systematic procedures in place for preventing breakdowns in workplace safety					
e) Knowledge						
1	I know how to perform my job in a safe manner					
2	I know how to use safety equipment and standard work procedures					
3	I know how to maintain or improve workplace health and safety					
4	I know how to reduce the risk of accidents and incidents in the workplace					
f) Motivation						
1	I believe that workplace health and safety is an important issue					
2	I feel that it is worthwhile to put in effort to maintain or improve my personal safety					
3	I feel that it is important to maintain safety at all times					

4	I believe that it is important to reduce the risk of accidents and incidents in the workplace					
5	I believe that it is important to consistently use the correct personal protective equipment					
6	I believe that it is important to promote the safety program.					

Section 3

The following are a number of statements that could be used to describe a specific of factors relating to safety climate within your workplace. Please read each statement carefully and indicate the extent to which you AGREE with each statement by ticking the appropriate number on the following scale.

1- Strongly Disagree 2-Agree 3-Not Sure 4-Agree 5-Strongly Agree

		1	2	3	4	5
a) Management Commitment to Safety						
1	Some safety rules/procedures are only there to protect management					
2	If you say too much about safety they might fire you					
3	Management listen to safety concerns, but nothing ever gets done.					
4	My company will stop work due to safety concerns, even if it means they are going to lose money					
5	My management does not act on safety concerns					
b) Priority of Safety on Plant						
1	The standard of safety is very high at my work place					
2	I am allowed to stop work if I feel the job is unsafe.					
3	My supervisor frequently checks to see if workers are all following safety rules					
4	There are frequently checks to see if workers are all following safety rules					
5	There is insistence on wearing of personal protective equipment's (PPE) even if it is uncomfortable					
c) Pressure for Production						

1	Sometimes it is necessary to ignore safety rules/procedures to keep production going					
2	People in this plant are sometimes under pressure to put production before safety.					
3	As long as daily targets are achieved, my supervisor does not care whether we worked by the safety rules or not					
4	Taking short cut to get a work done quickly is accepted among members of my work crew as long as everything goes well and nothing happens					
5	Whenever we fall behind schedule and we are not achieving daily targets, my supervisor wants us to work faster rather than by the rules					

Section 4

The following are a number of statements that could be used to describe Safety Behavior of workers in response to the Safety Climate at the workplace. Please read each statement carefully and indicate the extent to which you often show with each statement by ticking the appropriate number on the following scale.

1 - Never

2 - Seldom

3 - Often

4 - Very Often

		1	2	3	4
<i>Safety Behaviors</i>					
	<i>Safety Compliance</i>				
1	I ensure the highest levels of safety when I carry out my job				
2	I will report colleagues who break safety rules to supervisor				
3	I attend attending safety meetings and briefings				
4	I put in extra effort to improve the safety of the workplace				
5	I use the correct safety procedures for carrying out my job				
	<i>Safety Participation</i>				
6	I warn a colleague for his / her unsafe act				
7	I report to my supervisor when colleagues break any safety rule				
8	I report injury to my supervisor no matter how small it is				
9	It is important to help my co-workers in unsafe or hazardous conditions				

10	I find it worthwhile to be involved in the development of safety standards				
11	I voluntarily carry out tasks or activities that help to improve workplace safety				
12	I help my coworkers when they are working under risky or hazardous conditions				