

**UNIVERSITY OF GHANA**

OCCUPATIONAL HEALTH AND SAFETY AS A PREDICTOR OF COMMITMENT  
AMONG WORKERS IN THE GHANAIAN MINING SECTOR

BY

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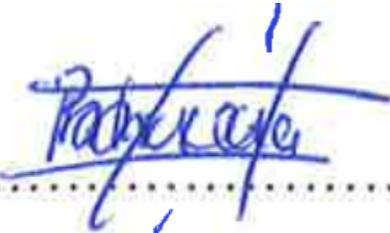
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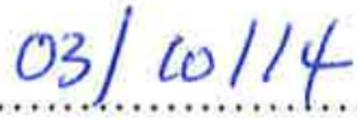
**DECLARATION**

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 therefore bear sole responsibility for any shortcomings.



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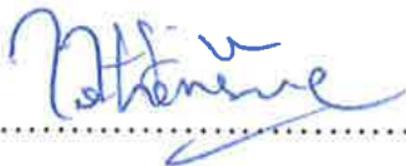


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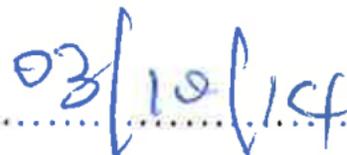
**CERTIFICATION**

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



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DATE



## DEDICATION

I dedicate this work to my father, Mr. John Eduku Muah and to all my siblings for their support and encouragement.

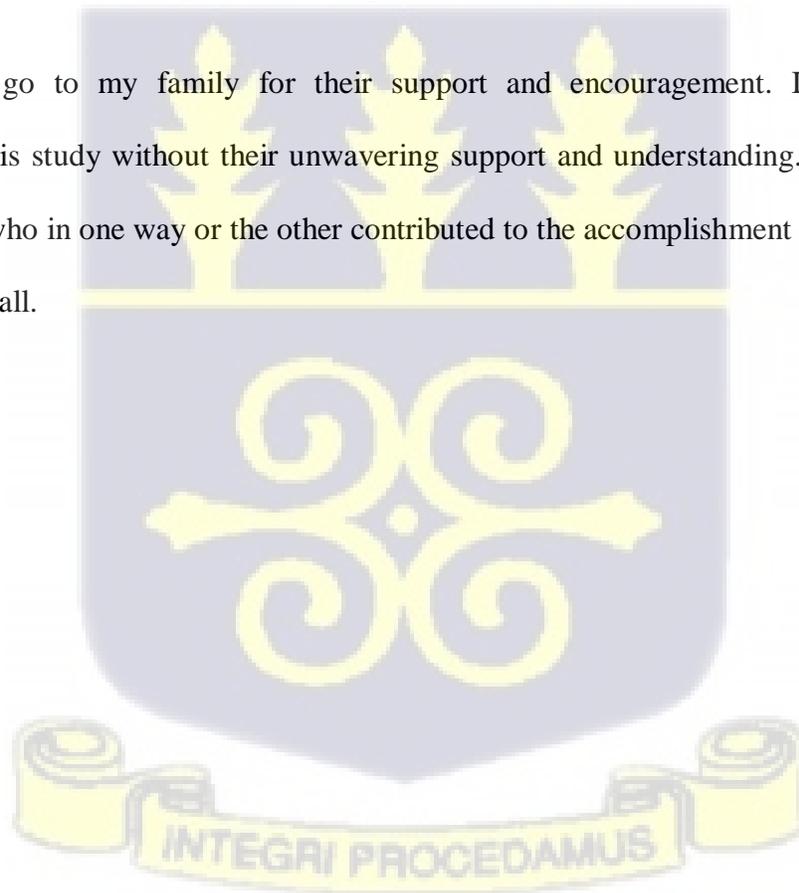


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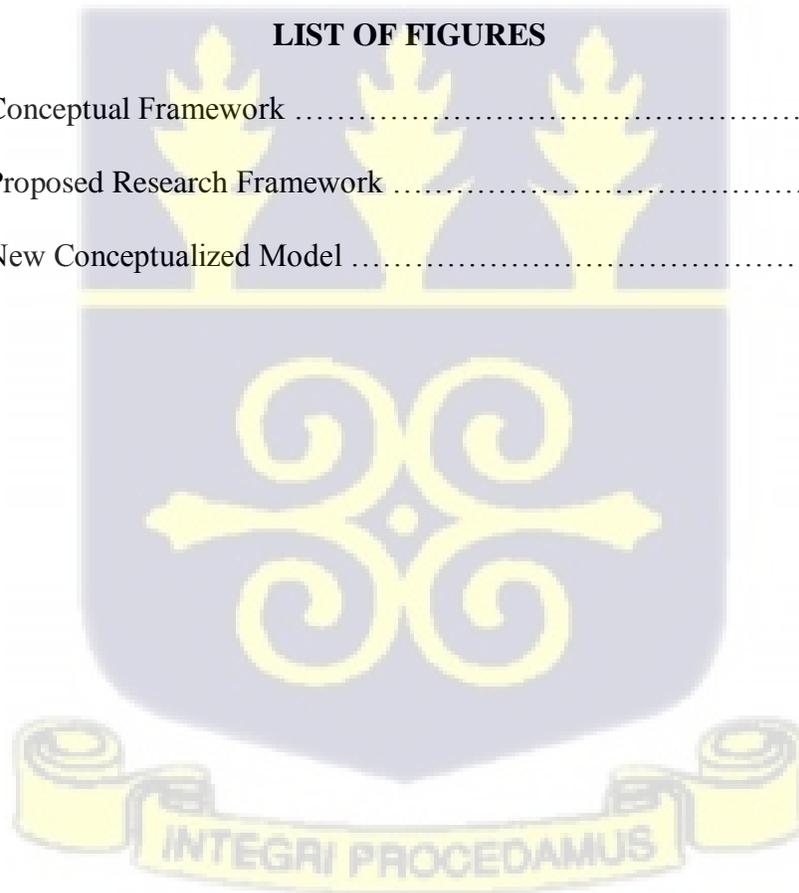


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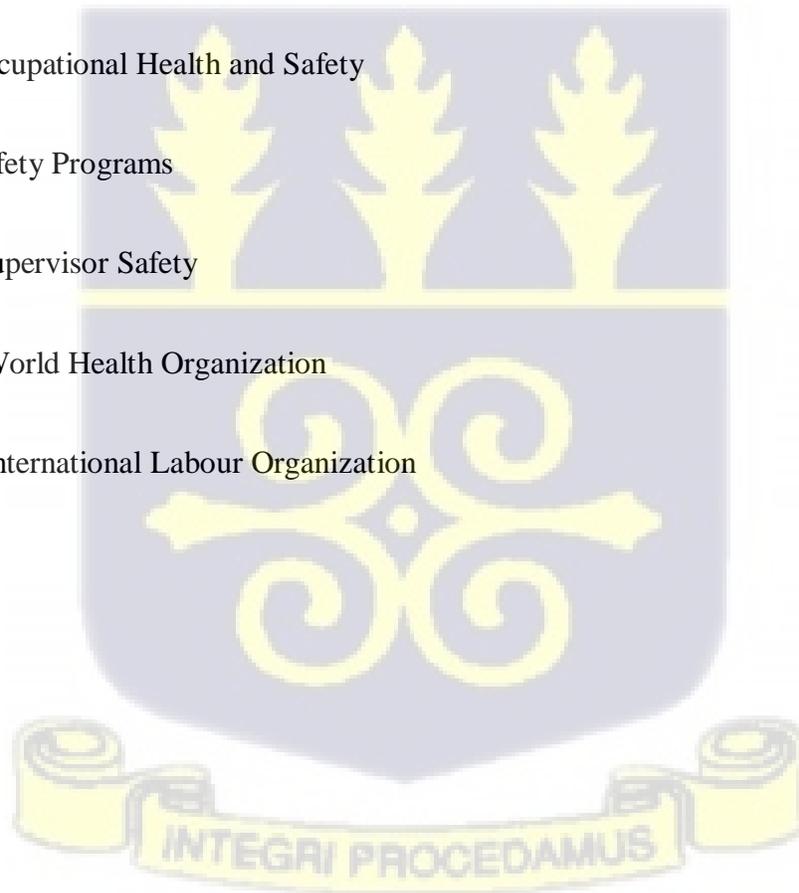
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## LIST OF ABBREVIATIONS

AFC	-	Affective Commitment
COC	-	Continuance Commitment
CWS	-	Co-Worker Safety
JS	-	Job Safety
MSP	-	Management Safety Practices
NOC	-	Normative Commitment
OC	-	Organizational Commitment
OHS	-	Occupational Health and Safety
SP	-	Safety Programs
SS	-	Supervisor Safety
WHO	-	World Health Organization
ILO	-	International Labour Organization



## ABSTRACT

This study sought to examine and establish the relationship and effect of occupational health and safety on organizational commitment. First, it was proposed that occupational health and safety would have a positive relationship with affective, normative and continuance commitment. Next, job safety, co-worker safety, supervisor safety, safety programs and management safety practices were expected to predict affective, normative and continuance commitment. Descriptive, cross-sectional survey design was used and the sample on which conclusions were based consisted of 370 employees of the Ghanaian mining industry who were selected using simple random sampling method. OHS was measured using instrument developed by Hayes et.al, (1998). The survey instrument has five constructs made up of job safety, co-worker safety, supervisor safety, safety programs and management safety practices. Also, organizational commitment was measured using commitment instrument developed by Allen and Meyer (1997) with three dimensions (affective, normative and continuance). Correlational and hierarchical regression analyses were used to test for proposed hypotheses. The correlational analysis showed a positive significant relationship between OHS and affective, normative and continuance commitment. Further the hierarchical regression showed that co-worker safety and management safety practices had a significant effect on affective, normative and continuance commitment. However, job safety, supervisor safety and safety programs did not predict affective, normative and continuance commitment. It was concluded that Management within the mining sector of Ghana must recognize the fact that workers who feel healthy and safe in the performance of their duties, develop emotional attachment and have a sense of obligation to their organization and are most likely to stay. Also invest in the protection of employees' health and safety on the job since that would improve employees' commitment to the organization.

## CHAPTER ONE

### INTRODUCTION

#### 1.0 Background of the Study

Occupational health and safety has been the concern of many researchers since a structured work environment came into existence (Danna & Griffin, 1999). For instance, Ramazzini (1713) was one of the first to document the harmful effects of working conditions on employees' health and studied the injury and death rates of many different occupations (Franco & Franco, 2007).

The importance of healthy workplaces is increasingly being recognized as a broad concept having bearing on quality of life at the individual level to substantial impacts on public health at a societal level (Helliwell & Putnam, 2004). Health is a positive concept that includes social and personal resources as well as physical capabilities. Occupational health and safety (OHS) is a multi-discipline concept which concentrates on the protection for safety, health and welfare of people engaged in work or employment (Barnett-Skluster, 2008).

According to Amponsah-Tawiah and Dartey-Baah (2011) occupational health and safety encapsulates the mental, emotional and physical well-being of the worker in relation to the conduct of his work and as a result marks an essential subject of interest impacting positively on the achievement of organizational goals. Thus in order for employees to perform their duties to the maximum they must be physically, mentally and emotionally sound. Hence employees' health and safety must be the concerns of every organization since health and safety affect productivity, competitiveness and sustainability of organization. Employees form the centrality of every organization and organizations' depends on employees' capabilities and abilities to be

successful. Employees therefore must be seen as the key to organizational success and their health and safety must be a priority.

The World Health Organization defines occupational health and safety as not just a mere absence of diseases and infirmity from the working environment but rather encompasses physical, mental and social well-being of employees (WHO, 2001). Occupational health and safety therefore seeks to promote and maintain the highest degree of the physical, mental, emotional, psychological and physiological well-being of employees in all endeavors of occupation (WHO, 2007). Primarily, occupational health and safety aim to protect workers against risk factors associated with their employment that could be detrimental to their health (WHO, 2002). Again, it seeks to prevent harmful health implication caused by conditions prevailing within the working environment. The adaptation of workers to occupational environment to match their physiological and psychological capabilities is also an imperative issue in occupational health and safety (WHO, 1995).

The International Labour Organization (ILO, 2005) explains occupational health and safety as the outcome of adequate protection for a worker from sickness, injury and disease arising from work. A focus on health and safety in the workplace is essential for ensuring that people are not harmed during work and that pain, suffering and loss are avoided (Leigh, Cone, & Harrison, 2001). Ensuring that people are not injured can extend the productive working lives of employees and contribute to economic growth and prosperity (Alli, 2008). The benefits of promoting occupational health and safety include enabling people to lead happier and longer lives, enhancing economic activity, reducing demand on health and social services, and reducing the costs of illness and injury on both individuals and communities (Waddell & Burton, 2006).

However, Armstrong (2009) describe health and safety policies and programs as safeguarding employees and other people that may suffer as a result of what the organization produces and does protecting them against ill-health and diseases aligned with employment or their association with the company.

Every employee has the right to healthy and safe work and working environment in order to enable them live a productive life (WHO, 1995). However, for the most part employees have to combat with management concerning health and safety. Lin and Mills (2001) indicated that there had been high rates of injuries at the workplace as a result of insufficient or non-existence of OHS systems. Chen and Chan (2003) also asserted that there are potential conflicts of interest between employees and management over occupational health and safety (OHS) because management aims to maximize the bottom line of the organization rather than investing in protective measures which they perceive to increase cost of production.

Similarly, Attwood, Khan and Veitch (2006) are of the view that factors affecting the process of occupational health and safety management include staff behaviour and capabilities, working conditions, safety related design of the workplace, and quality of protective equipment with many of these factors being influenced by decisions taken at the corporate level. Thus the quality of health and safety measures at the workplace is determined by the management of organizations. Likewise, Armstrong (2009), affirms that, the well-being of employees depend on the quality of working life provided by their employers and the feelings of satisfaction that emanates from job description and the work environment as well as the internal provisions made for their health and safety. Workers thus expect their employers to take due diligence to guarantee their safety at the end of the work day. However, work-related accidents, injuries and

deaths continue to crop up at a frightening rate (Zacharatos, Barling and Iverson, 2005). In order to curtail the problem of industrial and occupational accidents at the working environment there is the need to emphasize the importance of occupational health and safety to the working person and organizations.

Available data reveal startling and tremendously high rate of work-related deaths and injuries in both the developed and developing nations (Gyekye, 2006). Total economic losses due to occupational illnesses and injuries are enormous (WHO, 1999) and Britain in 2005 and 2006 recorded an overall economic loss ranging from £2.9 to £3.2 billion as a result of work-related diseases and injuries (Pathak, 2008).

According to ILO estimates, 2.2 million people die due to work-related accidents or illness each year, while 350,000 of these deaths are due to occupational accidents, the remaining rate could be attributed to occupational illnesses and diseases. Again, the ILO estimates that there are 264 million non-fatal accidents each year that result in a three-day absence from work, while 160 million people also suffer from work-related illnesses (ILO, 2011).

Also, in a data recorded by the ILO (2003), indicated that there was annual injury rate ranging from 0.35% to 49.42% among 100 wage worker in the Southern African Development Community (SADC) region annually. The ILO is of the view that cost of work-related ill-health and accidents costs the world 4% of the global GD (British Safety Council, 2010). Occupational health and safety practice is essential to the overall productive performance of an organization however if much attention is not taken, the organization could accrue debt due to poor occupational health and safety practices. The United States for instance over the past decades have recorded 6,026 fatal work-related injuries and approximately 3.8 million non-fatal injuries

in 1998, resulting in an estimated 80 million production days lost for that year and almost 60 million days in future years (Bureau of Labor Statistics, 2000; United States Census Bureau, 2000). In spite of this growing problem, it could be concluded that little attention has been paid to industrial and occupational accidents and injuries in terms of organizations putting in place preventive intervention programs to ensure employee safety.

Pressure are usually exerted on individuals at work due to the changing nature of competition creating awareness and importance of new psychological contracts and employees are now abandoning the concept of stability of lifetime employment and embracing continuous learning and personal development (Mullins, 2005). Hence creating favourable working conditions is paramount to the sustainability of qualified employees because sustained productivity improvement depends on organization human capital (Slaus, & Jacobs 2011). Cole (2002) posits that employees who are healthy and feel safe at work are those that can fully invest their capabilities and exploit the best of their potentials to work. It is therefore important for organization to recognize the need for committed employees to their existence in this ever changing environment. That is, for organizations to retain qualified and committed employees there is the need to provide safe and healthy environment, because healthy and safe employees are those that are most likely to be committed to their organizations.

According to Meyer and Allen (1997, p 11) organizational commitment “is a psychological state that characterizes the employee’s relationship with the organization and has implication for the decision to continue membership in the organization.” However, in the definition of Mowday, Steers and Porter (1979), commitment is an attitude in the form of an attachment that exists between the individual and the organization, and it is reflected in the relative strength of an

employee's psychological identification and involvement with the organization. An organization could only boast of quality human resource when the individual employee identifies himself with the goals of the organization. Organizational commitment therefore becomes critical issue to be considered for the sustainability of organization. In view of this management and behavioural sciences literature has also described organizational commitment as a key factor in the relationship between the individual employee and his organization. For instance, in the work of Raju and Srivastava (1994); Mowday (1998); and Gilbert and Ivancevich (1999), organizational commitment was explained as the factor that promotes the attachment of the individual to the organization. Moreover, according to Raju and Srivastava (1994) and Mowday (1998), employees are regarded as committed to an organization if they willingly continue their relationship with the organization and devote considerable effort to achieving organizational goals. They further argued that, high levels of effort exerted by employees with high levels of organizational commitment would lead to higher levels of performance and effectiveness at both the individual and the organizational level. Thus, organizational commitment influences whether an employee stays as a member of an organization, share common goals, beliefs and put forth much effort to the success of the organization (Ivanko, 2013). It is therefore imperative to examine how occupational health and safety at the workplace impact employee decision to continue to be a member of an organization specifically in the mining sector.

Mining is globally known as one of the most hazardous sectors (ILO, 2003) and also considered by mine workers as more dangerous and hazardous than workers in any other sector (Gyekye, 2003). Thus, the accident and ill-health record of the mining sector compares to that of other economic sector such as manufacturing and construction marks the sector as one of the most

dangerous industrial sector and therefore has been the main center of attention as a result of the risks that it could impose on employees. Mine environments are especially challenging because they could degrade rapidly and they change as mining progresses (Hermanus, 2007). Dust and noise are inherently associated with breaking of rocks, and in underground mines, air and light must be supplied artificially which at times could lead to difficulty in breathing, poor vision and the possibility of the earth caving in (Pule, 2011). Also harmful gases are emitted in the course of explosions and ergonomic hazards are common in mining since miners generally handle heavy equipment and do heavy work often in cramped conditions for longer hours (Donoghue, 2004). Furthermore, mention would be made of the fact that, occupational diseases, like lung diseases and noise-induced hearing loss, are pervasive in the mining industries (Pule, 2011).

In spite of the above challenges, mining contributes a considerable amount to the gross domestic product (GDP) and provide substantial business opportunities. In Ghana for instance, mining contribute about 40% of gross foreign exchange earnings as well as 5.7% of the GDP (Aryee, 2000). Yet, much attention has not been given to occupational health and safety especially in the mining sector in terms of advocacy and training as well as occupational health and safety (OHS) as a generic issue for mine workers. This study therefore, seeks to examine how occupational health and safety could predict employee commitment in the mining sector of Ghana.

### **1.1 Research Problem**

The well-being of the workforce in every country has an immediate and direct impact on national and world economies at large (Dorman, 2000). Industrial accidents and injuries are a source of substantial human and economic cost (HSE, 2010). However, attempts to address the problem of

occupational health and safety at the workplace have been ongoing for at least a quarter of a century and regardless of all the excellent efforts, however, the problem remains (Attwood *et al.*, 2006). People working in mines are exposed to various physical, chemical, mechanical, biological and psychosocial risk factors (Amponsah-Tawiah, Jain, Leka, Hollis and Cox, 2013).

Additionally, Owiredu (2011), cited in Amponsah-Tawiah *et al.*, (2013) indicates that, Ghana is one of the West African countries that has become a preferred destination for mineral investment with the legal mining industry contributing over 49% of the country's Gross foreign exchange earnings. This increase in investment and mining activity, however, presents not only economic opportunities for the country but also major challenges, particularly in the area of occupational safety and health for employees in the sector (Amponsah-Tawiah *et al.*, 2013). Amponsah-Tawiah and Darteh-Baah (2011) opine that a country like Ghana with a fast growing workforce coupled with a growing informal sector, workers have tended to fight for job security which has resulted in poor occupational health and safety policies at the workplace.

With recent increased concentration in mining in Ghana, seemingly diverting attention from agriculture to mining of gold and oil extraction, raised concerns for more investigation into occupational health and safety management in this sector. Also, in spite of the risk factors associated with mining and its related activities, perceived employee's commitment in the sector seem to be high. However, there are arguably limited studies if any that examine the direct relationship between occupational health and safety and employee commitment in the mining sector of a developing country such as Ghana. This study therefore seeks to examine the impact of occupational health and safety on employee commitment in the sector.

## 1.2 Research Purpose

The purpose of this study is to examine the effect of occupational health and safety on employee commitment in the mining sector of Ghana.

## 1.3 Main Objective

- To examine the influence of occupational health and safety on employees' commitment in the mining sector.

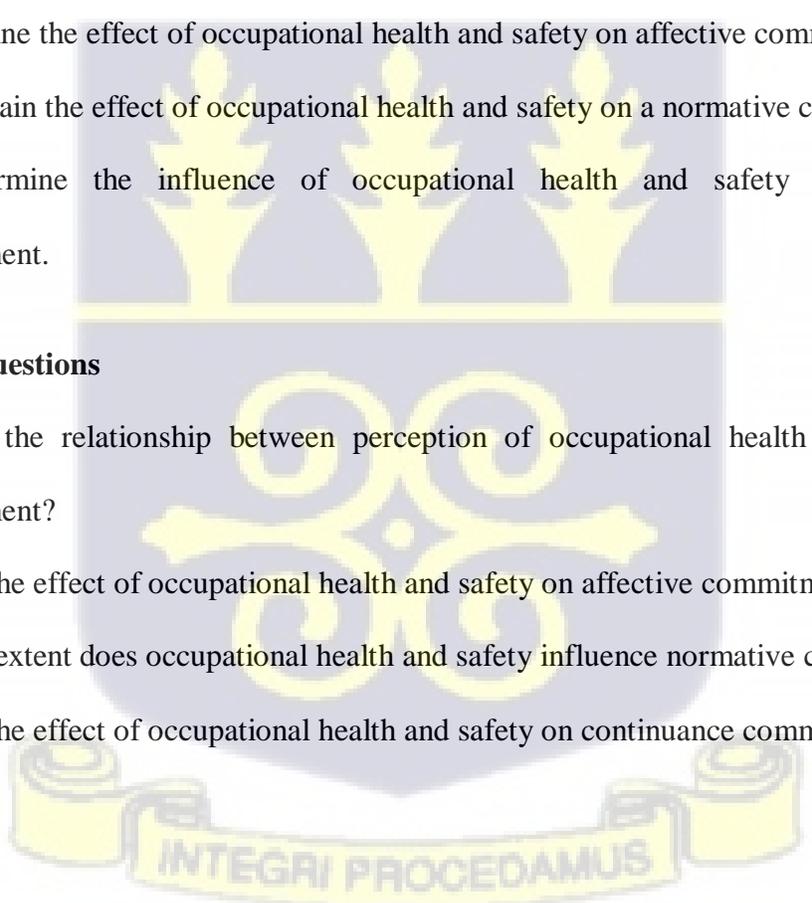
### 1.3.1 Specific Objectives

This study aims at achieving the following objectives:

- To find out the relationship between occupational health and safety and employee commitment.
- To examine the effect of occupational health and safety on affective commitment.
- To ascertain the effect of occupational health and safety on a normative commitment
- To determine the influence of occupational health and safety on continuance commitment.

## 1.4 Research Questions

- What is the relationship between perception of occupational health and safety and commitment?
- What is the effect of occupational health and safety on affective commitment?
- To what extent does occupational health and safety influence normative commitment?
- What is the effect of occupational health and safety on continuance commitment?



## 1.5 Hypotheses

1. There will be positive relationship between occupational health and safety and employee commitment.

H<sub>1</sub>- a: There will be positive relationship between OHS and affective commitment

H<sub>1</sub>- b: There will be positive relationship between OHS and normative commitment

H<sub>1</sub>- c: There will be positive relationship between OHS and continuance commitment

2. Occupational health and safety will have a significant influence on affective commitment.

H<sub>2</sub>-a: Job safety will have a significant effect on affective commitment

H<sub>2</sub>-b: Supervisor safety will significantly effect on affective commitment

H<sub>2</sub>-c: Safety program will significantly effect on affective commitment

H<sub>2</sub>-d: Co-worker safety will a have significant effect on affective commitment

H<sub>2</sub>-e: Management safety practices will have a significant impact on affective commitment

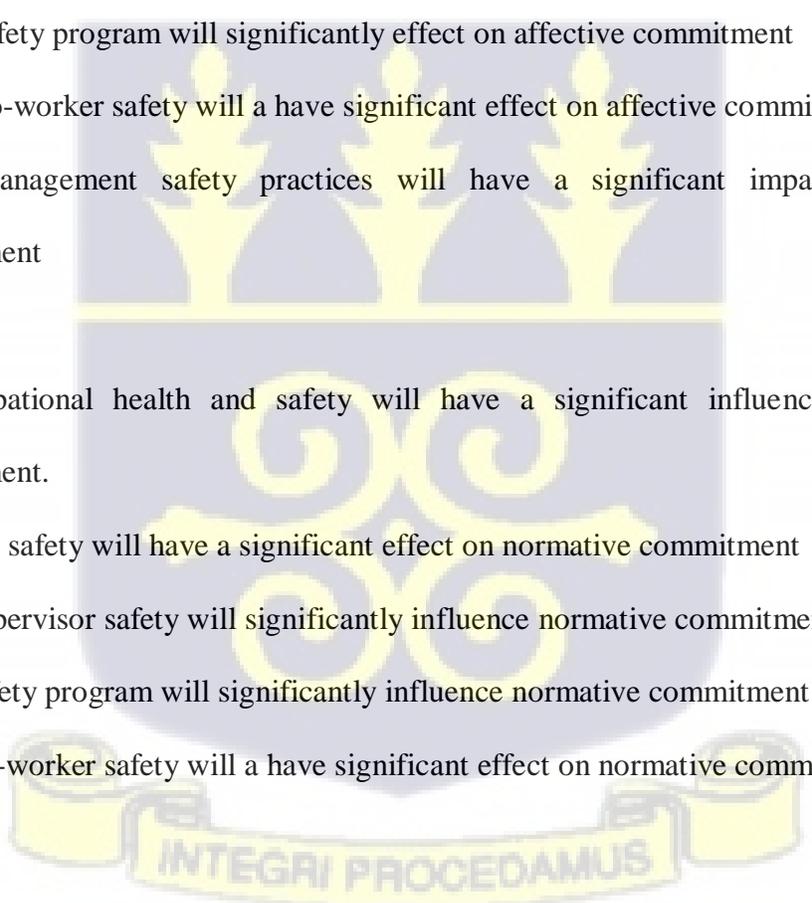
3. Occupational health and safety will have a significant influence on normative commitment.

H<sub>3</sub>-a: Job safety will have a significant effect on normative commitment

H<sub>3</sub>-b: Supervisor safety will significantly influence normative commitment

H<sub>3</sub>-c: Safety program will significantly influence normative commitment

H<sub>3</sub>-d: Co-worker safety will a have significant effect on normative commitment



H<sub>3</sub>-e: Management safety practices will have a significant influence on normative commitment

4. There will be a significant effect of occupational health and safety on continuance commitment.

H<sub>4</sub>-a: Job safety will have a significant effect on continuance commitment

H<sub>4</sub>-b: Supervisor safety will have a significant effect on continuance commitment

H<sub>4</sub>-c: Safety program will have a significant effect on continuance commitment

H<sub>4</sub>-d: Co-worker safety will have a significant influence on continuance commitment

H<sub>4</sub>-e: Management safety practices will have a significant effect on continuance commitment

### **1.6 Significance of the Study**

The study seeks to draw attention to prevailing working conditions in mining industry of Ghana. This will impact occupational health and safety practices among organizations in the mining sector to develop an effective safety management system to ensure employee safety.

The outcome of this study will inform the government and policy makers to ensure effective implementation of policies that will push organizations to be more proactive in managing the safety, health and welfare responsibilities of their employees.

The outcome of this study will help to develop a framework for understanding the relationship between health and safety management and organizational commitment. It will also contribute to the existing body of knowledge on the influence of occupational health and safety on employee commitment and will serve as a direction for future research.

## **1.7 Scope of the Study**

The current study focuses on the mining sector of Ghana and assesses occupational health and safety practices within this sector. It concentrates on safety and health management and how it influence employees' decision to work for organizations within this sector. Ghana is a developing country blessed with mineral resources, especially gold, diamonds, manganese and bauxite. These minerals contribute over 40% of the country's exports, gold being the most important mineral accounting for about 90% of revenue from minerals. Gold production rose from 285,291 ounces in 1983 (from four mines), a 23-year low, to 1.7 million ounces in 1995 (from ten mines and small scale production), making Ghana the continent's second largest producer of gold after South Africa (Sutherland, 2011). Minerals are a major source of foreign currency to Ghana. This study therefore, focuses on three selected mining companies and they are as follows;

### **1.7.1 AngloGold Ashanti Company Limited**

Anglogold Ashanti is a global gold mining company and was formed in 2004 by the merger of Anglogold and the Ashanti Goldfields Corporation. The company has about 3,500 workers. AngloGold Ashanti currently has two wholly owned and managed operations in Ghana – Obuasi and Iduapriem – which produced 512,000oz combined, equivalent to 11.8% of group production in 2011. Its operations are located in the Ashanti and Western Regions of Ghana, and were acquired following a merger between the former AngloGold Limited of South Africa and Ashanti Goldfields Company Limited of Ghana.

The Iduapriem mine, wholly owned by AngloGold Ashanti since September 2007, comprises the Iduapriem and Teberebie properties in a 110km concession. Iduapriem is located in the Western Region of Ghana, which is 70km north of the coastal city of Takoradi and 10km southwest of the Tarkwa mine. Iduapriem is an open-pit mine and its processing facilities include a carbon-in-pulp (CIP) plant.

Obuasi is located in the Ashanti Region of Ghana, approximately 60km south of Kumasi. Mining operations are primarily underground, to a depth of 1.5km. Some surface mining in the form of open pit and tailings reclamation occurs. Obuasi currently treats sulphide ores from underground at the south plant, following the decommissioning of the tailings treatment plant in October 2010. The south plant also treats sulphide tailings and has a capacity of 360,000 tonnes per month. As at 31 December 2011, AngloGold Ashanti had a total inclusive Mineral Resource of 38.44Moz in Ghana, of which the Mineral Reserve was 11.92Moz. This is equivalent to 16.6% and 15.8% respectively of group resources and reserves. The Ghanaian operations had an average of 7,081 employees in 2011, including contractors (2,177) working for the company (2010: 7,205). Capital expenditure in Ghana totaled \$205 million for the year – \$73m at Iduapriem and \$132m at Obuasi. Total capital expenditure by AngloGold Ashanti in Ghana over the past five years is \$739m. Forecast capital expenditure for both mines in Ghana in 2012 is between \$306m and \$320m (AGA Fact sheet, 2011).

### **1.7.2 Goldfields Ghana Company Limited**

Gold Fields Ghana Limited (GFGL) was incorporated in Ghana in 1993 as the legal entity holding the Tarkwa concession mining rights. Gold Fields Ghana now holds 90% of the issued shares of GFGL after acquiring the indirect 18.9% of the issued shares belonging to IAMGold

and its affiliates. The government of Ghana holds a 10% free carried interest, as required under the mining law of Ghana. The Tarkwa Gold Mine operates under seven mining leases covering a total area of approximately 20,825 hectares.

The Tarkwa Gold Mine is located in southwestern Ghana near the southern end of what is commonly referred to as the Tarkwa Basin, 300 kilometres by road west of Accra, the capital of Ghana, and is easily accessible with an established infrastructure.

The open pit surface operation exploits narrow, tabular auriferous conglomerates similar to those mined in the Witwatersrand Basin of South Africa. Mining is currently taking place from six pits, Pepe, Atuabo, Mantraim, Teberebie, Akontansi and Kottraverchy and the mine utilises a conventional CIL plant as well as a heap leach facility. [www.goldfields.com](http://www.goldfields.com), accessed on 5<sup>th</sup> September, 2013.

### **1.7.3 Golden Star Resource Limited**

Golden Star Resources Limited is a Canadian incorporated international gold mining and exploration company whose principal properties are located in Ghana. It was formerly known as Bogoso Gold Limited, it owns a 90% interest in Bogoso/Prestea property, which comprised of the adjoining Bogoso and Prestea surface mining leases for exploration and production of Gold. GSR Operating Mines Properties are mainly in Ghana, all other locations are exploration properties. GSR was established under the federal laws of Canada on May 15, 1992 as a result of the amalgamation of South American Goldfields Inc. and Golden Star Resources. The head office is however in Littleton, Colorado USA and maintains a regional corporate office in Accra, Ghana, Exploration Offices in Takoradi, Ghana and Cayenne, French Guiana. Since 1999

Golden Star has successfully transitioned from being a focused gold exploration company into an emerging mid-tier gold producer, while simultaneously maintaining its emphasis on exploration. The Company expects to grow its gold business with a continuing focus on organic growth from the exploration and development of existing assets. Recognizing that consolidation can lead to improved fundamentals and increased competitive strength, Golden Star is open to transactions that bring producing and exploration assets that have synergy with the Company's existing activities and will improve shareholder value.

The main goal of the company is to grow its business in Ghana, and regionally in West Africa, through organic growth and appropriate acquisitions and has about 900 employees. [www.gsr.com](http://www.gsr.com), retrieved on 26<sup>th</sup> January, 2014.

## 1.8 Chapter Disposition

**Chapter One** (Introduction) - This chapter gives a brief background of the concept of occupational health and safety, relationship and factors associated with occupational health and safety and commitment. The chapter further explains the statement of problem, research objectives, study questions, significance of the study and hypothesis of the study. The final part of the chapter presents brief definition of the terms used in the study.

**Chapter Two** (Literature Review)-This chapter provide a thorough review of the relevant literature and a detailed empirical assessment of the major concepts of occupational health and safety and commitment. In this chapter, relationship between occupational health and safety and commitment is established; also relevant theories explaining commitment organizational commitment is discussed.

**Chapter Three** (Methodology)-This chapter focused on the methodology used in the study. It consist of information pertaining research design, study population, sampling techniques and sample size, data collection instrument and method, mode of data processing and analysis, variables and ethical consideration.

**Chapter Four** (Data Analysis and interpretation)-In this chapter, the results of the empirical research was reported and statistical analysis of the data related to the research hypotheses was also reported. The chapter further presents the discussion on the major findings of the study and in relation to previous research.

**Chapter Five** (Discussion, Summary and Conclusion) – In the final chapter, conclusions were drawn based on the findings, limitations of the study were explained, suggestions were made for future research in this area and finally applied significance of the study was discussed.

### 1.9 Definition of Terms

**Occupational health & safety:** “Occupational health and safety is a multifaceted discipline aiming at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers 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 adaptation of work to man and of each man to his job” (WHO, 1995).

**Occupational accidents:** Occupational accidents is an occurrence arising out of or in the course of work and resulting in a fatal or non-fatal occupational injury

**Health** – The protection of the bodies and minds of people from illness resulting from the materials, processes or procedures used in the workplace.

**Safety** – The protection of people from physical injury. The borderline between health and safety is ill defined and the two words are normally used together to indicate concern for the physical and mental well-being of the individual at the place of work.

**Occupational or work-related ill health** – This is concerned with those illnesses or physical and mental disorders that are either caused or triggered by workplace activities.

**Welfare** – The provision of facilities to maintain the health and well-being of individuals at the workplace. Welfare facilities include washing and sanitation arrangements, the provision of drinking water, heating, lighting, accommodation for clothing, seating, eating, rest rooms and first-aid arrangements.

**Job safety:** Job safety shows the extent to which employee job duties do not pose threat or unhealthy consequence on his/her health and safety.

**Co-worker safety:** Co-worker Safety encompasses all activities undertaken by individuals in their workplace to ensure their personal safety, the safety of their co-workers and the safety of their organization at large.

**Management safety practices:** Management safety practices indicate the extent to which the organization's top management demonstrates positive and supportive safety attitudes towards their employees' safety.



**Safety programs:** Safety programs are safety policies and safety training implemented that gives knowledge of safety to employees in order for them to work safely and with no danger to their well-being.

**Supervisor safety:** Supervisor safety describes employees' perceptions of the extent to which their supervisor keep track of unsafe practices as well as acknowledges workers who adapt safe working behaviours.

**Organizational commitment:** commitment "is a psychological state that characterizes the employees' relationship with the organization and has implication for the decision to continue membership in the organization" (Meyer & Allen, 1997).

**Affective commitment:** Affective commitment is the identification, involvement and emotionally attachment of employees to a particular organization and its goals and maintains membership to facilitate those goals (Meyer & Allen, 1997).

**Normative commitment:** Normative commitment is the feeling of obligation to remain with an organization as a result of an investment made by an organization in its employees at work (Meyer & Allen, 1997).

**Continuance commitment:** It refers to the commitment employees experience towards the organization because of investments they have made or because of the costs associated with leaving the organization (Meyer & Allen, 1997).



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

This chapter gives a review of an extant body of literature which is of significance to this study. In this chapter, an explanation to the concept of occupational health and safety with more emphasis on the dimensions of occupational health and safety and its effect on organizational commitment is presented. It discusses occupational health and safety management and how they can help in reducing the rates and fatalities of accidents and ill health at the workplace and how it can influence individual decision to remain a member in an organization is elaborated on. It further reviews literature on organizational commitment and its theories. Moreover, it gives an account of empirical evidence on the relationship between occupational health and safety and organizational commitment which helped in the development of conceptual framework for the study.

#### 2.1 Historical Review

The concern for the protection of workers' health and ensuring safety at the workplace is not a new phenomenon. The work place is a potentially hazardous environment where millions of employees spend at least one-third of their life time (Jahoda, 1982). This fact has been known for time immemorial, even though developed gradually until 1900. The cognizance of hazardous working environment and its effects on employees' health was made known as early as fourth century BC when Hippocrates noted lead toxicity in the mining industry and wrote of consequence of an unhealthy workplace on slaves (Wade, 1982). Caesar (100–40 BC) was tale to have an officer responsible of the safety of his legions (Pease, 1985; Weaver, 1980). In this manner, the practice of occupational health and safety has been in existence since the origin of

mankind and has evolved gradually and continuously in responds to curb workplace accidents, injuries and diseases.

Pliny the Elder, a Roman scholar, in the first century AD, noticed health risks to those working with zinc and sulfur. As a result he invented a face mask made from an animal bladder to protect workers from exposure to dust and lead fumes (Tadesse & Admassu, 2006). In the second century AD, the Greek physician, Galen, gave a description of pathology of lead poisoning and created the awareness of hazardous exposures of copper miners to acid mists. In 1556, German scholar, Agricola, advanced the science of industrial hygiene and wrote a book that explained the diseases of miners and prescribed preventive measures. His book included suggestions for mine ventilation and worker protection, discussed mining accidents, and described diseases associated with mining occupations such as silicosis (Tadesse & Admassu, 2006). This shows that significant effort has been made in ancient times to reduce occupational diseases and safety problems. The subject gained great importance in the medieval period where there were less training, technical information distribution, consultation and regulatory cleanup efforts to improve work conditions.

In the early 20th century, Dr. Alice Hamilton led efforts to improve industrial hygiene. She studied industrial conditions and informed employers about the evidence, which proofs correlation between worker illness and exposure to toxins and presented tentative proposals for eradicating unhealthy working conditions (Wade, 1982). Within the same period, U.S. federal and state agencies began an investigation on healthy conditions in industries. In 1908, public awareness of occupational ill-health and diseases stimulated the passage of compensation acts for certain civil employees. States passed the first workers' compensation laws in 1911. And in 1913,

the New York Department of Labor and the Ohio Department of Health established the first state industrial hygiene programs. All states enacted such legislation by 1948 (Wade, 1982).

The U.S. Congress passed three landmark pieces of legislation related to safeguarding workers' health:

- The Metal and Nonmetallic Mines Safety Act of 1966
- The Federal Coal Mine Safety and Health Act of 1969,
- The Occupational Safety and Health Act of 1970 (OSH Act).

Today, nearly every employer is required to implement the elements of an industrial hygiene and safety, occupational health, or hazard communication program and to be responsive to the Occupational Safety and Health Administration (OSHA) and its regulations. However, concrete approach to the control of occupational diseases became valid in most countries after the twentieth century (Tadesse & Admassu, 2006). It could be inferred that occupational accidents and ill-health have long been cause for concern at workplace and the impact that it has on the working person. The intent of preventing diseases, illness and death at the working environment is not a recent concept. Society and researchers have responded to increasing levels of evidence as to the relationships between disease and certain worksites by making employers accountable for the individual and social costs incurred by poor workplace conditions by advocating for healthy and working environment years ago (wade,1982; Duebenspeek, 1974; Gray,1990; Nwajei, 1993; Christiani,1984; Reason, 1998; Cooper, 1995).

### **2.1.1 Evolution of Modern Day Occupational Health and Safety**

Contemporary approaches to occupational health and safety are rooted in the 1960's when trade unions in many countries turned their attention to issues related to quality of working life such as

job security, job satisfaction and occupational health and safety (Hermanus, 1999). Later in the decade heightened community awareness of the industrial origins of environmental health issues caused workers and their unions to adopt a more questioning approach to potential hazards in the workplace (Creighton & Gunningham, 1985). Thus several major disasters in the nuclear, petrochemical and transport industries caused strong public concerns over the management of hazardous activities.

For instance Safety issues emanating from the Flixborough accident in 1974, followed by the Seveso incident in 1976, the chernobyl nuclear power plant disaster in 1986 and the Piper Alpha oil installation explosion, the clapham train crash and the kings cross fire in 1987 (Reason, 1998) necessitated the need for efficient safety management (Agwu, 2012). Public and workers agitation for the need to curtail occupational accidents and injuries led to review and revision of occupational health and safety policies and regulations (Hermanus, 1999). In the 1970s new laws and policies which were national in ambit were adopted in a number of countries. For instance workmen's compensation programs were developed by states in the early part of the century in response to increasing frequency of industrial accidents and diseases (Wade, 1982). Though this did not help to eradicate ill-health and fatalities at the workplace, however established the fact that poor working environment prevail and drew employers and employees attentions to it (Benjamin & Greef, 1997). These changes in law and policy established a new framework for occupational health and safety. Institutional mechanisms were created to ensure that conflict over health and safety related issues was managed more effectively and resolved more equitably. Employers were encouraged to engage workers and introduce strategies to address health and safety issues on an ongoing and systematic basis (Hermanus, 1999).

Globalization has also played a major role in workplace conditions which has resulted in many people to work within highly hazardous environment. Considering the pattern of global economic trends, the subject of employee health and safety in the workplace has taken a crucial dimension such that international conventions instituted the international organization for standardization to see to the regulation and improved workplace conditions and services (Zwetsloot, 2003). For instance International Labour Organization (ILO) and World Health Organization (WHO) in order to ensure decent working environment collaborated to endorse the Global Strategy on Occupational Health for All emphasizing the importance of primary prevention and encouraged countries to establish national policies and programs with the required infrastructures and resources for occupational health (WHO, 2008).

## **2.2 The Concept and definition of Occupational Health and Safety**

Workers just like any other resources require maintenance and care in order to maximize their productivity (Casio, 1996). It is against this background that health and safety should not be viewed as a separate function or responsibility, but as a broader initiative that aims at improving productivity, profitability and competitiveness of a firm (Pike, 2000). Occupational health programs are thus primarily concerned with the prevention of ill-health arising from workplace conditions, while safety programs deal with the prevention of accidents and with minimizing the resulting loss and damage to lives and properties (Adeniyi, 2001). Occupational health and Safety management refers to the tangible practices, responsibility and performance related to safety and health at the working environment (Mearns, Whitaker & Flin, 2003). Boyle (2000) posits that the process of managing occupational health and safety is the same as other management activities, but the distinction is the complex nature of occupational health and safety. However, according to Cooper (1995), the management of occupational health and safety

is in many respects exactly the same as managing productivity or other functional areas of operations. In line with this, Civil Aviation Safety Authority (2002), describe Safety Management System as an integrated set of work practices, beliefs and procedures for monitoring and improving the safety and health of all aspects of operation. This shows that, the management of safety at the workplace is not just prevention of repetitions of accidents that have already occurred but rather must be integrated into the general management system that relate to quality management and protection of working environment and the working person. As stated by Khdair and Shamsudin (2011), the concept of good health and safety at work is a difficult and complex phenomenon.

An OHSMS is the integrated set of organizational elements involved in the continuous cycle of planning, implementation, evaluation, and continual improvement, directed toward the abatement of occupational hazards in the workplace. Such elements include, but are not limited to, organizations' OHS relevant policies, goals and objectives, decision-making structures and practices, technical resources, accountability structures and practices, communication practices, hazard identification practices, training practices, hazard controls, quality assurance practices, evaluation practices, and organizational learning practices (Robson, Clarke, Cullen, Bielecky, Severin, Bigelow, Irvin, Culyer , & Mahood, 2005). Thus such a system recognizes the potential for errors and establishes robust defenses to ensure that errors do not result in incidents or accidents.

The European Union (1997) also share the same view that , safety management system should include the part of the general management system which comprise of the organizational structure, responsibilities, practices, procedures, processes and resources for determining and implementing the major accident prevention policy.

Adeniyi (2001), also buttress the point made above, that managing health and safety at work is usually a matter of developing health and safety policies, conducting risk assessment which identifies the hazards and assessing the risks attached to them, carrying out health and safety audits and inspections, implementing occupational health programs, managing stress, preventing accidents, measuring health and safety performance, communicating the need for good health and safety practices, training in good health and safety practices and organizing health and safety programs. Because researches have shown that high rates of injury and accidents are due to unsatisfactory or non-existent of health and safety systems (Lin & Mills, 2001).

In the words of Hughes and Ferrelt (2008), occupational health is a sound state of the body and mind of people from illness resulting from the materials, processes or procedures used in the workplace, while safety is the protection of people from physical injury. Thus occupational health and safety (OHS) could be seen as safeguarding the physical and mental well-being of employees in relation to the performance of their duties at the place of work.

Also, as stated by the WHO (1999) a healthy workplace is one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and well-being of workers and the sustainability of the workplace by considering the following, based on identified needs: health and safety concerns in the physical work environment; health, safety and well-being concerns in the psychosocial work environment including organization of work and workplace culture; personal health resources in the workplace; and ways of participating in the community to improve the health of workers, their families and other members of the community (WHO, 2010). Alli (2008) defines occupational health and safety as a way of forecasting, acknowledging, assessing and putting measures in place to curb or

eliminate hazards stemming from the workplace that could harm the healthiness and welfare of workers regarding the potential effect on the society and the general environment.

Health and safety policies and programs focused on safeguarding employees and other people that may suffer as a result of what the company produces and does protect them against ill-health and diseases aligned with employment or their association with the company (Armstrong, 2009).

Occupational health programs deal with the prevention of ill-health and diseases resulting from working conditions. This implies that occupational health and safety programs must not only seek to protect employees of companies but must also ensure the safety of customers, visitors and members of the community within which the organization is situated. These stakeholders are one way or the other affected by their connection to what the company manufacture. In examining the above statement it could be understood that occupational health and safety practices must safeguard the health and safety of employees who are in direct contact with the processes of the organization and this protection however must extend to their families, the community and the public at large.

Occupational health and safety management system is considered to be an essential factor in ensuring workplace safety and health management. Health and Safety management and programs are designed with the aim of ensuring safety, health and welfare of employees at work and protection to other people from hazards to safety and health resulting from the activities of people at work in various sectors of occupations. Safe working environment means that the workplace has been evaluated for risk factors and that the hazards are eradicated or controls have been established to ensure organizations are able to operate safely. In analyzing all these definitions, it could be deduced that almost all the definitions of OHS appear to agree on one

thing, thus ensuring employees well-being at work. Therefore occupational health and safety could be defined as safeguarding the well-being of employees at work, thus prevention of accident, illness and abuse emanating from the performance of duties that could affect physical, mental, emotions and social well-being of employees.

### **2.3 Importance of Occupational Health and Safety in an Organization**

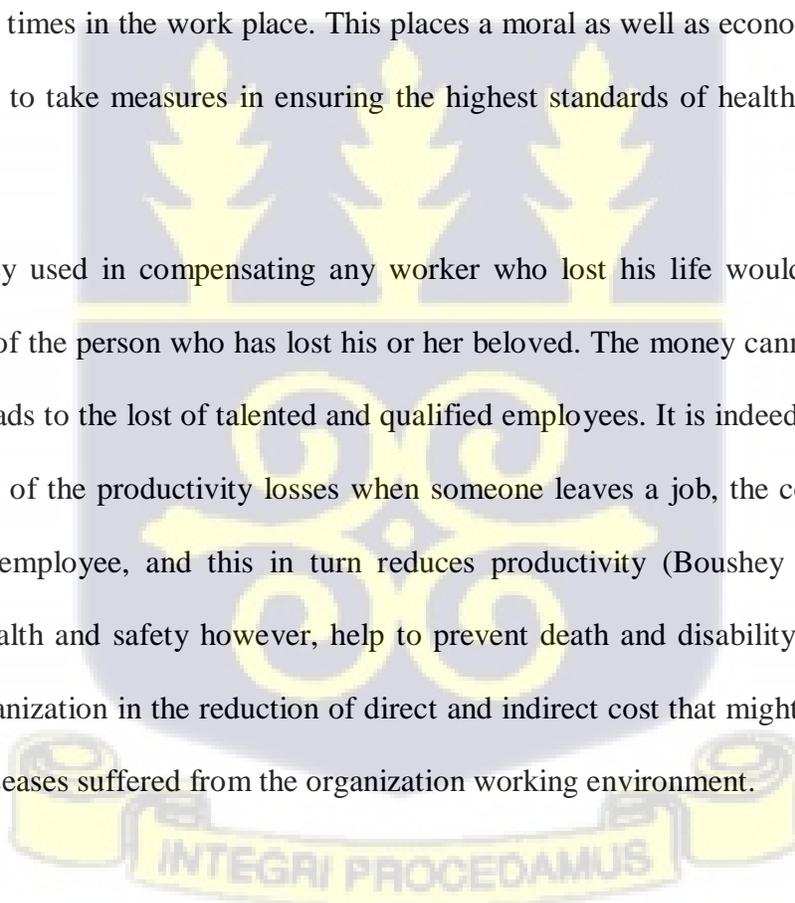
The study of health and safety is of relevance to organizations. Occupational safety and health is a key element in achieving sustained decent working conditions and strong preventive safety cultures. The human, social and economic costs of occupational accidents, injuries and diseases and major industrial disasters have long been cause for concern at all levels from the individual workplace to the national and international (Hermanus, 2007). The economic costs of these injuries and deaths are huge, at the enterprise, national and global levels. Considering compensation, lost working time, interruption of production, training and retraining, medical expenses, and so on, estimates of these losses routinely affect organizations enormously (Alli, 2008). All these losses could be prevented if appropriate occupational health and safety management are effectively implemented and adhere to.

Occupational Health and Safety (OHS) activities are most at times not deemed as sources of intellectual capital of the firm (Nunez & Villanueva, 2011). In spite of this, it is generally acknowledged that safer and healthier working environment comes along with competitive advantage, which is usually one of the main objectives of the firm, as they can enhance productivity, motivate employees' and decrease costs (Thompson, 1997). Thus Occupational health and safety programs have been confirmed to aid employers and society minimize personal, financial and societal costs that injuries, illnesses, diseases and fatalities impose on

victims as results of their association with organizations (OSHA, 2012). Organizations that upheld their occupational health and safety witness benefit in the form of higher efficiency, greater worker productivity and cost reduction.

According to Mitchison and Papadakis (1999) effective and efficient safety management enhances the level of safety in organization and thus can reduce injuries and harm resulting from mishaps (cited from Bottani, Monica & Vignali, 2009). In addition, beside the human cost of going through emotional trauma and suffering an accident, the economic consequence can be overwhelming (Khdair & Shamsudin, 2011). Since ill-health and injuries inflicted by the system of work or working conditions jeopardize employee's ability to effectively discharge their duties, close and continuous attention to quality health and high standards of safety must be maintained at all times in the work place. This places a moral as well as economic responsibility on organizations to take measures in ensuring the highest standards of health and safety in the workplace.

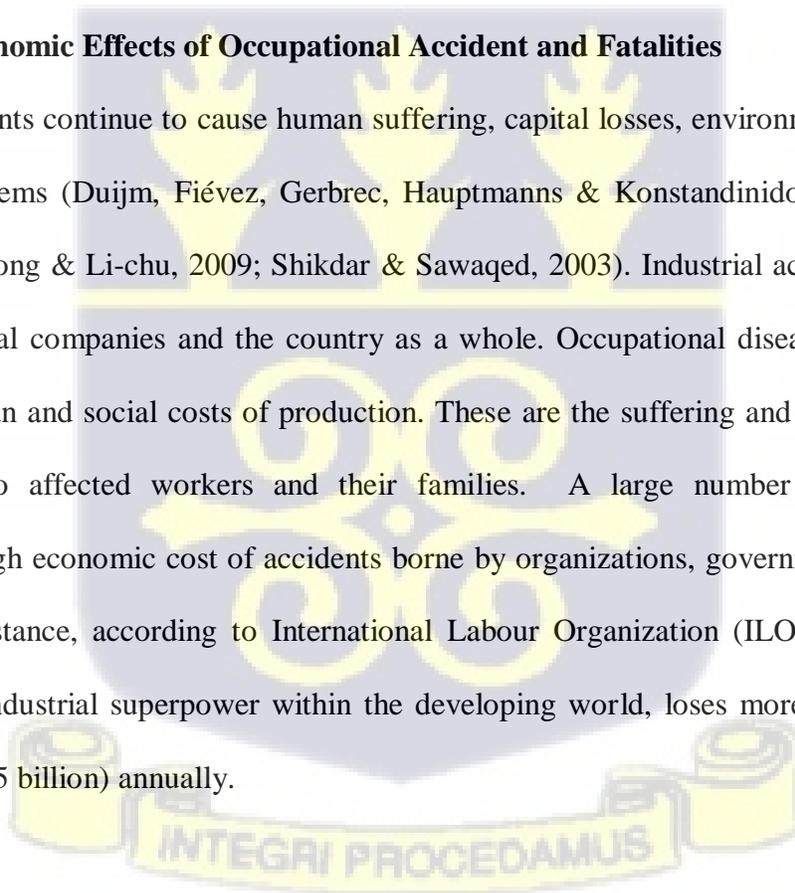
Likewise, money used in compensating any worker who lost his life would only temporally relieve the pain of the person who has lost his or her beloved. The money cannot restore the life back and thus leads to the lost of talented and qualified employees. It is indeed, costly to replace workers because of the productivity losses when someone leaves a job, the costs of hiring and training a new employee, and this in turn reduces productivity (Boushey & Glynn, 2012). Occupational health and safety however, help to prevent death and disability at the workplace and also aid organization in the reduction of direct and indirect cost that might result because of accidents and diseases suffered from the organization working environment.



Employers must therefore facilitate optimal physical and mental health in relation to work and the adaptation of work to the capabilities of workers in the light of their state of physical and mental health to enable workers to conduct social and economically productive lives and contribute positively to sustainable organizational development. The value of occupational health and safety services at the workplace is locally recognized as well as the national levels. The implementation of occupational health and safety systems helps in the reduction of morbidity and work-related injuries. Moreover, it could assist in fewer losses to employers and workers as there will be reduction of wage losses and decreased compensation costs. Ensuring healthy and safety working conditions is in the interest of workers, employers' government and society at large since it could increase employees' commitment and reduce absenteeism among workers.

### **2.3.1 Socio-Economic Effects of Occupational Accident and Fatalities**

Industrial accidents continue to cause human suffering, capital losses, environmental destruction and social problems (Duijm, Fiévez, Gerbrec, Hauptmanns & Konstandinidou, 2008; Kartam, 1997; Li, Wei-dong & Li-chu, 2009; Shikdar & Sawaqed, 2003). Industrial accidents are costly to both individual companies and the country as a whole. Occupational disease and injury are part of the human and social costs of production. These are the suffering and possible life-long disadvantages to affected workers and their families. A large number of studies have demonstrated high economic cost of accidents borne by organizations, governments and society at large. For instance, according to International Labour Organization (ILO) data, China, an economic and industrial superpower within the developing world, loses more than 200 billion Yuan (US \$24.15 billion) annually.



Workplace hazards and exposure cause over 160 million workers to fall ill annually, while it has been estimated that more than 1.2 million workers die as a result of occupational accident and diseases (ILO Annual report, 2011). Also, according to the Bureau of Labour Statistics, (2000), there were 6,026 fatal work injuries and approximately 3.8 million nonfatal injuries in 2010, resulting in an estimated 80 million production days lost for that year in the United States.

Direct costs for enterprises, such as material damage and down-time, and financial losses through experience related insurance premium and a share of the medical expenses, are obvious in unhealthy organizations and this however could accrue cost. In addition, hidden costs, such as overtime work made necessary by accidents, retraining expenses and intangible factors such as loss of company prestige and deteriorating industrial relations, may have a substantial impact on the quality and profitability of production. For instance some authors estimate these hidden *costs* for enterprises at several times the same as direct costs (Andreoni, 1986; Heinrich, Petersen & Roos, 1980).

According to Guidotti (2012), the impact that occupational health and safety has is deeply embedded in our society and it goes on with profound but largely unacknowledged effect on development. This becomes worrisome when it infringes on workers' health style in a form of risk to their well-being and can lead to many unacceptable consequences such as prolong illness, financial loss. Thus a low safety and health record of a particular occupation or work task may make it difficult to recruit people for job vacancies in these areas without paying high wage premium. Where hazardous practices become evident, they necessitate the possibly painful choice between continuing work processes that are dangerous to workers or to the general environment and this could lead to shutting down hazardous production units, thereby creating sometimes considerable and sudden unemployment.

Consequential expenditure due to injury as well as to material damage; production losses; and administrative costs - total economic costs of work accidents for society have been estimated as ranging from around 1% of gross domestic product in the United Kingdom and the United States and 3% in France (Andreoni, 1986).

## **2.4 Dimensions of Occupational Health and Safety**

Occupational health and safety is the absence of illness or disease resulting from the interaction of employee and the work environment (Lucas, 2001) and the protection of workers from the danger of industrial accidents (Aswathappa, 2004) due to the interaction of the employee and the work environment. This study therefore assesses five forms of workplace safety proposed by Hayes, Perander, Smecko & Trask (1998) and these dimensions are as follows.

### **2.4.1 Management Safety Practices**

Safety at work is a difficult and complex phenomenon, and the subject of safety performance across the industries is hard and demanding to achieve (Wameedh & Shamsudin, 2011). Steenkamp and Van Schoor (2002) rightfully mention that occupational health and safety is a complex international problem for management and society, and that it must always be a top management priority. Management commitment plays an important role in all aspects of safety intervention (Marsh, Robertson, Duff, Phillips, Cooper, & Weyman 1995). Management commitment to safety indicates the extent to which the organization's top management demonstrates positive and supportive safety attitudes towards their employees' safety (Hsu, Lee, Wu, & Takano, 2007). Yule, Flin and Murdy (2007) noted that employees' perception of dedicated management action to safety had resulted in accident reduction. The interest in health and safety management is due to major disasters that have highlighted the failings of

management to protect the health and safety of their workers and thus, to comply with occupational health and safety legislation as to fulfill their responsibilities as an employer ensuring that workers have a safe work-place (Hale, Heming, Carthey & Kirwan, 1997). Although employee participation and involvement are crucial, the accountability and responsibility in the safety and health must come from senior management as required by the occupational health and safety legislation (Vassie & Lucas, 2001). A cross sectional survey conducted by Geldart, Smith, Shannon and Lohfeld, (2010), on organizational practices, workplace health and safety on 312 workers in Canadian manufacturing firms, the study found administrative policies; practices and attitudes to have a direct positive impact on safety in the workplace. Hayes, Perander, Smecko and Trask (1998) also found a positive correlation between management safety practices and occurrence of accidents. Thus management involvement in occupational health and safety at workplace is seen as prime to safety performance among employees.

#### **2.4.2 Supervisor Safety**

The supervisor is a person who instructs, directs, and controls workers in the performance of their duties and change the unsafe behaviour of workers (OSHA, 2012). Supervisors play major role in ensuring safety in the workplace. According to Yule, Flin and Murdy (2007) employees conform to safety rules and procedures when they perceived that the action of their supervisor is fair and congruent with organization policy on safety. It describes employees' perceptions of the extent to which their supervisor keep track of unsafe practices as well as acknowledges workers who adapt safe working behaviours. Thus it is the duty of supervisors to take all reasonable care to ensure employees are protected and follow safety policies to reduce accidents at the workplace. They are however not to allow employees to undertake or perform duties that are

detrimental to their health and compromising their safety. Hayes et al., (1998) found supervisor safety to be strongly linked to employee's compliance with safety behaviors and accident reported rates. This implies that supervisors who are enthusiastic about prevention of accident occurrence, employees tend to emulate it and comply with safety rules and regulation concerning their jobs. Crocker, (1995), found that the worker psychological instincts are very complicated and posited that "workers will work more safely with a supervisor who is seen as someone who respects their workers and their contribution, and who is stimulated by a distinct company policy on safety. Because employees see supervisors regards for safety equally important as production and encourages them to react positively toward work safety. Sawacha, Naoum and Fong, (1999), found that expectation of employees to their supervisor's safety attitude was relatively high and they see their superintendent's attitude towards safety as being a major source of influence upon their safety behavior on site.

### **2.4.3 Safety Programs**

A Health and Safety Program consist of clearly defined actions to implement the health and safety training and policies. Safety training and safety policies are essential determinants to enhance safety performance. Safety training is defined as knowledge of safety given to employees in order for them to work safely and with no danger to their well-being (Law, Chan & Pun, 2006). Lin and Mills (2001) found that clear policy statements and safety training played an important role in reducing accident rates. Earlier studies discovered the link between safety training and increased safety performance (Huang, Ho, Smith & Chen, 2006). Consequently, effective training assists workers to have a sense of belonging and thus, more accountable for safety in their workplace. In addition, a company objective and communication of the objective

to all workers is a crucial aspect of effective health and safety management, as lack of communication may hinder employee involvement (Vassie & Lucas, 2001). Vassie and Lucas (2001) investigated health and safety management in the manufacturing sectors and the results indicated that empowered workers who played active health and safety roles could result in health and safety performance improvements. Occupational accidents rise due to lack of attention given to safety performance, safety procedures and improvement of methods to prevent accidents and injuries. On the other hand, occupational accidents occur due to lack of knowledge, training, lack of supervision, and lack of rules implementation (Wameedh & Shamsudin, 2011).

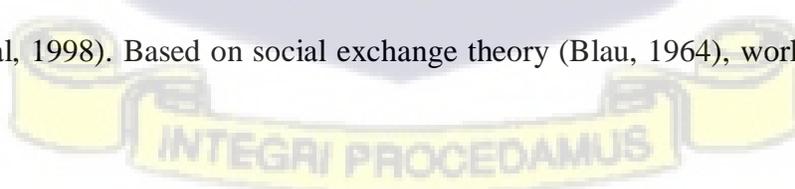
#### **2.4.4 Co-worker Safety**

Safety behaviors of co-workers are also important pertaining employee safety on the job. Co-worker safety concerns the extent to which workers perceive their colleagues as valuing safety. According to Hansen (1989), employee behaviors at work and personality variables contribute, directly or indirectly, to accidents. Safety behaviour encompasses all activities undertaken by individuals in their workplace to ensure their personal safety, the safety of their co-workers and the safety of their organization at large. Ford and Tetrick (2008) asserted that, workers' safety oriented behaviour can be scaled by the extent to which they engage in actions that promote safety and avoid those that decrease safety. In previous studies frequency or rate of safety behaviours have been mapped through direct observation (Glendon & Litherland, 2001) and by assessment of near misses (Seo, 2004), unsafe practices (Hoffman & Stetzer, 1996; Brown & Prussia, 2000), workers' safety compliance and safety participation (Cheyne, Tomás, Cox and Oliver, 1998; Neal, Griffin and Hart, 2000) as well as workers' propensity to actively care about the safety of others (Geller, Roberts & Gilmore, 1999). Burke, Gustafson, Kendall and

Krasnogor, (2002) identified four components of safety behaviour. These components concerned workers'; use of personal protective equipments (PPE), engagement in workplace practices to reduce risk (PRR), dissemination or communication of health and safety information (CHS) and lastly exercise of their rights and responsibilities (ERR).

Marchand, Simard, Carpentier-Roy, and Ouellet, (1998) and Neal, Griffin and Hart (2000) also conceptualized safety behaviour as comprising of two components which they termed safety compliance and safety participation (or initiatives). Safety compliance according to these models refers to the mandatory activities that workers need to perform to bring about workplace safety. Usually such activities offer direct personal protection for the worker. It includes activities like following safety standards and using the correct personal protective equipment (PPE). Safety participation on the other hand, involves 'activities that may not directly contribute to an individual's personal safety, but which do help to develop an environment that supports safety (Neal & Griffin, 2002). Such activities are usually not mandatory within a workplace and individuals perform them at their own discretion. They can thus be considered as safety specific citizenship' behaviours with examples being; identifying and reporting hazards, making suggestions to improve safety and correcting colleagues who engage in unsafe acts that helps to ensure safety and protection of co-workers.

A co-worker who values safety presumably acts safely; take steps to eliminate hazards and also warn others who act unsafely. This is similar to previously identified dimensions like perceived effects of safe conduct on social status (Zohar, 2000) and co-worker safety (Varonen & Mattila, 2000, Hayes et al, 1998). Based on social exchange theory (Blau, 1964), workers who perceive



that their colleague care for their safety may also be pushed to reciprocate with similar behaviours.

#### **2.4.5 Job Safety**

Job safety shows the extent to which job duties do not pose threat or unhealthy consequence on the health and safety of employees. According to OSHA (2002) job safety analysis is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Gyekye (2006) explains job safety as a measure of degree of safety inherent in job assignment. Hayes et al (1998) found that job safety is a significant predictor of accident. Thus when risk and hazards associated with a task or job operations are not assessed and identified, these could lead to occurrence of accident. Job safety looks at how employees are well informed on hazards and risk associated with job description and measure implemented to curtail or eradicate those hazards and risk. Aidoo and Eshun's (2012) three year analysis of occupational injury records in Ghanaian mines found the most common physical risk factors for injuries to workers legs, hands and heads were caused by faulty machinery, electrocution and vehicular accidents use in the performance of duties.

In conclusion, previous researchers have found how these variables predict accidents at the workplace (Hayes et al., 1998; Gyekye, 2006). They found that management safety practices and supervisor safety were among the best predictors of accident. Job safety impact significantly on accidents, job satisfaction, organizational commitment and compliance with safety behaviours, which is consistent with prior research supporting the importance of management safety in predicting accident-related variables (Zohar, 2003). Thus, improving the safety performance of

organizations (e.g., increasing employees' compliance with safety behaviors, decrease accident rate) should include attention to management's role in safety, job safety, coworker, safety programs and supervisor safety (Hayes et al., 1998; Gyekye 2006). However, this current study seeks to find out how these facets of occupational health and safety reduces accidents and how it impact on employee decisions to stay with high risk organizations such as mining.

## **2.5 Occupational Health and Safety Issues in Africa**

The improvement of reporting systems for occupational accidents and diseases is an increasingly important challenge in many African countries (ILO, 2003). As a result most of these developing Countries that are still in the process of developing accident and disease reporting systems receive a limited number of occupational accident and disease reports, and may underestimate the real magnitude of the problem (Hermanus, 2007).

According to Puplampu and Quartey (2012) the prevalence of occupational health and safety issues in most of the African countries is due to inadequate attention given to OHS by industry and the government. One of the reasons that have led to less concern to OHS in Africa is lack of funds and management commitment ((Kalejaiye , 2013). Most organizations in Africa see investment into OSH as cost that could increase production cost. Additionally, the reason might be that, greater emphasis is laid on increasing productivity and profitability whiles compromising health and safety standards, procedures and policies.

Another OHS perspective for Africa is that, Africa's slowness in promoting occupational health and safety is due to colonialism and its effects on socioeconomic development (Meredith, 1986). The colonial administration situated occupational health and safety in certain viable and relevant sectors in pursuit of their colonial ambitions. It is also suggestive that many African countries

have weak procedural and administrative justice systems to handle occupational health and safety issues, a perspective that is often neglected (Puplampu & Quartey, 2012). It is believed that, these have retarded the development and promotion of occupational health and safety in African countries which has resulted in several occupational health and safety risks, accidents, and hazards proliferate in most African countries (Amweelo, 2000).

Equally, Occupational health and safety remain neglected in developing countries in Africa because of competing national and sector issues and challenges (Nuwayhid, 2004). For instance, the Regional Committee for Africa Report (2004) stipulated that due to endemic poverty and poor performance of African economies, the African region is faced with a number of OHS challenges. According to this report, Africa's challenge is how to ensure that workers in both the informal sector and formal sector have adequate health and safety education and are able to actively use this information to better their health and safety practices. Probably, ignorance might be the reason for the neglect of occupational health and safety practices and investment in African countries (Puplampu & Quartey, 2012).

In the same vein, ILO (2003) indicated that, there are some African countries that are refusing to provide OHS services for its public sector workers. These shows that governments in African countries must help formulate and implement policy frameworks for promoting OHS. In 2005, a global meeting was held in Benin to review the state of occupational health and safety practices in Africa. Several observations were revealed and reported. First, it was established that most African countries have poor OHS review mechanisms, second, majority have inadequate OHS policy and some do not have OHS infrastructures (ILO, 2009).

Lastly, many countries in the developing world specifically Africa have pursued a path of rapid industrialization and have been willing to welcome all industries, however hazardous (Castleman, 1980; Jeyaratnam, 1994; Johanning, Selikoff & Goldberg, 1991). Owing to this, corporations frequently keep their high-technology facilities within developed countries but move traditional manufacturing facilities to developing countries and these manufacturing facilities include those used in the textile, chemical, metal, and machine manufacturing industries and mining. These industries with traditional machinery consume high quantities of natural resources and energy and may cause occupational diseases as well as environmental pollution (Park, Hisanaga & Kim, 2009). Hazardous industries are attracted to developing countries because of their cheaper labor force, lack of regulation, and poor enforcement of any existing regulations on occupational health and safety (Park, Hisanaga & Kim, 2009).

### **2.6.1 Occupational Health and Safety Legislation in Ghana**

The Occupational Health and Safety issues in Ghana, was established under the Factory Offices and Shops 1970 (Act, 328). The main provision of the Act was intended to bring it in line with internationally accepted standards on safety, health and welfare of employees. The occupational health and safety activities stated under the Act, include, creating safe work and work environment and promoting the safety, health and welfare of employees in order to ensure effective utilization of human capabilities thereby promoting increased productivity.

Although Ghana does not have a national policy on Occupational Health and Safety (Amponsah-Tawiah and Dartey- Baah, 2011), the Ghana Labour Act, 2003 (Act 651) has also made provision for Occupational Health and Safety. Provisions made under Part XV Section 118 of the Act include placing a responsibility on employers to ensure a safe and healthy working

environment and obligation on employees to use safety appliances provided by the employer in compliance of the employers instructions. It is generally known that developing countries like Ghana lack relevant policies to adequately cater for the health and safety of employees (Quainoo, 2001). Accident rate in the mining, manufacturing and construction industries in developing countries are known to be at levels that are several times higher than in the industrialized countries (Clarke, 2005).

A draft policy jointly developed by the Ministries of Labour, Health and Mines and Energy as far back as 2000 is yet to be adopted (Amponsah- Tawiah and Dartey- Baah, 2011). In the absence of a national occupational safety and health policy in Ghana, two main statutes have charted the cause for the provision of services over the years. These are the Factories, Offices and Shops Act, (328) of 1970 and the Mining regulations 1970 LI 665. These have driven the implementation in the labour and mining sectors respectively. Other statutes that have a bearing on health and safety are the Workmen's Compensation Law 1987, Environmental Protection Agency Act, (490) of 1994.

According to Clark, (2005), there is lack of specification of standards which should form the yardstick against which services are to be evaluated. Thus in general Ghana like many other developing countries has a long way to go in designing and implementing occupational safety and health policies and programs that could enhance the welfare of its working force.

### **2.6.2 Problems of OHS Legislations in Ghana**

There are many challenges with the legal provisions of OHS in Ghana. Firstly the Factories 'Act and Mining Regulations Act which provided guidance for implementation are very limited in

scope. For instance these Acts do not specifically cover majority of industries such as agriculture and other informal sectors (Clarke, 2005).

Secondly, the requirements given by these Acts are very narrow in scope in view to preventive measures. Proactive strategies like risk assessments, medical surveillance and control of hazards are not accommodated for in the Acts. There is an overlap of some of the functions mandated by these pieces of legislation for different ministries. For example, both the Environmental Protection Agency (EPA) Act and Factories Act mandate entry into factory premises by inspectors from the EPA and Factories Inspectorate, respectively. There is also some disagreement between the Factories' and Mines' Inspectorates regarding the inspection of explosives' stores, which both organizations have a mandate for (Clarke, 2005).

There is a lack of specification of standards which should form the basis against which services are to be assessed. Compensations as defined by the Workmen's Compensation Law bear no relation to the level of risk to which workers are exposed. The laws do not define funding mechanisms for OHS that should be applied both by government and the private sector. OHS programmes are therefore grossly underfunded, a reflection of the low priority accorded to it by the government (Clarke, 2005).

### **2.6.3 Health and Safety Issues in Ghana**

Most African countries are noted for poor occupational health and safety practices. However, despite numerous occupational health and safety advances in recent years, several occupational health and safety issues still persist in most African countries, particularly in Ghana. The African

continent is witnessing a verifiable shift towards peace, stability and economic growth and this situation is making the world appreciate West-Africa for its significant investment opportunities and Ghana is one such country in the sub-region experiencing rapid industrialization in recent times (Amponsah-Tawiah & Dartey-Baah, 2011). With this opportunity comes with its own challenges specifically in the area of OHS.

In every country, the state, society, organizations' and the employees themselves are the major stakeholders in seeing to the promotion of occupational health and safety issues. This is not different in the case of Ghana. Therefore to see to its implementation, there is the need for strong cultural and legal backings to enforce such essential ideas on health and safety issues. Currently, Ghana cannot boast of any comprehensive health and safety policy which provide standards or guide to be adhered to by industries. 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 and needs to be reviewed to meet the current needs of society.

This has resulted in organizations in Ghana operating under the assumption that the protection of limb and life should be a reason sufficient enough for workers to behave safely. Hence they tend to trample flagrantly on the rights of employees by not providing adequate health and safety protection (Amponsah- Tawiah & Dartey-Baah, 2011).

In addition, facilities for providing occupational health services in Ghana consist basically of government and private and faith based health facilities in the communities. However, a few companies have their own facilities that cater for the health and safety needs of their employees.

Services provided by the existing facilities are very limited as compared to those prescribed by the ILO Convention No. 161 on Occupational Health Services. Primary medical care is the norm with the provision of basic curative care and first aid becoming the order of the day (Amponsah-Tawiah & Dartey-Baah, 2011).

## **2.6 Occupational Health and Safety Issues in the Mining**

Mining is a major economic activity in many developing countries (UNEP, 1997; Tauli-Corpuz 1997). The main aim of any mining company is to mine an ore body in a given environment as safely, efficiently and economically as possible. Operations, whether small or large-scale, are inherently disruptive to the environment (Makweba & Ndonde, 1994), producing enormous quantities of waste that can have deleterious impacts for decades (UNEP, 1997). The environmental deterioration caused by mining occurs mainly as a result of inappropriate and wasteful working practices and rehabilitation measures.

Mining activities are generally associated with dangerous working conditions which result in accidents and injuries and the consequence is the loss of production time, the victim's incapacity to work and the loss of special skills to the mining companies (Aidoo & Eshun, 2012). As a result of such losses, most mining companies worldwide are placing high premium on safety (accident control and prevention). However, as posited by Donoghue (2004), although substantial progress has been made in the control of occupational injuries there remains more room for further reduction of injury cases in the mining industries.

In the United States, from 1880 to 1910, mine explosions and other accidents claimed thousands of victims (Kowalski-Trakofler & Barrett, 2003). The vigorous nature of mining and the

continuous tampering of soil and rocks present both a direct and perceived threat to workers' safety (Pule, 2011) since they are exposed to a number of hazardous conditions in the physical work environment which include excessive noise, mine gases, mine fires, heat stress, poor visibility and dusty conditions ( Amponsah- Tawia et al., 2013) . These hazards in turn could lead to accidents which vary across the mining sector and include rock fall, fires, explosions, mobile equipment accidents, falls from height, entrapment and electrocution (Donoghue, 2004). For instance, there was a mine inundation at Quecreek, Pennsylvania in 2002, explosion at sago mine and fire at Alma Mine both in West Virginia (Groves, Kecojevic, & Komljenovic, 2007) and on August 5<sup>th</sup>, 2010, miners were trapped 650 meters underground by an earth landslide (Cardena, 2011). Also according to Akabzaa (2000) mining has a number of common stages or activities, each of which has potentially-adverse impacts on the natural environment, society and cultural heritage, the health and safety of mine workers, and communities based in close proximity to operations. Likewise, Kitula (2006) found out that in Tanzania most of mine-related fatalities include Collapsing of tunnels and the presence of poisonous gases underground.

Most developing countries do not have comprehensive sources of occupational health and safety data and much of the data are fragmented and incomplete (Hermanus, 2007). Reliability of the occupational health data is especially a problem in developing countries where reporting systems and reporting criteria are not well established. Major health risks encountered in mining include airborne pollutants such as silica dust and coal dust, noise, heat and vibration. Other significant health risks include chemical risks, which are not related to underground air pollutants or gases, skin disorders, ergonomic stresses, ionizing radiation and in the diamond sector on the west coast of the country, decompression illness associated with diving ( Hermanus, 2007). He affirms that

although health risks can be avoided by implementing controls at source in the work environment, designing such controls for mining environments presents considerable challenges because dust and noise are generated by mining itself.

Donoghue (2004) also supports this view that noise is everywhere within mining, stemming from a variety of increasingly mechanized practices, including boring, drilling, blasting, cutting, materials handling, ventilation, crushing, conveying and ore processing. Again, Aidoo and Eshun's (2012) three year analysis of occupational injury records in Ghanaian mines also found that ground fall and slip falls were major causes of accidents. Additionally they found the most common physical risk factors for injuries to workers legs, hands and heads were caused by faulty machinery, electrocution and vehicular accidents.

Restricted space as occurs in most underground mines also greatly limits the number and type of mechanical devices (cranes, hoists, or forklifts) that can be used to reduce physical workload hence causing workers to sometimes work beyond their limits. Workers in mines with very low roofs may have to work on their hands and knees, backs or stomachs in confined spaces, risking the possibility of an explosion or cave-in, electric shock or exposure to harmful gasses. In fact, restricted spaces in many underground mines practically compel workers to adopt awkward postures that ergonomists strive to avoid (Torma-Krajewski, Steiner, Lewis, Gust, & Johnson, 2006). Workers in surface mines, on the other hand also have to contend with rigid outdoor work in all kinds of weather and climates. Surface mining, which is also more commonly associated with solar heat or cold temperatures, has the associated risks of heat stroke or chill. Heat exhaustion is also a risk factor in underground mining due to the dual effect of increasing rock temperature and the auto-compression of the air chamber (Donoghue, Sinclair & Bates, 2000).

### 2.7.1 Concept and Definition of Commitment

Organizational commitment is job related attitudes that has received extensive attention from researchers around the globe. For instance researchers have investigated commitment as an important attitudinal predictor of employee behaviour and intentions (Mowday, Porter & Steers, 1982). The concept of commitment may have attracted more attention recently from organizational scientists, perhaps due to changes taking place in employment practices that have arisen from the international employment marketplace and increased alternatives for skilled employees in a global economy (Sullivan & Arthur, 2006). The success of an organization and the pursuit of quality depend not only on how the organization makes the most of human competencies, but also on how it stimulates commitment to the organization (Silva, 1997).

According to Bateman and Strasser (1984) organizational commitment is a multidimensional in nature, involving an employee's loyalty to the organization, willingness to exert effort on behalf of the organization, degree of goal and value congruency with the organization, and desire to maintain membership. In addition, Herscovitch and Meyer (2002) explain organizational commitment as the degree to which an employee identifies with the goals and values of the organization and willingly exert effort to help it succeed. Similarly, Porter, Steers, Mowday and Boulian, (1974) posit that organizational commitment is "the relative strength of an individual's identification with and involvement in a particular organization". Furthermore, Mullins (2005) describes organizational as an employee's level of identification and involvement in the organization. That is the degree to which employee characterize and embrace with a particular organization goals and exert considerable effort to the achievement of those goals. Organizational commitment is a subjective measure that captures employees' perceptions of their

identification with their organizations' core values, their intent to stay with their organization, and their willingness to exert more effort than expected by their organization.

Again, Organizational commitment has been conceptualized as a psychological state or mindset that binds individuals to a course of action relevant to one or more targets, and a willingness to persist in a course of action (Cooper-Hakim & Viswesvaran, 2005). Thus commitment is different from motivation, in that commitment influences behaviour independently of other motives and attitudes, and may lead to persistence to a course of action (Meyer, Becker & Vandenberghe, 2004; Meyer & Herscovitch, 2001). Also, Meyer and Allen (1997) conceive organizational commitment as a psychological state that characterizes employee's relationship with the organization which has implication on the decision to continue membership in the organization. Further, it is a form of psychological contract, which employees make in response to the benefits provided by the organization (Angle & Perry, 1983). It could be inferred from these authors that, organization commitment is the extent to which an employee is psychologically bound to an organization therefore influences its relationship with the organization.

In addition, Mowday et al., (1982) established that organizational commitment is a strong belief in an organization's goals, and values, which leads to willingness to exert considerable effort on behalf of an organization and a strong desire to remain a member of the organization. OC is an exchange agreement between individuals and the organization (Coopey, 1995). Thus individuals come to organization with needs, expectations and willing to exchange their skills, knowledge, abilities and capabilities to satisfy those needs and expectations. When the organization is able to meet those needs and expectation commitment is then created. Commitment is a construct that

seeks to explain consistencies involving attitudes, beliefs and behaviour and involves behavioral choices and implies a rejection of feasible alternative courses of action (Hulin, 1991). Thus, these consistencies are usually seen as behavioral choices devoted to the pursuit of a common goal or goals (Hulin, 1991).

It can therefore be deduced from the above definitions that organizational commitment is the psychological identification of employees to the beliefs and values and their acceptance to remain a member and involve themselves in the achievement of organizational goals. In other words organizational commitment refers to the extent to which an employee identifies and willingly embraces the culture of organization and exerts considerable effort to the achievement of organizational objectives.

### **2.7.2 Effect of Organizational Commitment**

In general, organizational commitment is considered useful measure of organizational effectiveness. With regards to positive influence of commitment on the organization, committed employees are normally high performers that contribute greatly towards organizational productivity (Oshagbemi, 1997; Yousef, 2000). According to Rowden, (2000), commitment has been related to valuable outcomes for both employees and employers of which could result in enhanced feelings of belonging, security, efficacy, greater career advancement, increased compensation and increased intrinsic rewards for the individual. Further, for the organization, the rewards of commitment could mean increased employee tenure, limited turnover, reduced training costs, greater job satisfaction, acceptance of organization's demands, and the meeting of organizational goals such as high quality (Mowday, Porter, & Steers, 1982). Employees who are committed to their employing organizations are less likely to quit than those who are not

(Mathieu & Zajac, 1990). Greater organizational commitment has also been linked to lower rates of absenteeism, better job performance (Geurtz, Schaufeli & Rutte, 1999; McNeese-Smith, 1995; Somers, 1995), job satisfaction, work motivation, organizational citizen behaviours, work environment characteristics, and employee characteristics (Lok & Crawford, 2001; Mowday, Porter, & Steers, 1982).

Employees who are not committed to their organizations engage in withdrawal behavior, defined as a set of actions that employees perform to avoid the work situation behaviors that may eventually culminate in quitting the organization. Low commitments has also been associated with low levels of morale and intent to quit (DeCottis & Summers, 1987) and decreased measures of altruism and compliance (Schappe, 1998). According to Mowday, Porter, and Steers (1982) non-committed employees may describe the organization in negative terms to outsiders thereby inhibiting the organization's ability to recruit high-quality employees. Research consistently indicates that organizational commitment is a better predictor of actual turnover (Tett & Meyer, 1993).

### **2.8.1 Contemporary Theories of Organizational Commitment**

The modern theories of organizational commitment stem from Becker's (1960) side-bet theory; the Mowday, Porter, Steers and Model (1982); the O'Reilly and Chatman Model (1986) and the Allen and Meyer Three-Component Model.

### **2.8.2 The Becker's 'Side-Bet' Theory**

The Side-Bet theory was propounded by H.S Becker in 1960. According to this theory, commitments come into being when a person, by making a side-bet, links extraneous interests with a consistent line of activity. The term "Side Bets" was used by Becker (1960) to refer to the

accumulation of investments valued by the individual which would be lost if he or she were to leave the organization. Thus Becker (1960) equated commitment to the investment that individual may have pile up with the organization. He further argue that over certain period of time certain costs accrue which make it difficult for a person to disengage from consistent line of activity which propels maintaining membership in the organization. The threat of losing these investments coupled with a perceived lack of alternatives to replace the loss make the person commit to the organization (eg. position, salary and bonuses).

Further, some other researchers (Ritzer & Trice, 1969) tested the side bet theory, to establish the nature and the actual indexes of the theory. Ritzer and Trice (1969) were of the view that the side-bets should amass over period of time and further suggested that age and tenure were the indexes of the side-bets as the best indicators of actions taken to which builds up one stake in the employing organization. Later some researcher also seconded Beck's theory and examined it, likewise suggested other indexes such as education, pay, gender, mobility, organizational level, marital status, number of children, perceive job alternatives (Amernic & Aranya, 1983; Stevens, Becker & Trice, 1978; Aranya & Jacobson, 1975).

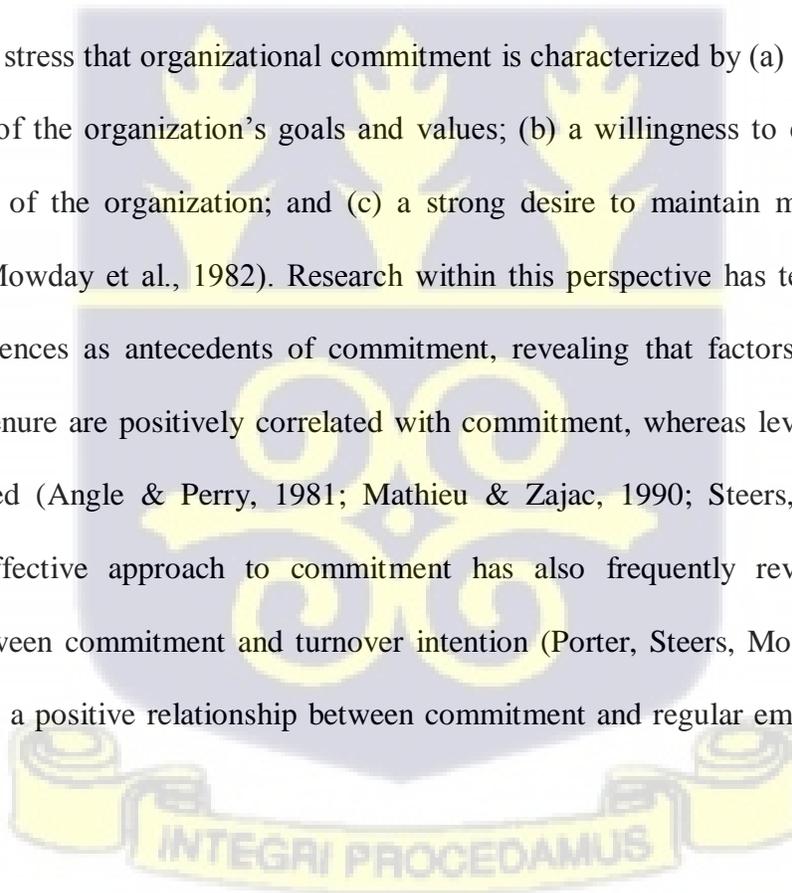
However, the findings based on the side-bet approach were disappointing in terms of the relationship between commitment and behavioral outcomes in the workplace, and in terms of their relationship to determinants (Cohen & Lowenberg, 1990). The problem lay in the scales that measured the two commitments. These scales were later criticized as being too simplistic and not really measuring Becker's theory (Meyer & Allen, 1984). Therefore, researchers suggested other theories for commitment that were based on the idea of psychological attachment, like a psychological contract between the individual and the organization. The psychological approach began with a scale, the Organizational Commitment Questionnaire

(OCQ) advanced by Porter and Smith (1970) and Porter and his colleagues (1974). These authors were of the view that side-bet theory focused just on continuance commitment.

### **2.8.3 The Mowday, Porter and Steers' Model**

Arguably the most thoroughly examined approach to organizational commitment is the viewpoint postulated by Mowday and his colleagues, which advanced the employee's emotional attachment with the organization (Mowday, Porter, & Steers, 1982). Mowday et al, (1982) described organizational commitment as the comparative strength of an individual's recognition with and involvement in a particular organization, which is characterized by conviction in and acceptance of organizational goals and values, willingness to exert effort on behalf of the organization.

This perspective stress that organizational commitment is characterized by (a) "a strong belief in and acceptance of the organization's goals and values; (b) a willingness to exert considerable effort on behalf of the organization; and (c) a strong desire to maintain membership in the organization" (Mowday et al., 1982). Research within this perspective has tended to focus on individual differences as antecedents of commitment, revealing that factors such as age and organizational tenure are positively correlated with commitment, whereas level of education is negatively related (Angle & Perry, 1981; Mathieu & Zajac, 1990; Steers, 1977). Research utilizing this affective approach to commitment has also frequently revealed an inverse relationship between commitment and turnover intention (Porter, Steers, Mowday, & Boulian, 1974) as well as a positive relationship between commitment and regular employee attendance (Steers, 1977).



#### **2.8.4 The O'Reilly and Chatman Model**

According to O'Reilly and Chatman (1986) the construct of organizational commitment has occupied a prominent place in organizational behavior research. They explain organizational commitment as the psychological attachment felt by the person for the organization and thus reflect the degree to which the individual internalizes or adopts characteristics or perspectives of the organization. They further give three constructive taxonomy as a basis for attitudinal change for which they indicated comprised of compliance, identification and internalization.

To O'Reilly and Chatman (1986), compliance occurs when attitudes and behaviors are adopted not because of shared beliefs but simply to gain specific rewards. They argue that in this case, public and private attitudes may differ. Identification occurs when an individual accepts influence to establish or maintain a satisfying relationship; that is, an individual may feel proud to be a part of a group, respecting its values and accomplishments without adopting them as his or her own. Internalization occurs when influence is accepted because it induced attitudes and behaviors are congruent with one's own values; that is, the values of the individual and the group or organization are the same.

They concluded that the basis for one's psychological attachment to an organization may be predicated on three independent foundations: (a) compliance or instrumental involvement for specific, extrinsic rewards; (b) identification or involvement based on a desire for affiliation; and (c) internalization or involvement predicated on congruence between individual and organizational values. These differences may represent separate dimensions of commitment. Through criticisms of their work, O'Reilly and Chatman (1986) restructured their framework to recognize two dimensions, compliance and normative, a combination of internalization and identification.

### **2.8.5 The Meyer and Allen Three-Component Model**

According to Meyer and Allen (1997) in order to have a better understand of commitment at the workplace, the concept must be viewed in three main dimensions. They based their research on Becker's side-bet theory (cost attachment) and Mowday, Porter and Steers model (affective attachment). They view organizational commitment, as a psychological state that characterizes employees' relationship with the organization and has implication for the decision to continue membership in the organization (Meyer & Allen, 1997).

They refuted the unidimensionality of organizational commitment proposed by earlier researchers such as (Mowday, Porter, & Steers 1982; Mowday, Steers & Porter 1979). To Meyer and Allen, organizational commitment could be experience in three folds and simultaneously to varying degrees. After researching into commitment they first identified two form of commitment those of affective attachment and cost attachment (Meyer & Allen, 1984). They were of the view that those of affective attachment develop emotional attachment and identified themselves with organization. Those with cost attachment on the other hand devote themselves to the organization as results of the investment they might have accumulated with the organization and could not get substitute when they quit. Upon further research, Allen and Meyer (1991) identified a third constituent, that of obligation.

Mathieu and Zajac (1990) suggest that differences in commitment levels may develop out of individual differences. In other words, commitment to an organization could depend on individuals and the value they place on organizational offerings. So in order to have a better understanding to individual commitment to an organization it is imperative to examine these dimensions because these different components of organizational commitment could have differential effects on other variables, such as attitudes or behaviors (Meyer and Herscovitch,

2001). Finegan (2000) claimed that with all three types of commitment, the employee is committed to the organization but for different reasons, and accordingly, each type of commitment produces different effects. The three form of commitment proposed by Meyer and Allen are further discussed below.

### **2.8.6.1 Affective Commitment**

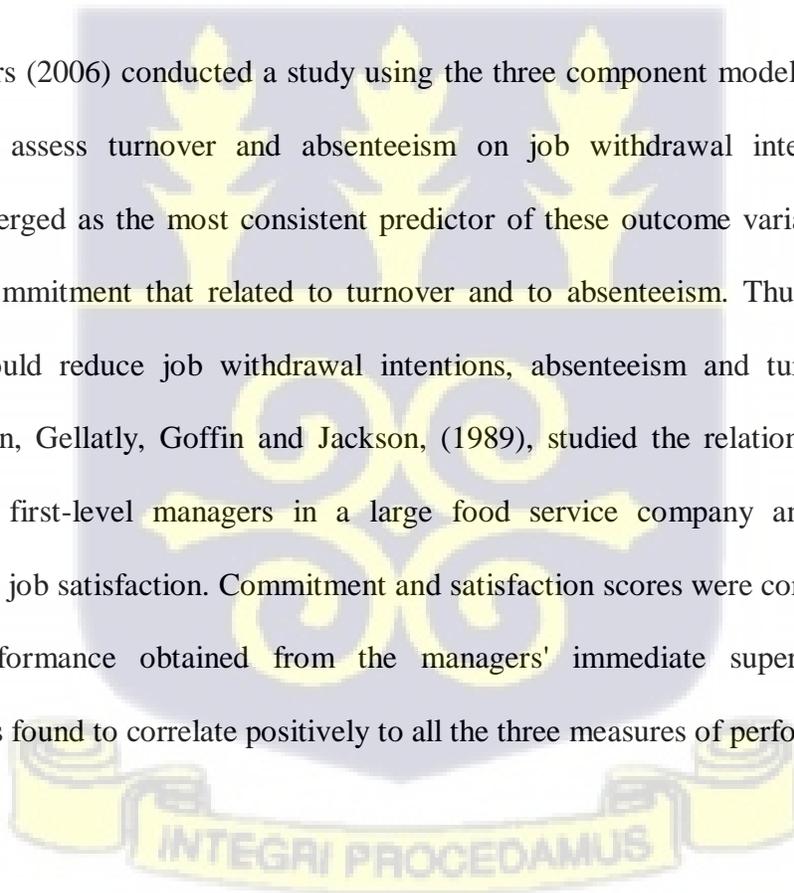
Affective commitment shows the extent to which the individual identifies with the organization thus individual identification, involvement, and emotional attachment to organization (Allen & Meyer, 1996). According to Mowday et al (1979) affective commitment is when employees identify themselves with a particular organization and its goals and maintain membership to facilitate those goals. Consistent with Zeidan (2006), employees in high affective commitment demonstrate emotional attachment identification with and involvement with the organization and such employees are less likely to engage in withdrawal behaviour and more likely to accept change (Meyer & Allen, 1997; Iverson & Buttigieg, 1999). A series of meta-analyses examination of relationship between commitment and turnover, absenteeism, job performance and organizational citizenship behaviour showed that all the three component of commitment correlate negatively with turnover intension (Stanely, Meyer, Topolyntsky & Herscovitch, 1999). However, affective commitment had the strongest, followed by normative and continuance commitment. Also affective commitment relate strongly to absenteeism and citizenship behaviour than that of normative and continuance commitment.

Meyer and Herscovitch (2001) are of the view that affective commitment correlates to a wide range of outcome because, when commitment is accompanied by a mindset of desire, the behavioural consequences of commitment as perceived by individual are broader than when accompanied by a mind set of provided cost and obligation. They argue that an individual with

high affective commitment towards an organization is more likely to consider the best interest of that organization than that of normative and continuance commitment.

Again, in a structural equation modeling by Culpepper (2011) examining the three components of commitment on turnover, affective commitment predicted subsequent turnover in an immediate and relatively short interval of 4 months. Normative commitment predicted turnover in neither the near term nor outmonths. Turnover rates for employees with low affective commitment were much higher than those with high affective commitment in the first quarter of a 1-year monitoring period, but subsequent turnover rates were roughly the same for the two groups. He suggests that efforts to reduce organizational turnover is to ensure enhance affective commitment.

Similarly, Somers (2006) conducted a study using the three component model of organizational commitment to assess turnover and absenteeism on job withdrawal intentions. Affective commitment emerged as the most consistent predictor of these outcome variables and was the only view of commitment that related to turnover and to absenteeism. Thus strong affective commitment would reduce job withdrawal intentions, absenteeism and turnover. Likewise, Meyer, Paunonen, Gellatly, Goffin and Jackson, (1989), studied the relationship between the performance of first-level managers in a large food service company and their affective commitment and job satisfaction. Commitment and satisfaction scores were correlated with three indexes of performance obtained from the managers' immediate supervisors. Affective commitment was found to correlate positively to all the three measures of performance.



In a Confirmatory factor analyses, Chen and Francesco (2003) examined the relationship between the three components of commitment and employee performance using sample of 253 supervisor–subordinate dyads from the People’s Republic of China. Results showed that affective commitment related positively to in-role performance and OCB, while continuance commitment was not associated with in-role performance but negatively correlated with OCB. In addition, normative commitment moderated the relationship between AC and in-role performance as well as OCB. The linear relationship between AC and in-role performance/OCB was stronger for those with lower NC.

### **2.8.6.2 Normative Commitment**

Normative commitment involves a feeling of moral obligation to continue working for a particular organization (Meyer & Allen, 1991). Thus normative commitment involves a person maintaining membership in an organization out of a sense of obligation. Weiner (1982) posit that the feeling of obligation to remain with an organization may result from internalization of normative pressure exerted on an individual prior to entry into an organization that is cultural socialization or organizational socialization. However, according to Meyer and Allen (1991) normative commitment may be developed when an organization provides and employee with rewards in advance such as college tuition or incur significant costs in providing employment such as training, safety and so forth. Acknowledgement of such investment on the part of the organization could create imbalance relationship and cause employee to feel obligated to reciprocate by devoting themselves to the organization until the cost has been paid (Scholl, 1981). According to Marsh and Mannari (1977) normative commitment centers on a person own moral believes and sense of responsibility to the organization. These authors further asserted

that, people who remain with an organization for such extended period of time do so in part because they believe it to be morally correct.

Similarly, normative commitment indicates the degree to which employees align themselves with organizational goals and pull in the same direction as the company (Jaros, 1997). Iverson and Buttigieg (1999) found normative commitment to be significantly negatively correlated with years of education, raising the possibility that less educated workers harbor feelings of organizational loyalty reminiscent of a bygone era. Work experiences believed to contribute to the development of normative commitment include organizational support, organizational justice and role clarity, and normative commitment is positively associated with overall job satisfaction and job involvement (Meyer et al., 2002). The importance of normative commitment is its association with withdrawal cognitions and organization citizenship behaviors.

### **2.8.6.3 Continuance Commitment**

Continuance commitment (CC) refers to perceptions that the costs of leaving the organization exceed the costs of remaining (Sinclair, Tucker, Wright & Cullen, 2005). It describes an individual's need to continue working for the organization based on the perceived costs associated with leaving (Allen & Meyer, 1990; Meyer & Allen, 1991, 1997). Continuance commitment refers to the commitment employees experience towards the organization because of investments they have made or because of the costs associated with leaving the organization (Dipboye, Smith & Howell, 1994; Mathieu & Zajac, 1990). This form of commitment develops when employees realize that they have accumulated investments they would lose if they leave the organization or because their alternatives are limited. Continuance commitment is the willingness to remain in an organization because of the investment that the employee has with

“nontransferable” investments. Nontransferable investments include things such as retirement, relationships with other employees, or things that are special to the organization (Reichers, 1985). Continuance commitment also includes factors such as years of employment or benefits that the employee may receive that are unique to the organization (Reichers, 1985). Meyer and Allen (1997) further explain that employees who share continuance commitment with their employer often make it very difficult for an employee to quit. Continuance commitment develops as employees recognize that they have accumulated investments that would be lost if they were to leave the organization or as they recognize that the availability of comparable alternatives is limited (Meyer, Allen, & Smith, 1993).

According to Meyer, Allen, and Smith (1993) the three types of commitment are all psychological state that either characterizes the employee’s relationship with the organization or has the implications to affect whether the employee will continue with the organization. Meyer et., al (1993) explain that those employee’s with a strong affective commitment will remain with an organization because they want to, those with a strong continuance commitment remain because they have to, and those with a normative commitment remain because they feel that they have to. This indicate that it is important for management to know the varying effect of commitment in order to channel resource and set policies that will help organization to retain committed employees.

### **2.8.7 Personal characteristics and organizational commitment**

Research concerning organizational commitment has been viewed from the personal characteristics of individuals. Some researchers (Salami, 2008; Azeem, 2010; Allen & Meyer, 1993; Padala, 2011; Mathieu & Zajac, 1990) are of the opinion that the causes of organizational

commitment could be dealt with the personal characteristics such as age, gender, marital status and education. Salami (2008) found a positive correlation between employee age and organizational commitment and stated that as employees get older on the job their commitment increases. Another reason could be scarcity of alternative employment for older workers since many organizations are reluctant to hire older workers whose length of contribution to the organization would necessarily be brief.

Likewise, Padala (2011) found inverse relationship between education and organization commitment. According to Azeem (2010), this inverse relationship may result because more highly educated individual have higher expectations and needs which the organization may be unable to meet. Consequently highly educated employees become frustrated and unhappy and therefore, uncommitted to the organization, believing that their expectations and needs can be met in other organization.

Again In meta-analysis carried out by Mathieu and Zajac (1990) involving 124 published studies of organizational commitment, based on the positivist approach mentioned above, only 14 studies identified women as a discrete group. Mathieu and Zajac's (1990) research concluded that women tended to be more committed than men, although the magnitude of the difference was small. It was found that in general there was no consistent relationship between gender and organizational commitment. Also Cohen and Lowenberg (1990) found that there was a weak relationship between gender and organizational commitment.

Bowen, Radhakrishna and Keyser (1994) conducted a research on job satisfaction and commitment of 4-H agents and found that married workers were more committed to the organization than single workers. They concluded that married workers might be committed

rather than single workers because of more family responsibilities and to cater for that require financial support and as such causes them to be more committed to the organization. Also lack of alternative employment opportunity could attribute to married workers commitment to the organization especially when they have dependents. Furthermore, Salami (2008) found job tenure to have significant impact on organizational commitment and concluded that the longer workers stay with an organization the more they have the time to evaluate their relationship with the organization.

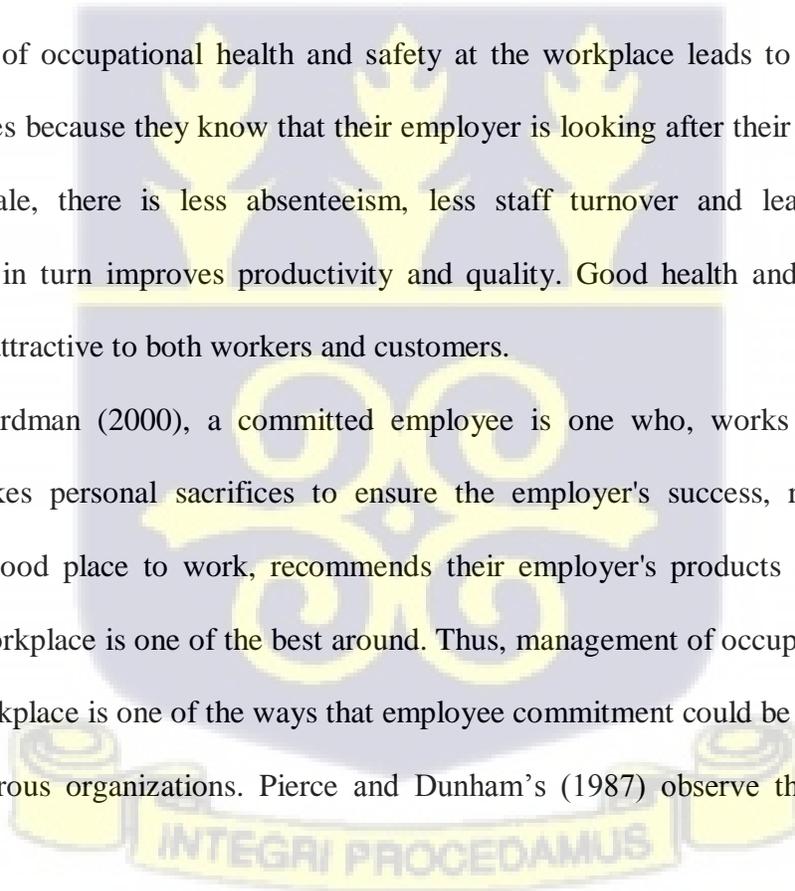
## **2.9 Occupational Health & Safety and Commitment**

According to Cooper (1995) if employees perceived the risks of a given job to be underrated by management, it is likely that the employees commitment and loyalty to that organization will be undermined as the employer will be perceived to be unwilling to provide a safe working environment. In other words to get committed employees to work within highly hazardous organization there is the need to provide safety and health systems that safe guard employees health and safety. Cole (2002) posits that employees who are healthy and feel safe at work are those that can fully invest their capabilities and exploit the best of their potentials to work. Furthermore it has been established that employees with high level of commitment are those that identify themselves with the organizational goals and put in much effort to achieve those goals (Raju & Srivastava, 1994). Similarly, Sinclair, Tucker, Wright and Cullen (2005) suggest that when organizations fail to address poor working conditions such as health and safety issues, workers are more likely to judge the costs of staying with the firm as exceeding the costs of leaving.



Grawitch, Trares and Kohler (2004) also explored the relationship between employee satisfaction with different workplace practices (i.e., employee involvement, growth and development, work-life balance, recognition, health and safety) and employee outcomes (i.e., organizational commitment, emotional exhaustion, mental well-being, and turnover intentions). Overall, regression results indicated that satisfaction with health and safety practices was predictive of organizational commitment. Also in china, Sui (2002) found a positive relationship between affective commitment and physical well being of employees. This means that to have committed employees management must show concern with protecting the safety, health and welfare of people engaged at work. Because committed employees are those who stay with an organization, attend work regularly, puts in a full day and more, protects corporate assets, and believes in the organizational goals and positively contribute to the organization because of their commitment to it. Management of occupational health and safety at the workplace leads to improved morale among employees because they know that their employer is looking after their health and safety. With high morale, there is less absenteeism, less staff turnover and leads to committed employees; this in turn improves productivity and quality. Good health and safety makes an employer more attractive to both workers and customers.

According to Ardman (2000), a committed employee is one who, works hard to improve themselves, makes personal sacrifices to ensure the employer's success, recommends their company as a good place to work, recommends their employer's products and services, and believes their workplace is one of the best around. Thus, management of occupational health and safety at the workplace is one of the ways that employee commitment could be created especially in highly dangerous organizations. Pierce and Dunham's (1987) observe that, organizational



commitment is more important in jobs that are complex require adaptability and demand initiatives of which are the characteristics of mining work.

## **2.10 Theoretical Review**

### **2.10.1 Social Exchange Theory**

The Social Exchange Theory starts with the premise that humans interact in social behavior in order to maximize benefits and minimize costs, which then leads to a positive outcome (Hutchison & Charlesworth, 2003). Social exchange theory posits that all human relationships are formed by the use of a subjective cost-benefit analysis and the comparison of alternatives (Emerson, 1972).

According to Molm (2001), social exchange theorists take their focus on aspect of social life, the benefits that people obtain from, and contribute to, social interaction, and the opportunity structures and relations of dependence that govern those exchanges. When people behave in the manner which they do, this is considered to be a social behaviour. The result of this social behaviour is what most classifies to be social exchange theory. The purpose of which is widely viewed as maximizing benefits with the intent of lowering or minimizing costs. These exchanges can be understood in expressions of both material and non-material goods, such as the symbols of approval or prestige.

According to Baker (2001), although values and norms govern behaviour, people attempt to minimize costs when interacting with others. Within social exchange theory, the anticipation of a reward such as social approval, a better standard of living or freedom from responsibility is considered to be influential for social behaviour. Thus the central message is that people weigh the pros and cons before making a decision. In other words in a social exchange, team members

exchange knowledge, expertise and resources with each other when they think that the reward for such behaviour is equal to or greater than the cost (Liao, Liu & Loi, 2010). However, if team members perceive that their gain will be less than the cost they pay, they will not participate in sharing or exchanging (Liao, Liu & Loi, 2010).

As stated by Brinkmann and Stapf (2005), the viability of social exchange theory is based on the assumption that individuals recognize one's life situations and notice each one's needs. It also refers to the principal of reciprocity, whereby privileges granted by one are returned by the other. The interaction between humans will be noticed consciously and in some way reciprocated. The willingness to generate an advance performance will be responded with a payback, either soon or with a time delay

### **2.10.2 Reciprocity Theory**

Reciprocity theory posits that people reward kind actions and punish unkind ones. The theory takes into account that people evaluate the kindness of an action not only by its consequences but also by the intention underlying this action. Further the theory explains why subjects behave differently in treatments where they experience the actions of real person compared to treatments where they face actions caused by random device.

According to Falk and Fischbacher (2000) a reciprocal action is modeled as behavioural response to an action that is perceived as either kind or unkind. The more an action is considered as kind or unkind, the more it will be rewarded or punished, respectively. People evaluate an experience action as kind or unkind by observing the outcome or the consequences of an action and the underlying motivation that is the intentions involved. It is not only the consequence that determines the kindness of an action. Rather people determine their dispositions toward others

according to motives attributed to these others not solely according to actions taken (Rabin, 1998). Reciprocity on the other hand dictated to punish in order to reciprocate an unkind act. The aim of reciprocating subject is not to reduce inequity but to lower opponents pay off. The reciprocity driven punishments are therefore not restricted to situations where inequity can be reduced. Instead it occurs whenever a person is treated unkindly and is given chance to pay back. Thus when employee perceived that the organization does not care for their health and safety they will reciprocate it by paying back the organization by exhibiting work behaviours such as absenteeism, intent to leave the organization and poor performance.

### **2.10.3 Equity Theory**

Equity theory proposes that a person's motivation is based on what he or she considers being fair when compared to others (Redmond, 2010). As noted by Gogia (2010), when applied to the workplace, Equity Theory focuses on an employee's work-compensation relationship or "exchange relationship" as well as that employee's attempt to minimize any sense of unfairness that might result. This theory was propounded by Adams (1963, 1965) and focuses on the issue of fairness and equal treatment in the organizations. Further looks at the effects of perceptions of equities and inequities in inputs and outputs on specific workplace behaviour. This theory suggests that people working in organizations form notions of the fairness or otherwise of their treatment in a four step process (Moorhead & Griffin, 1998).

Thus, employees first assess how they perceive themselves to be treated by the firm. Second they form a view of how another or others with whom they measure themselves are treated by the firm. Third they compare their particular circumstances with a referent that might be a specific individual or some persons or a generalized group which leads to specific perceptions of equity

or inequity. Finally, feelings of inequity or equity may lead (depending on their type and intensity) to specific behavioural outcomes (Coldwell & Perumal, 2007).

According to Cosier and Dalton (1983), the key to equity theory is the ratio of inputs to outcomes. Inputs include all factors (education, effort, experience etc) that a person perceives as relevant in obtaining some return. Outcomes include all factors seen to be returns on the individual's job investment. The value of the exchange to the individual, then, is a function of the outcomes to input ratio. It is from this ratio that the formulation of equity and inequity arises. Greenberg (1990) found in an investigation of employee theft as a reaction to underpayment equity, that groups whose pay had been reduced had significantly higher theft rates compared to control groups whose pay had been unchanged. According to Allen and White (2002), the latest view of the classical equity model suggests that it has its greatest predictive value of employee behaviour in cases focusing on equity sensitive groups.

#### **2.10.4 Affective Event Theory**

Affective event theory (AET) suggested that characteristics of the work environment influence the occurrence of certain work events, which lead to specific emotions (affective reactions), which in turn shape work attitudes and behaviors (Weiss & Cropanzano, 1996). That is emotions are critically important to how employees handle workplace situations. The model states that there is a relationship between the employees' internal influences (such as emotions) and their reactions to incidents that happen during their workday that affect their performance, commitment, and long-term job satisfaction. Previous motivational theories have proposed that work environments influence the affective and evaluative response of the employee (Hackman & Oldham, 1976). Likewise, many researchers have tested positive and negative affectivity as dispositional characteristics of employees that have attitudinal, stress, and performance

outcomes (e.g., Brief, Burke, George, Robinson, & Webster, 1988; George, 1991; Staw, Bell, & Clausen, 1986). The AET model linked these research branches together. Events that occur at work, depending on the work environment and the disposition of the individual, may result in emotional reactions. Emotions are usually characterized as affective, short-lived, relatively intense, and they typically interrupt thought processes (Fiske & Taylor, 1991; Frijda, 1993; George, 1996). Thus, events may occur within work environments that act as “affective shocks” to the existing system (Weiss & Cropanzano, 1996), meaning they require further interpretation and reaction. When emotional reactions are aggregated over time, they are proposed to influence the overall feelings one has about the job (Weiss & Cropanzano, 1996).

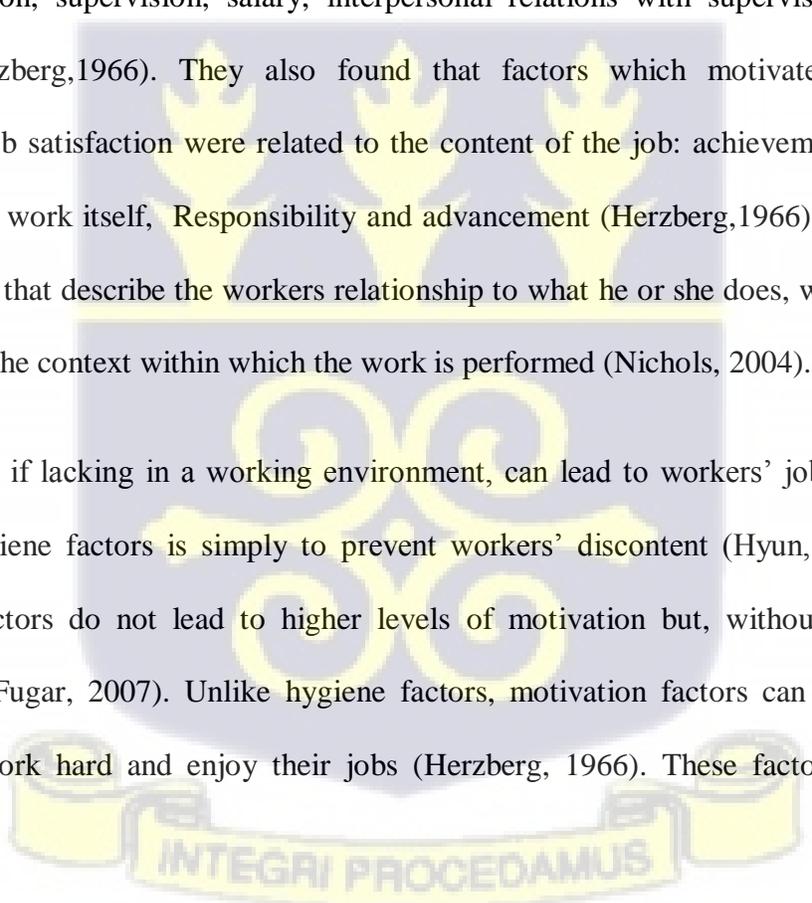
The theory explains that there are both positive and negative occurrences during the workday that can affect an employee's emotions and job satisfaction. AET is about how the work environment emotionally affects workers and does not take into account any outside influences. All parts of the job can affect emotions, including the actual job tasks, management style, co-workers' actions, health and safety issues and job pressures. Positive and negative situations at work create long-term emotional responses that can impact job satisfaction, development, and commitment.

#### **2.10.5 Herzberg Two Factor Theory**

Herzberg's theory of motivation postulated that satisfaction and dissatisfaction were not two opposite extremes of the same continuum, but two separated entities caused by quite different facets of work (Furnham, Eracleous, & Chamorro-Premuzic, 2009). In the mid 1960s management theorist Frederick Herzberg made a discovery that changed the way in which people understood motivation in the workplace (Nichols, 2004). Herzberg (1966) and his

colleagues after conducting a research on factors that affect job attitude of employees, suggested Two-Theory of Motivation. According to these authors there are two factors driving employee satisfaction in the workplace. Herzberg (1966) refuted the traditional perspective on job attitudes which holds that the opposite of job satisfaction is job dissatisfaction and the opposite of job dissatisfaction is job satisfaction. In other words removing the causes that make workers dissatisfied would help them to be satisfied and removing causes that makes workers satisfied would make them dissatisfied (Chyung, 2005). As a result proposed two main factors which they referred to as motivation factors and hygiene factors. They discovered that dissatisfaction tended to be associated with complaints about the job context or factors in the immediate environment (Fugar, 2007). These factors which they called hygiene or extrinsic factors are company policies and administration, supervision, salary, interpersonal relations with supervisor and working conditions (Herzberg, 1966). They also found that factors which motivated workers and contributed to job satisfaction were related to the content of the job: achievement, recognition, the nature of the work itself, Responsibility and advancement (Herzberg, 1966). The motivating factors are those that describe the workers relationship to what he or she does, while the hygiene factors relate to the context within which the work is performed (Nichols, 2004).

Hygiene factors, if lacking in a working environment, can lead to workers' job dissatisfaction. The role of hygiene factors is simply to prevent workers' discontent (Hyun, 2009). In other words, these factors do not lead to higher levels of motivation but, without them, there is dissatisfaction (Fugar, 2007). Unlike hygiene factors, motivation factors can truly encourage employees to work hard and enjoy their jobs (Herzberg, 1966). These factors involve what



people actually do on the job and should be engineered into the jobs employees do in order to develop intrinsic motivation within the workforce.

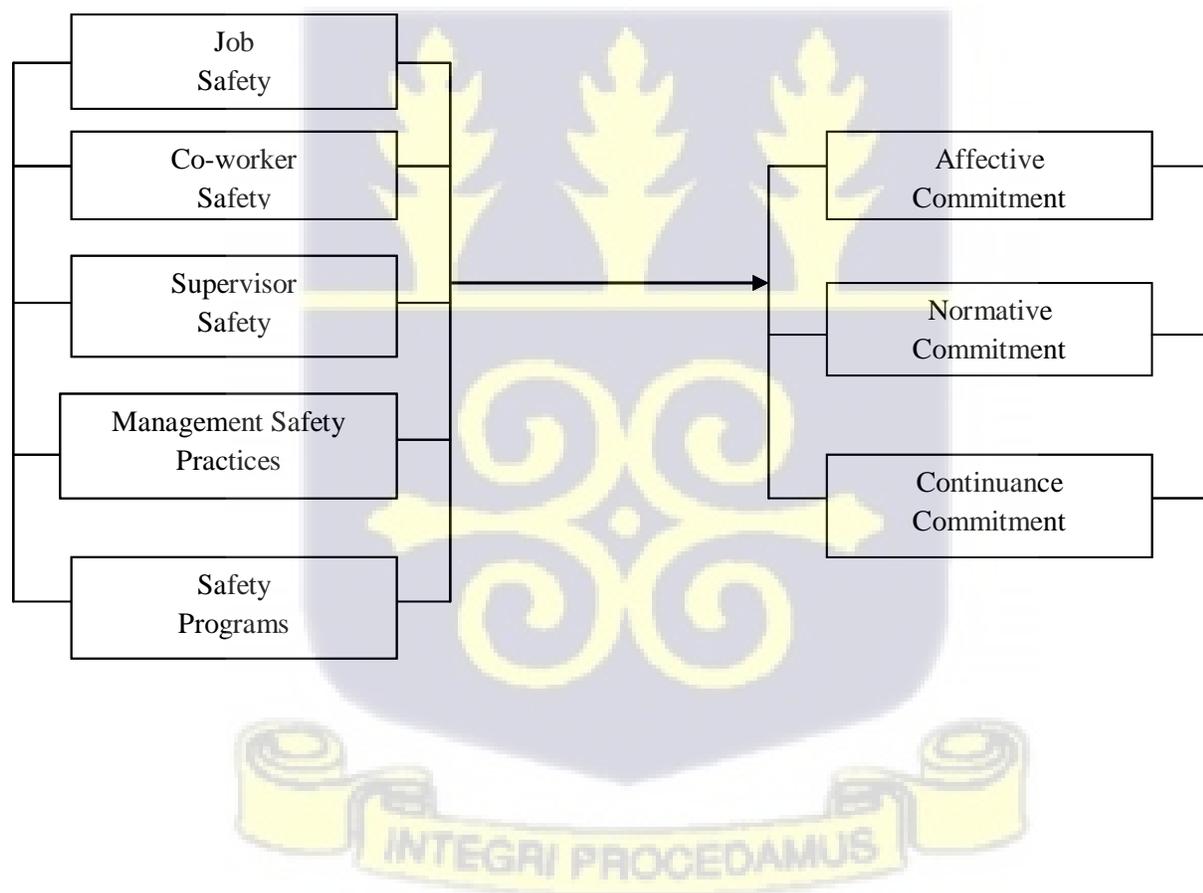
### 2.10.6 Conceptual Framework

The main theories guiding this study are the social exchange, reciprocity theory, equity theory, Herzberg two factor theory and affective event theory. Based on the theoretical and empirical review, a conceptual model illustrated in was developed to depict the relationships among the variables in the study.

**Figure 2.1 The Conceptual Framework**

Independent variable (OHS)

Dependent variable (Commitment)



## CHAPTER THREE

### METHODOLOGY

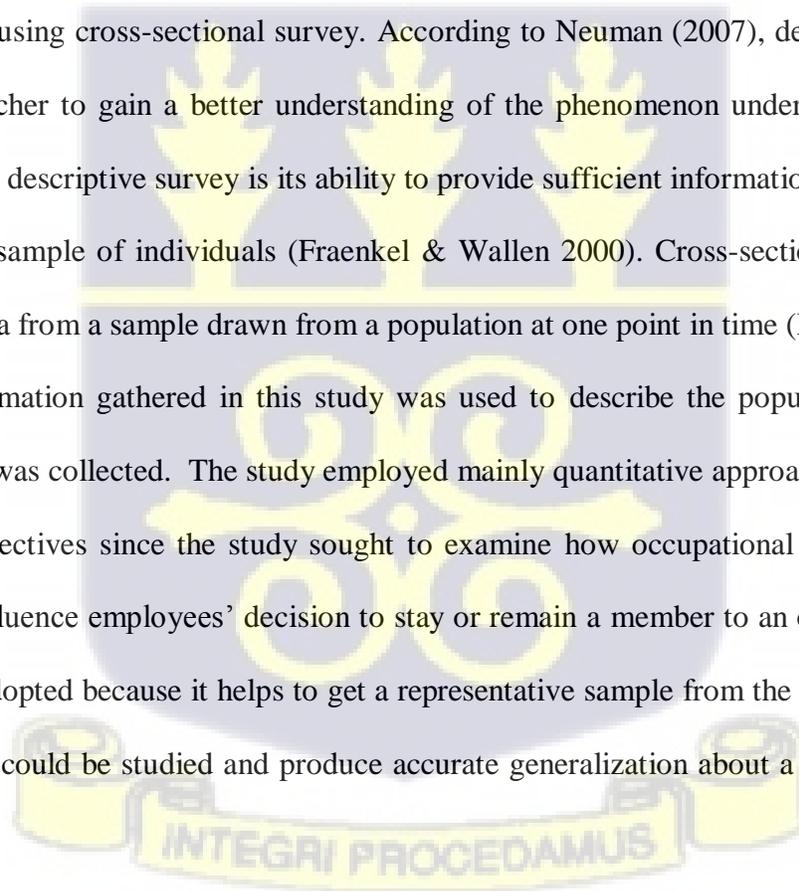
#### 3.0 Introduction

This chapter explains the methods and procedures used to address the research questions of the study. It focuses on research design, population under investigation, sample frame, sample size and sampling technique, data collection methods and instruments, methods of data analysis, and presentation as well as ethical considerations.

#### 3.1 Research Design

Fraenkel and Wallen (2000) define research design as the overall plan for collecting data in order to answer the research questions. The research design used in this study is the descriptive research design using cross-sectional survey. According to Neuman (2007), descriptive research helps the researcher to gain a better understanding of the phenomenon under study. The main advantage of the descriptive survey is its ability to provide sufficient information obtained from a relatively large sample of individuals (Fraenkel & Wallen 2000). Cross-sectional survey is the collection of data from a sample drawn from a population at one point in time (Neuman, 2007).

Hence the information gathered in this study was used to describe the population at the time within which it was collected. The study employed mainly quantitative approach in dealing with the research objectives since the study sought to examine how occupational health and safety management influence employees' decision to stay or remain a member to an organization. This approach was adopted because it helps to get a representative sample from the population so that a smaller group could be studied and produce accurate generalization about a larger group. It is



also a means for testing objective theories by examining the relationship among variables and the impact that these variables have on each other (Creswell, 2007).

The quantitative research method is characterized by the use of close-ended questionnaires, the selection of the study sample and the presentation of the research results usually in numbers (Rasool, 2000). Quantitative research employs experimental and correlational designs in an attempt to reduce errors and bias in order to clearly perceive social facts (Remenyi, 1996). Likewise, this method was used due to its ability to help ensure that the data to be collected is appropriate for inferential analysis and descriptive interpretation.

### **3.2 Study Population**

Population is defined as a set of people, objects, places or events a researcher is interested in exploring in order to have a better understanding about them (Creswell, 2007). The target population for this study was large scale mining companies in Ghana. It included employees from across three selected mining companies so as to give a true representation of results of the situation. It is from the population that a representative sample was selected for the study. These organizations were chosen because large mining companies produce a lot of ounces of minerals. With the recent fall in gold prices leading to most mining companies lay off workers, another area that suffers during such situation is OHS. Hence, the need to find out safety management in the large scale mines and how it affects employees' commitment.

### **3.3 Sample Frame**

Sampling frame according to Kumekpor (2002) can be conceived as a description of all the sampling units that make up a universe. A carefully 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 (Kumekpor, 2002). Also, according to Castillo (2009), a research population is generally a large collection of individuals or objects that is the main focus of a scientific query. Respondents were selected from three organizations in the Ghanaian mining industry. The sampling frame for the study comprised of all employees within AngloGold Mining Company Limited (AGA), Goldfields Mining Company Limited and Golden Star Resource mining Company Limited. These three companies are located in the Ashanti and Western regions of Ghana. The sampling frame was drawn from the total population of 6000 employees made up of AGA, three thousand and five hundred (3500) employees, Goldfields thousand six hundred (1600) employees, and Golden Star Resource with nine hundred employees (900) included employees in the managerial and supervisory positions.

### **3.4 Sample Size**

To avoid misleading generalization, the researcher chose a sample as suggested by Amin (2004), who posits that sampling is essential in picking elements from a population in such a way that the sample elements selected represent the population. The researcher used a sample of 370 respondents drawn from the population of 6000 permanent employees in the three mining companies; AngloGold Ashanti, Goldfields and Golden Star Resource. The selection of the sample size was done using the Kregcie and Morgan (1970) table of selecting sample from population. They propose the use of a sample table to determine which equivalent sample would ensure representation. The sample was further drawn from the large population due to the fact that this research was purely academic and was to be collected in a given period of time. Below is the formula used by kregcie and Morgan (1970) to calculate for sample size.

$$S = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)}$$

Where,

$S$  = required sample size.

$X^2$  = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

$N$  = the population size (6000)

$P$  = the population proportion (assumed to be .50 since this would provide the maximum sample size).

$d$  = the degree of accuracy expressed as a proportion (.05).

thus

$$s = \frac{3.841 \times 6000 \times 0.50(1-0.50)}{0.05^2(6000-1) + 3.841 \times 0.50(1-0.50)}$$

=370 respondents

### 3.5 Sampling Technique

Sampling is the process of systematically selecting a group of people or cases to be included in a research (Graziano & Raulin, 2000; Trochim, 2006). According to Abayie (2010), sampling techniques are approaches used in selecting samples from a study population. It represents the population and it is more manageable to work with than the entire population (Neumann, 2007).

The cluster sampling technique was first used to cluster organizations in the mining sector into large scale and small scale using the list of mining companies given by the Ghana chamber of mines. After which the purposive sampling technique was used to select three mining companies

and these three mining companies were selected based on their longevity and production of ounces of gold annually. The stratified sampling method was used to group employees into departments. This method was used because it helps to put the population into homogenous units or group based on common characteristics. In this way each department was represented in the total population of the organization. According to Twumasi (1993) stratification contributes to sampling efficiency by lowering variance. Finally, the Simple Random Sampling was used to choose employees randomly and entirely by chance from all the departments within the organizations under study.

### **3.6 Unit of Analysis**

The major unit used as the basis for analysis for this study was full time employees working in the three selected mining companies.

### **3.7 Data Collection Methods and Instruments**

The major data collection tool employed in this study was questionnaires which were self-administered to respondents. The researcher used closed-ended questionnaires with the aim of gathering data on occupational health and safety management and employees' commitment in the mining sector. The researcher chose Questionnaire over other data collection instrument because of its capability to decrease the researcher's bias and the propensity of gathering reliable data essential for quantitative and inferential data analysis (Creswell, 2007). Questionnaires put a distance between respondents and researchers, consequently making it more possible for participants to reveal information that is sensitive to them (Gomm, 2004). According to De Vos Strydom, Fouche, Poggenpoel, Schurink and Schurink (1998), questionnaire has the flexibility to allow respondents to provide answers in their own time. They emphasize that delivery by hand

could increase response rates due to the personal contact and also gives the respondents an opportunity to clarify any problems (De Voset *al*, 1998).The questionnaire used to gather the data was divided into three main sections (Sections A, B and C). Section A, provided information on biographical data; Section B on occupational health and safety and section C gives information on commitment.

### **3.7.1 Measurement Instruments**

According to Lank, shear and Knobel (2004) researchers in quantitative studies should endeavour to use instruments that are not only reliable but also valid. These scholars perceive reliability as the stability of response to a data collection tool irrespective of the number of times the data are administered to the same respondents. In other words, an instrument is considered reliable if it produces similar result each time it is administered to the same respondents. Based on this declaration, the occupational health and safety survey was chosen to measure safety management practice among the three selected mining companies.

The Occupational Health and Safety Survey instrument used is based on the work of Hayes, Perander, Smecko, and Trask (1998). This instrument assesses employees' perceptions of occupational health and safety management and measures five factorially distinct constructs; *Job safety, Co-worker safety, Supervisor safety, Management safety practices and Safety programs*. Past research has shown this scale to have good psychometric properties (Gyekye, 2006; Milczarek & Najmiec, 2004). Sample items were "Safety programs are effective", "Supervisors enforce safety rules", "and Management provides safe work conditions". The authors reported a coefficient alpha of .91 for job safety; .91 for co-worker safety; .95 for supervisors' safety; .95 for management safety practices; and .93 for satisfaction with safety programs. Responses to this

scale in the current study produced satisfactory reliability of .79 for job safety; .74 for co-worker safety, .90 for supervisors' safety; .80 for management safety practices; and .84 for satisfaction with safety program. According to Sekaran (2007), if the Cronbach's alpha of a scale is less than .5, it means that the instrument used has a low reliability (and thus opens for some errors). However, if the alpha value is within .7 and above the instrument has acceptable reliability. The total coefficient alpha score was .93. Each statement (e.g. "my job could hurt easily") is answered on a five-point Likert scale ranging from 1 "Strongly Disagree" to 5 "Strongly Agree".

Employees' commitment was measured by commitment survey developed by Allen and Meyer (1997). This survey has three dimensions made up of Affective commitment, Normative Commitment and Continuance commitment. These dimensions have a total of 18 items. Each statement (e.g. "I would be very happy to spend the rest of career with this organization") is answered on a five-point Likert scale ranging from 1 "Strongly disagree" to 5 "Strongly agree". Affective commitment had a cronbach alpha coefficient of .74; Normative had .74 and Continuance with cronbach alpha coefficient of 0.84. This study yielded Cronbach's alpha coefficient ranging from .7 to .90 indicating a high level of internal consistency between variables.

### **3.7.2 Pilot study**

This section describes the purpose, process, and results of the pilot study. After obtaining ethics endorsement, a pilot study was conducted to establish the reliabilities of the instruments chosen for the measurements of constructs of the study and to find out whether prospective respondents would have difficulty in understanding or interpreting questions in the questionnaire (Dillman, 2000; Alreck & Settle, 2003; Chan & Chan, 2005). The pilot study was conducted to also test if

the length of the questionnaire is acceptable and if the respondents understood the questions; and to uncover any difficulties arising from the procedure used for data collection (Chan & Chan, 2005). In other words, the pilot testing provided the researcher with feedback on procedures, respondent cooperation, and whether or not some adjustments should be made in the questionnaire and the data-collection procedures.

Twenty employees from moolman mining Company Limited was chosen for the pilot study. Participants were requested to read through and complete the questionnaire. All 20 collected questionnaires had no missing responses and were considered valid. The pilot study indicated there was no need for the researcher to amend the questionnaire. The category of scales and reliability values for the variables are presented in the table below.

**Table 3.1 Reliability Results**

Instrument	Number of items	Cronbach's Alpha
Job Safety	10	.79
Co-worker Safety	10	.74
Supervisors' Safety	10	.90
Management Safety Practices	10	.80
Safety Programs	10	.84
Affective Commitment	6	.74
Normative commitment	6	.74
Continuance commitment	6	.84

### 3.8 Method of Data Analysis and Presentation

The Statistical Package for the Social Sciences program (SPSS version 20) was used to carry out the statistical analysis. Data analysis was conducted on respondent's data in two perspectives:

Descriptive data analysis and inferential data analysis. Cronbach's alpha coefficients ( $\alpha$ ) was used in order to determine the reliability of the measuring instruments, while descriptive statistics (e.g. means, standard deviations and percentages) were used to analyze bibliographic data to provide general knowledge of the distribution of the respondents. According to Amin (2004) descriptive statistics provides us with the techniques of numerically and graphically presenting information that gives an overall picture of the data collected.

Pearson product-moment correlation coefficient was used to specify the relationship between occupational health and safety and commitment as captured in hypotheses 1. In terms of statistical significance, 95% confidence interval level was set thus ( $p < 0, 05$ ). An effect size was used to decide on the practical significance of the findings. A cut-off point of 0.30 was considered by the researcher as average effect (medium effect) and 0.50 which is maximum effect (large effect) was used for the practical significance of correlation coefficients (Cohen, 1988).

The hierarchical multiple regression analysis was used to determine the extent of impact of the various dimension of occupational health and safety on employee commitment as captured in hypotheses 2, 3 and 4. According to Hair, Black, Babin and Anderson (2010), multiple regression analysis is a statistical tool used to analyze the relationship between a single dependent variable and several independent variables. Thus, the objective of multiple regression analysis is to predict changes in a single metric dependent variable in response to changes in several metric independent variables. It can be used to address a variety of research questions. It can tell how well a set of variables is able to predict a particular outcome. Its basic formulation is

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n + \epsilon$$

Where

$Y$  is the dependent variable

$\beta_0$  = the population y-intercept,

$\beta_1, \beta_2,$  and  $\beta_n$  = the population slope coefficient,

$\epsilon$  = the error term,

$x_1, x_2, x_n$  = the independent variables

### 3.9 Ethical Issues and Considerations

Ethical issues' concerning this study were highly abided by and observed during the process of conducting this research. Authorization and endorsement was obtained from the office of the Administration and Human Resource of the selected mining companies before questionnaires were administered to respondents. Letters were sent to these companies to seek approval from them to be allowed to be part of the researcher population for the study. In the course of data collection, informed consent of the respondents was sought and respondents were assured before hand of the privacy of the information they will provide. Anonymity of respondents was adhered to when storing and processing data. The researcher sought permission for all instruments used and hence acknowledged all scholarly work and data consulted including books, journals, theses, newspapers and field data.



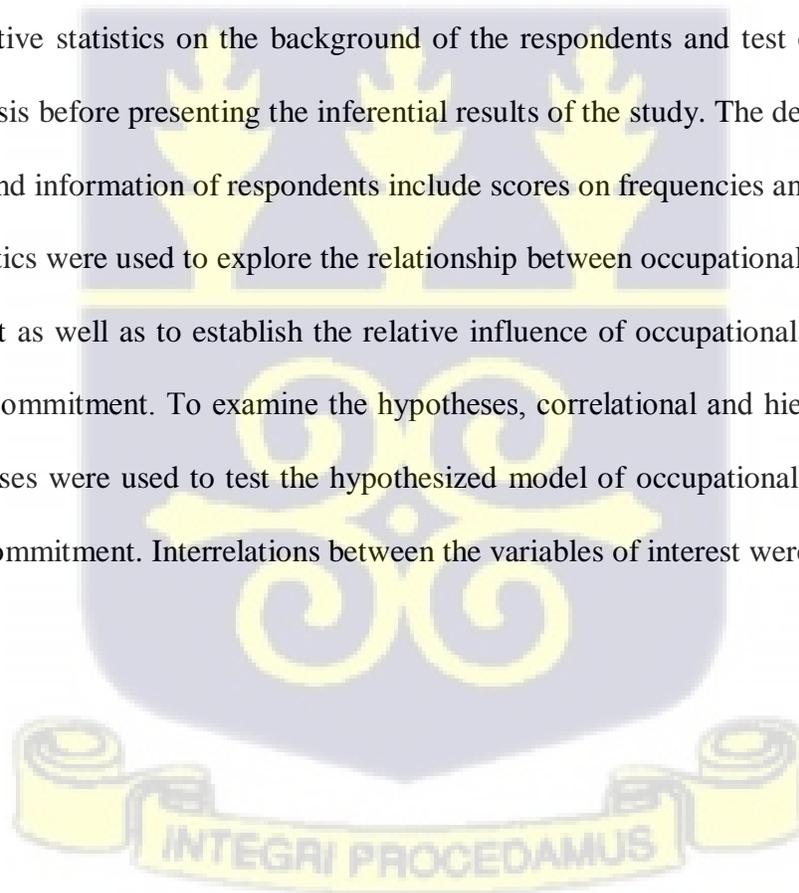
## CHAPTER FOUR

### ANALYSIS AND DISCUSSION

#### 4.0 Introduction

The purpose of this chapter is to present the results of the survey data gathered. The outcomes of the data analyzed are presented in this chapter as well as the discussions of the findings. The discussion of outcomes involves the probable effects of the findings. In discussing the findings, the outcomes of this study are discussed in relation to the concepts, research hypotheses formulated and relevant issues discussed in the review of related literature.

This current study examines how occupational health and safety is being practiced and managed within the mining sector of Ghana and how it influences employees' commitment. The chapter presents descriptive statistics on the background of the respondents and test of assumptions of regression analysis before presenting the inferential results of the study. The descriptive statistics on the background information of respondents include scores on frequencies and percentage. The inferential statistics were used to explore the relationship between occupational health and safety and commitment as well as to establish the relative influence of occupational health and safety on employees' commitment. To examine the hypotheses, correlational and hierarchical multiple regression analyses were used to test the hypothesized model of occupational health and safety and employee commitment. Interrelations between the variables of interest were also ascertained.



#### 4.0 Background of the Sample

##### 4.1. Biographic Data of Respondents

Three hundred and seventy (370) respondents out of 6000 employees participated in this study.

The participants background comprise of gender, age, level of completed education, number of years spent with the organization and marital status are examined in the following section.

**Table 4.1: Distribution of Respondents' Demographic Characteristics**

Variable	Characteristics	Frequency	Percent
Gender	Male	286	77.3
	Female	84	22.7
Age	Below 20	0	0.0
	20-30	137	37.0
	31-40	121	32.7
	41-50	77	20.8
	51-60	33	8.9
	Over 60	2	0.5
Marital Status	Single	144	38.9
	Divorced	12	3.2
	Married	214	57.8
Tenure	Less than 1 year	67	18.1
	1-5years	154	41.6
	6-10years	60	16.2
	11-15years	42	11.4
	16-20years	28	7.6
	Over 21years	19	5.1
	Education	Basic Certification	46
SSCE		99	26.8
Diploma		74	20.0
First Degree		106	28.6
Professional		32	8.6
Post Graduate Degree		13	3.5



From table 4.1, it is evident that out of the total number of employees who responded to the survey questions from the three mining companies, 77.3% representing a total of 286 respondents were males making the highest score, while 22.7% also represent the female participants. The percentage scores, therefore indicated that the survey was male dominated. Further, with respect to age distribution of respondents, table 4.1 shows that, Of those surveyed, majority of the respondents were between the age 20-30 (n=137) making 37.0% of the sample used. Followed by the age range of 31- 40 (n=121) with 32.7%, age range 41-50 (n=76) with 20.5%, age range 51-60 (n=33) with 8.9%, age range over 60 (n=2) with 0.5% and age range below 20 (n=0) with 0.0%. This means majority (n=137) of the employees who participated in this study fell within the age range of 20-30years.

Again, regarding the marital status of the respondents, figures from table 4.1 indicate that majority of the employees (n=214) representing 57.8% were married with dependents. This was followed by 38.9% single employees representing (n=144) and 3.2% employees being divorced or separated (n=12). In addition the number of years that the employees have spent with their organizations was also examined. The descriptive analysis in table 4.1 established that most (n=154) employees representing 41.6% have spent 1-5years. This was followed by those who have spent less than a year 18.1% constituting 67, 11.4% have spent 11-15years (n=42), 7.6% have worked for 16-20 years (n=28) whereas 5.1% have spent 21years and above (n=19) with the organization.

Lastly, concerning the educational level of employees, the descriptive statistics as shown in table 4.1 revealed that majority of the respondents (n=106) representing 28.6% were first degree holders. This was followed by 26.8% SSCE holders, 20.0% diploma holders, 12.4 basic

certificate holders, 8.6% professional holders and 3.5% of the employees holding post graduate certificate.

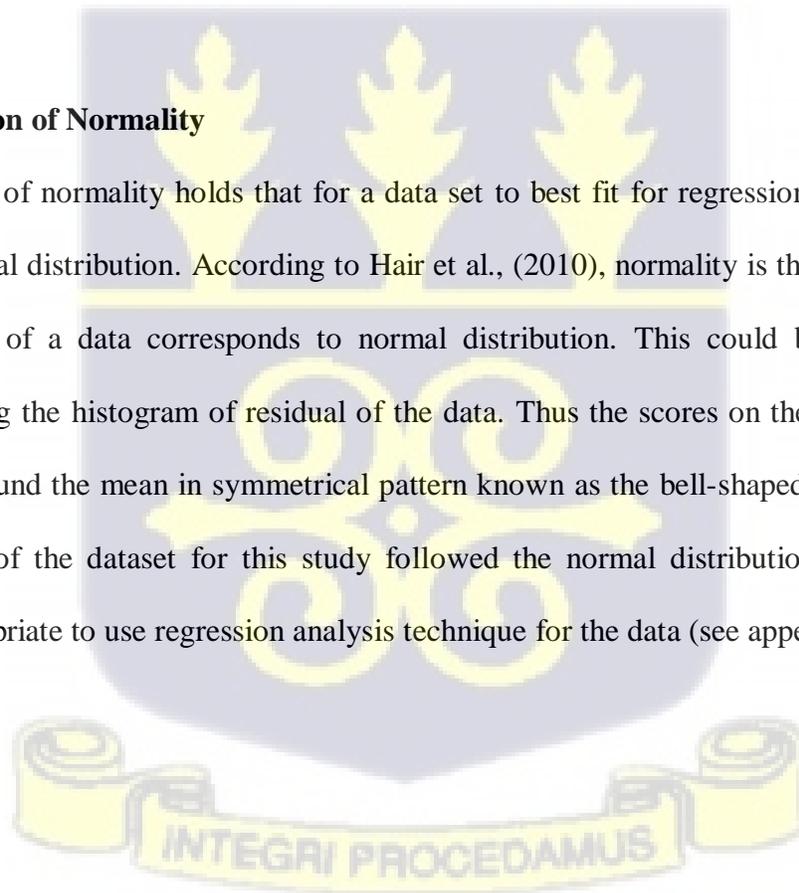
## **4.2 Examination of Hypotheses**

### **4.2.0 Testing of Assumption**

This section present regression analysis for the data gathered for the study. In order to examine the hypotheses of the study, underlying assumptions about correlational and regression analysis technique was ascertained for the appropriateness of the data to be used. The five conditions examined were normality, linearity, multicollinearity, homoscedasticity and no correlation of errors (Hair et al., 2010). Violations of these assumptions would make inferences drawn from the results for this study unreliable.

#### **4.2.1 Assumption of Normality**

The assumption of normality holds that for a data set to best fit for regression analysis, it must follow the normal distribution. According to Hair et al., (2010), normality is the degree to which the distribution of a data corresponds to normal distribution. This could be determined by graphically using the histogram of residual of the data. Thus the scores on the variables should be clustered around the mean in symmetrical pattern known as the bell-shaped or normal curve. The histogram of the dataset for this study followed the normal distribution curve therefore making it appropriate to use regression analysis technique for the data (see appendix III).



#### **4.2.2 Assumption of Linearity**

The condition of linearity presupposes that the correlation between the independent and dependent variables should be linear. In this fashion, linear model predict values that falls in a straight line by having a constant unit change of the dependent variable for a constant change in the independent variable (Hair et al., 2010). Hence, the relationship between the outcome and continuous variable is described by a straight line. In that a change in the independent variable causes a constant change in the outcome variable. This assumption is met when the scores randomly cluster around the straight line at the zero point. This assumption was tested using residual scatterplot of regression standardized residual. The variables understudy formed a relatively linear line, meaning there is no violation of linearity (See appendix III).

#### **4.2.3 Assumption of Homoscedasticity**

Homoscedasticity is the assumption that, the variability in scores for one variable is roughly the same at all values of the other variable. In other words the dependent variable(s) must have equal levels of variance across the range of the predictor variable(s). The variance of the error term should be constant across the range of the predictor variables. When this assumption is met scores will be concentrated at the centre around the zero point and distributed in a rectangular pattern. This assumption was examined using residual scatterplot and the variance of residual of error is constant for all values for the variables understudy (See appendix III).

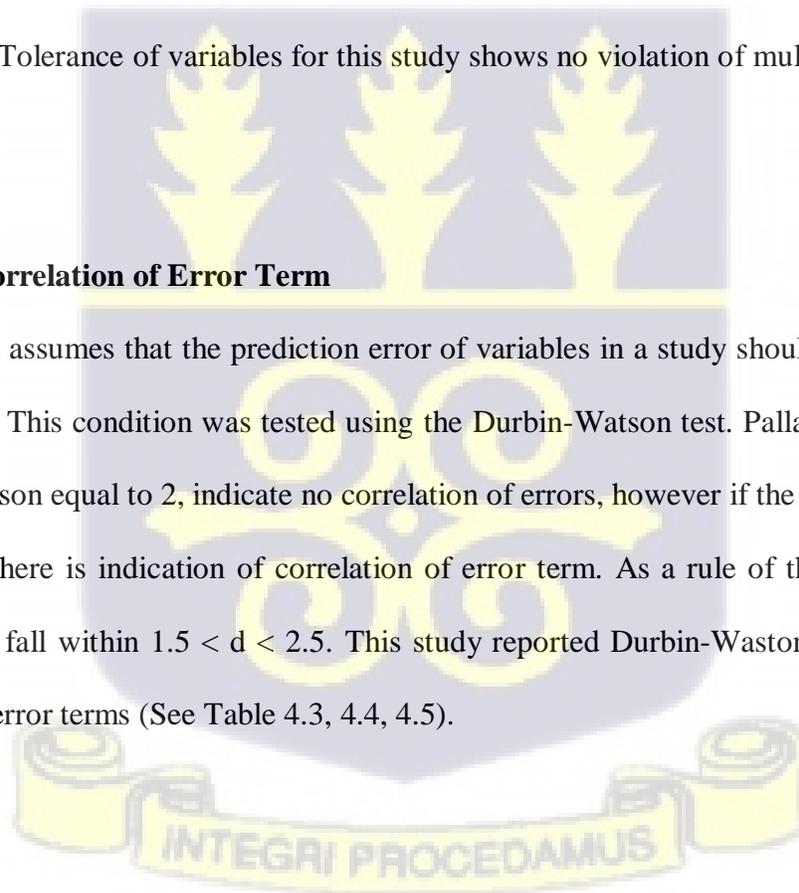
#### **4.2.4 Assumption of Multicollinearity**

Multicollinearity occurs when high correlation exists among independent variables. According to Hair et al., (2010) multicollinearity occurs when any single independent variable is highly

correlated with a set of other independent variables. When variables are highly correlated it is difficult to obtain reliable estimates of their individual regression coefficients, therefore makes their estimated coefficient untrustworthy. With multicollinearity it is difficult to assess the effect of the independent variables on the dependent variable because it increases the standard error of beta coefficients and make the assessment of unique role of each predictor variable challenging (Green & Salkind, 2005; Tabachnick & Fidell, 2001). In this study, this assumption was determined or tested using the Variance Inflation Factor (VIF) and Tolerance. The VIF measures how much the variance of the regression coefficient is inflated by multicollinearity problem and the tolerance is the amount of variance in an independent variable that is not explained by the other independent variables. According to Pallant (2011) with VIF exceeding 10 and variable Tolerance smaller than .10 indicate correlation among independent variables. The examination of the VIF and the Tolerance of variables for this study shows no violation of multicollinearity (See Table 4.3).

#### **4.2.5 No Autocorrelation of Error Term**

This assumption assumes that the prediction error of variables in a study should be uncorrelated with each other. This condition was tested using the Durbin-Watson test. Pallant (2011) suggest that Durbin-Watson equal to 2, indicate no correlation of errors, however if the Durbin-Watson is greater than 2, there is indication of correlation of error term. As a rule of thumb the Durbin-Watson should fall within  $1.5 < d < 2.5$ . This study reported Durbin-Watson of 1.74 showing uncorrelated of error terms (See Table 4.3, 4.4, 4.5).



### 4.3 Inferential Statistics

Correlation and regression analysis were performed on the various variables to establish whether there were any significant relationships between job safety, co-worker safety, supervisor's safety, management safety practices, safety policies and employees' commitment. Pearson's Correlation analysis was done to identify any relationships between the various groups of variables and the hierarchical multiple regression analysis was done to predict the degree of influence of independent variables on the dependent variables.

#### 4.3.1 Correlation Analysis

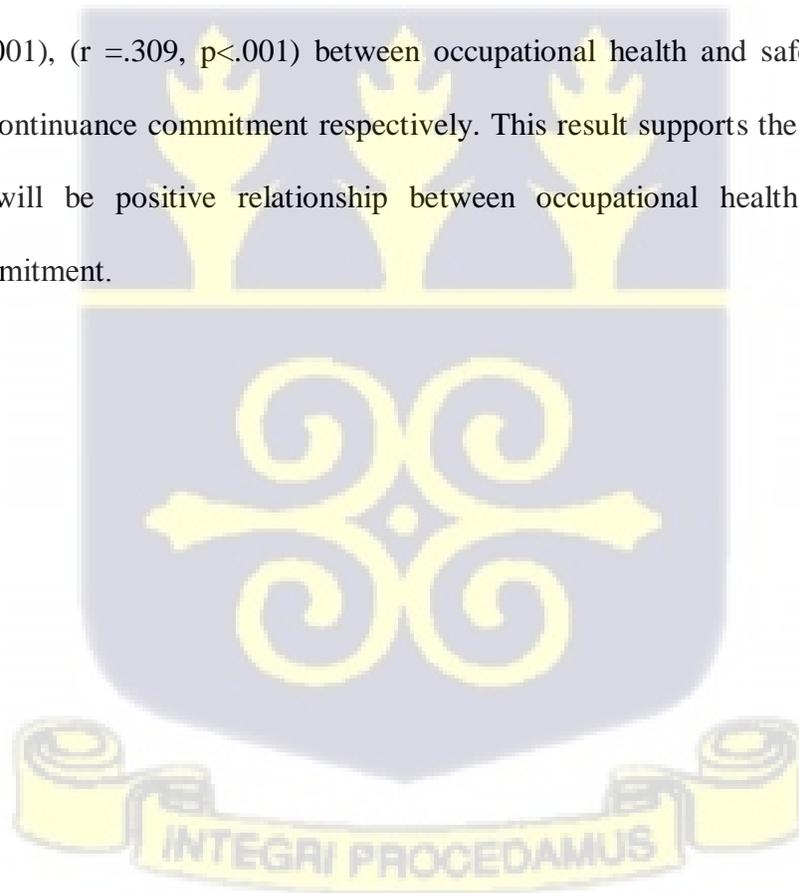
The correlation analyses between the various variables for the study are presented in table 4.2 below. Thus gender, age, marital status, level of education, years spent with the organization, job safety, co-worker safety, supervisor's safety, management safety practices, safety programs and employee commitment. This analysis generates a correlation coefficient which explains the movement of variables in a particular direction. The correlation coefficient is coded as "r". The "r" value range is between 0 to  $\pm 1$ . The value of zero (0) indicating that there is no relationship between two variables. The value of 1.0 showing there is a perfect linear relationship between two variables. A positive value shows that the two variables move together in the same direction, and when the value of "r" is negative, it shows the variables move in an opposite direction. Interpretation to values in this analysis followed the guidelines suggested by Cohen (1988). He is of the view that values ("r") within the range of  $r = .10$  to  $.29$  or  $r = -.10$  to  $-.29$  are weak; also values ("r") which fall between  $r = .30$  and  $.49$  or  $r = -.30$  and  $-.49$  are medium and lastly values within the range of  $r = .50$  to  $1.0$  or  $r = -.50$  to  $-1.0$  are strong. In this study, Pearson product moment correlation coefficient was used to establish the association among variables.

Additionally, the correlation table aside examining the relationship between variables for the study, it also indicates statistical significance of the relationship. For the purpose of this research, significance level was set at  $P < 0.05$ .

#### 4.4 Test of Hypotheses

##### 4.4.1 Occupational health and safety and organization commitment

**Hypothesis 1:** One of the major objectives of this study was to examine the relationship that exists between occupational health and safety and employees' commitment. It was therefore hypothesized that there will be a positive relationship between occupational health and safety and commitment. To test for this hypothesis Pearson's correlation was employed. As presented in table 4.2, the findings indicate moderate positive significant relationship ( $r = .257, p < .001$ ), ( $r = .370, p < .001$ ), ( $r = .309, p < .001$ ) between occupational health and safety and affective, normative and continuance commitment respectively. This result supports the hypothesis which stated "There will be positive relationship between occupational health and safety and employees' commitment."



**Table 4.2: Means (*M*), Standard Deviations (*SD*), Pearson's Product Moment Correlations and Internal Consistency of Study Variables**

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender	1.23	.42	-												
2. Age	3.02	.10	-.039	-											
3. MS	2.19	.97	.034	.591**	-										
4. EDL	3.05	1.31	.098	-.146**	-.127*	-									
5. YS	2.64	1.38	.015	.678**	.440**	-.141**	-								
6. JS	3.18	.75	-.019	.123*	.139**	-.181**	.122*	<b>.79</b>							
7. CWS	3.26	.42	-.075	-.027	-.057	-.012	.001	.071	<b>.74</b>						
8. SS	4.0	.60	.007	.057	.004	.006	.044	.106*	.468**	<b>.90</b>					
9. MSP	4.0	.65	.093	.034	-.016	.098	-.021	.055	.332**	.639**	<b>.80</b>				
10. SP	3.41	.41	-.026	-.004	-.008	.159**	-.095	.101	.299**	.441**	.531**	<b>.84</b>			
11. AFC	2.91	.60	-.038	.022	-.017	-.128*	.046	.108*	.240**	.201**	.202**	.112*	<b>.74</b>		
12. NOC	3.19	.73	.120*	.009	-.009	-.027	-.027	.022	.244**	.323**	.420**	.250**	.331**	<b>.74</b>	
13. COC	3.10	.85	.049	.036	.045	-.172**	-.018	.094	.198**	.245**	.298**	.195**	.248**	.526**	<b>.84</b>
14. OSH	3.57	.37	.004	.072	.037	-.004	.034	.495**	.585**	.789**	.770**	.658**	<b>.257**</b>	<b>.370**</b>	<b>.309**</b>

Note N=370; (1) MS= Marital Status; EDL= Education Level; YS= Year Spent; JS= Job Safety; CWS= Co-worker Safety; SS= Supervisor's Safety; MSP= Management Safety Practices; SP= Safety Program; AFC= Affective Commitment; NOC= Normative Commitment; COC= Continuance Commitment; OSH = Occupational Health and Safety. (2) \* indicate  $p < 0.05$ ; \*\* indicate  $p < 0.01$ ; Cronbach  $\alpha$  of each construct on the diagonal in boldface type. (4) Coding of categorical variables; Gender: male = 1 and female = 2



#### 4.4.2 Occupational health and safety and affective commitment

**Hypothesis 2** stated that occupational health and safety would significantly impact on affective commitment. To test for this hypothesis a two step hierarchical multiple regression was employed. Age, marital status, tenure and education of respondents were entered in step one to control for their effect on affective commitment. The dimensions of occupational health and safety examined in this study (job safety, co-worker safety, safety programs, supervisors' safety and management safety practices) were entered in step two. The hierarchical multiple regression in table 4.3 showed that at step one, the control variables contributed insignificantly to the regression model ( $F = 1.492, p > 0.05$ ) and accounted for 2% of the variance in affective commitment ( $R^2 = .020$ ). The introduction of the dimensions of OHS in step two explained an additional 8% ( $\Delta R^2 = 0.081$ ) of the variation in the dependent variable (affective commitment) and this caused a change in  $R^2$  which was significant ( $F = 4.032, p < 0.001$ ). Together the control variables and the dimensions of OSH accounted for 10% of the variance in affective commitment.

In considering the unique contribution of the various dimensions of OHS in predicting affective commitment, co-worker safety practices ( $\beta = .172, p < 0.01$ ) had the highest significant unique contribution followed by management safety practices ( $\beta = .148, p < 0.05$ ). Therefore, hypothesis 2d and 2e were supported while hypothesis 2a, 2b and 2c were not supported. However, these variables together significantly impacted on affective commitment ( $\beta = .256, p < 0.001$ ).



**Table 4.3 Hierarchical Regression of OSH on Affective Commitment**

Variable	$\beta$	t	$R^2$	$\Delta R^2$	F	VIF	TOL	DW
Step 1			.020	.020	1.492			1.724
Age	-.001	-.016						
Marital Status	-.054	-.827						
Education	-.052	-2.354						
Tenure	.028	.735						
Step 2			.101	.081	4.032***			
JS	.064	1.236				1.017	.951	
CWS	.172	2.992**				1.298	.990	
SS	.024	.336				1.962	.995	
MSP	.148	2.090*				1.944	.975	
SP	-.011	-.177				1.450	.959	
OSH	.256	5.143***						

Note N= 370; \* indicate  $p < 0.05$ ; \*\* indicate  $p < 0.01$ ; \*\*\* indicate  $p < 0.001$ ; VIF = Variance inflated factor; TOL = Tolerance; DW= Durbin-Watson

#### 4.4.3 Occupational health and safety and normative commitment

**Hypothesis 3** postulated that occupational health and safety will significantly influence normative commitment. Similarly, two steps hierarchical multiple regression was used to examine this hypothesis. Likewise, in step one the demographic variables (age, marital status, tenure and education) were controlled to assess their influence on normative commitment. Job safety, co-worker safety, safety programs, supervisors' safety and management safety practices as constructs of OSH in this study were inputted in step 2. The hierarchical multiple regression in table 4.4 indicates that at step one, the control variables contributed insignificantly to the regression model ( $F = 1.415$ ,  $p > 0.05$ ) and accounted for 1% of the variance in normative commitment ( $R^2 = .019$ ). In the addition of the various constructs of OHS in step two expounded an extra 18.7% ( $\Delta R^2 = .187$ ) of the variance in outcome variable

(normative commitment) and resulted in a change in  $R^2$  which yielded a significant outcome  $F = 9.298$   $p < 0.001$ . In summation, the control variables and the facets of OSH accounted for 21% of the variation in normative commitment.

Further, in assessing the unique contribution of the various constructs of OSH in respect of their significant influence on normative commitment, management safety practices ( $\beta = .334$ ,  $p < 0.001$ ) contributed the highest, followed by co-worker safety ( $\beta = .112$ ,  $p < 0.05$ ). Then again job safety, supervisors and safety programs unique contribution was not significant. Hence, hypothesis 3d and 3e were supported whereas hypothesis 3a, 3b and 3c were not supported. Conversely, these variables together significantly influence normative commitment ( $\beta = .369$ ,  $p < 0.001$ ).

**Table 4.4 Hierarchical Regression of OSH on Normative Commitment**

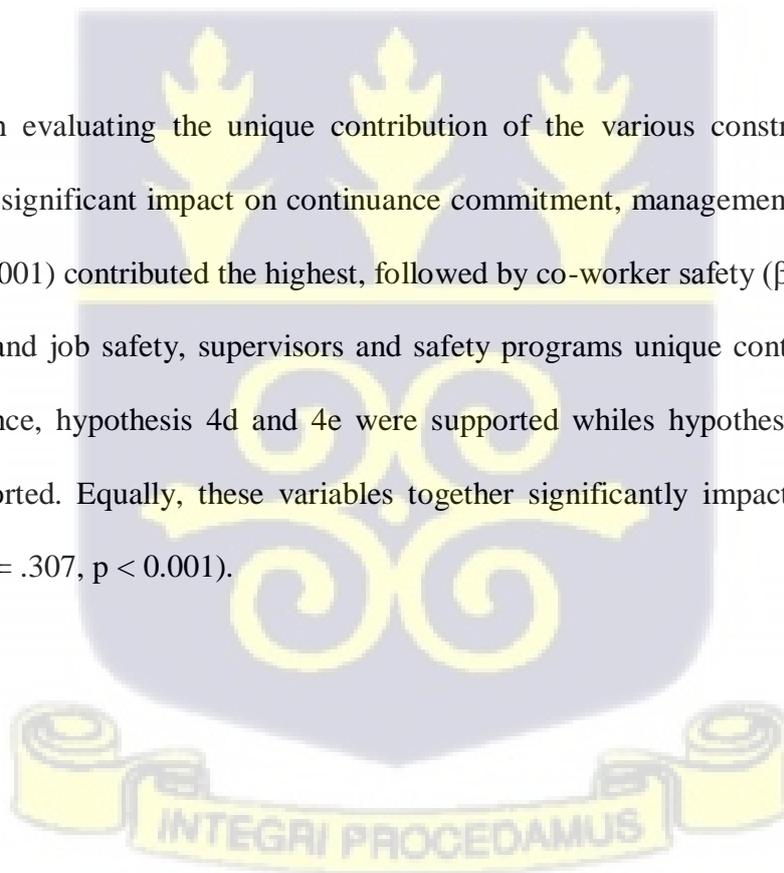
Variable	$\beta$	t	$R^2$	$\Delta R^2$	F	DW
Step 1			.019	.019	1.415	1.761
Age	.074	.933				
Marital Status	-.031	-.478				
Education	-.042	-.801				
Tenure	-.072	-1.00				
Step 2			.206	.187	9.298***	
JS	-.023	-.473				
CWS	.112	2.062*				
SS	.046	.688				
MSP	.334	5.029***				
SP	.032	.558				
OSH	.369	7.632***				



#### 4.4.4 Occupational health and safety and continuance commitment

**Hypothesis 4** proposed that occupational health and safety would impact significantly on continuance commitment. Hypothesis 4 was also determined by employing two stages hierarchical multiple regression. In the same way, age, marital status, tenure and education were entered in step one to ascertain their effect on continuance commitment. The findings in table 4.5 demonstrated that at step one age, marital status, tenure and education contributed insignificantly in explaining continuance commitment with  $F= 2.959$ ,  $p >0.05$  and reported 4% variance in continuance commitment. But when job safety, co-worker safety, supervisors' safety, safety programs and management safety practices were entered in step two, accounted for 11% ( $\Delta R^2 = 0.111$ ) in explaining continuance commitment. This means that with the control variables and occupational health and safety together explained 15% variation in continuance commitment with  $F= 6.326$ ,  $p < 0.001$ .

Additionally, in evaluating the unique contribution of the various constructs of OSH in respect of their significant impact on continuance commitment, management safety practices ( $\beta = .230$ ,  $p < 0.001$ ) contributed the highest, followed by co-worker safety ( $\beta = .196$ ,  $p < 0.01$ ). On the other hand job safety, supervisors and safety programs unique contribution was not significant. Hence, hypothesis 4d and 4e were supported while hypothesis 4a, 4b and 4c were not supported. Equally, these variables together significantly impact on continuance commitment ( $\beta = .307$ ,  $p < 0.001$ ).



**Table 4.5 Hierarchical Regression of OSH on Continuance Commitment**

variable	$\beta$	t	R <sup>2</sup>	$\Delta R^2$	F	DW
Step 1			.039	.039	2.959	1.809
Age	.063	.801				
Marital Status	.027	.424				
Education	-.179	-3.421				
Tenure	-.100	-1.425				
Step 2			.150	.111	6.326***	
JS	.030	.591				
CWS	.196	3.346**				
SS	.028	.413				
MSP	.230	3.854***				
SP	.056	.931				
OSH	.307	6.234***				

**Table 4.6 Summary of Results of the study**

Research Objectives	Hypotheses	Results
To examine the relationship between OSH and commitment	1a. There will be positive relationship between OSH and affective commitment	Supported
	1b. There will be positive relationship between OSH and normative commitment	Supported
	1c. There will be positive relationship between OSH and continuance commitment	Supported
To ascertain the impact of OSH on affective commitment	2a. Job safety will have a significant effect on affective commitment	Not Supported
	2b. Supervisor safety will significantly effect on affective commitment	Not Supported
	2c. Safety program will	

	significantly influence on affective commitment	Not Supported
	2d. Co-worker safety will have significant influence on affective commitment	Supported
	2e. Management safety practices will have a significant impact on affective commitment	Supported
To examine the influence of OSH on normative commitment	3a. Job safety will have a significant effect on normative commitment	Not Supported
	3b. Supervisor safety will significantly effect on normative commitment	Not Supported
	3c. Safety program will significantly effect on normative commitment	Not Supported
	3d. Co-worker safety will have significant influence on normative commitment	Supported
	3e. Management safety practices will have a significant influence on normative commitment	Supported
To determine the effect of OSH on continuance commitment	4a. Job safety will have a significant effect on continuance commitment	Not Supported
	4b. Supervisor safety will significantly effect on continuance commitment	Not Supported
	4c. Safety program will significantly effect on continuance commitment	Not Supported
	4d. Co-worker safety will have significant effect on continuance commitment	Supported
	4e. Management safety	

practices will have a Supported  
significant effect on  
continuance commitment

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#### 4.5 Discussion of Findings

Despite the number of studies on occupational health and safety, arguably few studies if any have examined this phenomenon and its influence on employee commitment in the mining sector in the developing country. In the light of provocative issues in the extraction of ore from the earth in recent times, this study set out to investigate occupational health and safety management and its implication for employee attitude specifically their commitment to the organization. The subject of occupational health and safety management in the mining industry is in the wake because of the increasing demand for minerals and the high risk factor associated with it. Ghana is now one of the West African countries which have become a preferred destination for mineral investment. This does not only bring about economic development but also accompanied by repercussions in terms of occupational health and safety issues. The case for employees and organisations in developing nations is that the rates of industrial and occupational injury-related deaths and disabilities are on the rise specifically in the mining sector and this affects employees' attitude and intentions toward their organization. This has necessitated the demand for more investigation into issues of occupational health and safety management at the workplace.

To determine whether mining companies in Ghana practice effective and appropriate occupational health and safety management, the study concentrated on the job safety, co-worker safety, supervisor safety, management safety practices and safety programs as dimensions of occupational health and safety management as proposed by Hayes et al (1998).

This section of the study gives extensive discussions of occupational health and safety and employee commitment in the mining sector of Ghana. Largely, the main objective of the

study was to examine the relationship and effect of occupational health and safety management on employee commitment.

#### **4.5.1 Background information of respondents**

The first step in this study was the analysis of demographic variables precisely, gender, age, marital status and level of education. The main aim of examining these variables was to determine the role they play in the mining sector and influence they might have on commitment. The finding of this study showed that the mining sector of Ghana is a male dominated industry with 77.3% being male. This result bears out the findings of Botha, Fourie, Botha and Bischoff (2012); Lozeva and Marinova (2010) and Wynn (2001). According to Botha et al., (2012) and Wynn (2001) male domination in the mining sector is attributed to the fact that working conditions within the mining industry are sometimes risky, hazardous and the workload required is grueling and physically demanding. Consequently, men are often preferred because women are not identical to men specifically for mining. They further assert that, the challenges faced in employing women in the underground mining environment are also directly linked to women's heat tolerance and as such, the initial selection screening methodology at all mining operations includes physically testing women for underground heat tolerance. These place tremendous challenges on management to find suitable women who can be placed into all underground mining occupations. The results from the current study also confirm a study conducted by women in mining (WIM) UK, which indicated that mining industry has the lowest number of women on company boards of directors than any group of organization. Lozeva and Marinova (2010) also found that low participation of women in mining is associated with cultural factors. According to these authors, traditionally women are seen as nurturers and sustainers of their communities, building and maintaining housing and supervising family affairs and involved in all things

that dealt with creativity, from planting and harvesting, to giving birth and raising children. So when they are found within masculine environment such as mining there is the feelings of stereotyping and under-utilization of talent. However, the correlation analysis revealed insignificant relationship between gender and affective, normative and continuance commitment. This also supported the findings of Salami (2008) who found insignificant relationship between gender and affective, normative and continuance commitment.

Further, the study found that 57.8% of the respondent were married which means that they had dependents. In linking respondents' marital status to occupational health and safety and commitment to their organization, these workers are more likely to exhibit low affective and normative commitment and exhibit high continuance commitment to their organization. Workers when compare their safety and health and its implication on their dependents and realize that their safety is not assured, they may consider the cost of staying with their organization to exceed the cost of leaving (continuance commitment). They may not emotionally be attached and feel no obligation toward to their organization because when they involve in any accident there is the tendency of implicating their dependents.

Another interesting observation of the demographic variable of the respondents is the educational level. The study found that majority of the respondents had acquired higher education. Thus most of the miners are literate and training of these workers in occupational health and safety would not be a problem and therefore refute the notion that most miners are illiterate. This implies most of these mining companies are now employing more literates. The study also found inverse and significant relationship with between respondents qualification and affective, normative and continuance commitment. This implies that as employees attain higher education their commitment level to their organization also

decreases. This confirms earlier studies of Jonathan, Darroux and Thibeli (2013); Bakan (2011) and Joiner and Bakalis (2006), who found inverse and significant relationship between education level and affective commitment. According to these authors, higher education is associated with low affective and continuance commitment among employees. Thus in order for mining companies to increase the affective, normative and continuance commitment, they must show interest in the health and safety of employees.

The findings of this study indicate that none of the respondents fell below the age of 20. This findings show that the mining companies in Ghana are adhering to laws that forbid child labour. Child labour aside occupational health and safety issues is also one of the major problems that is characterize with mining especially in the small scale mining.

According to Cooper (1995) occupational health and safety of an organization plays an important role in determining employee commitment in an organization. This suggests that relationship exist between occupational health and safety and commitment. This study explored this hypothesis and also finds out the relative effect of the various facets of occupational health and safety on employee commitment.

#### **4.5.2 Occupational Health and Safety and Commitment**

**Hypothesis one** predicted that there will be positive relationship between occupational health and safety and affective, normative and continuance commitment. The study confirmed that there is moderate positive significant relationship between occupational health and safety and affective, normative and continuance commitment. That is investment in health and safety to guard employees' safety and health causes an increases the commitment level of employees thus binds employees to their organization. In order words the safer the working environment the more employees are committed to the organization especially in highly risk working

environment such as mining organizations. The justification for this result could be that, there are appropriate health and safety management at the workplace which reflects in the well being of employees in the performance of their jobs. This finding is consistent with study conducted by Grawitch, Trares and Kohler (2004) who explored the relationship between employee satisfaction with different workplace practices (i.e., employee involvement, growth and development, work-life balance, recognition, health and safety) and employee outcomes (i.e., organizational commitment, emotional exhaustion, mental well-being, and turnover intentions) and found positive relationship between health and safety and organizational commitment.

Additionally, this result is in line with the social exchange and reciprocity theory, which holds that, all human relationships are formed by the use of a subjective cost-benefit analysis and the comparison of alternatives (Hutchison & Charlesworth, 2003). Thus the benefits that people obtain from, contribute to social interaction, and the opportunity structures and relations of dependence that govern those exchanges. In other words in a social exchange, team members exchange knowledge, expertise and resources with each other when they think that the reward for such behaviour is equal to or greater than the cost (Liao, Liu & Loi, 2010). However, if team members perceive that their gain will be less than the cost they pay, they will not participate in sharing or exchanging knowledge, expertise and resources (Liao, Liu & Loi, 2010). That is when participants realize that what they given out to the organization do not correspond to what they are receiving, they withdraw or stop partaking in that relationship.

Hence, when employees perceived that the organization they are working for does not care for their health and safety they will reciprocate it by paying back the organization by exhibiting negative work behaviours such as absenteeism, intent to leave the organization and

poor performance. However if they feel protected they will reciprocate it by demonstrating positive working behaviour such as increasing their commitment level.

In conclusion as health and safety is appropriately managed to ensure safety, employees' commitment level also increases especially in highly hazardous organization. Thus when management show concern about employees' safety and put measures in place to reduce ill health emanating from the job, employees also become appreciative and in turn identify themselves with the goals and values of the organization and willingly exert more effort to help the organization to succeed. Management within the mining sector must therefore endeavour to improve upon the health and safety at the workplace in order to retain highly qualified employees. Because employees who are healthy and feel safe at work are those that can fully invest their capabilities and exploit the best of their potentials to work. It is therefore important for management in organizations that are associated with hazardous working environment to recognize the need for committed employees to their success and achievement of organizational goals.

#### **4.5.3 Occupational Health and Safety and Affective Commitment**

With respect to **hypothesis 2**, the findings of the study indicated that occupational health and safety had a significant effect on affective commitment. Thus employees' perception on safety at the workplace influence their emotional attachment and identification with their organization especially within highly hazardous working conditions. With regard to the dimensions of occupational health and safety management used in this study, the results showed that management safety practices impacted significantly on affective commitment.

Thus management commitment to safety at the workplace plays a significant role in determining affective commitment at the mining industry. Hence, employees who perceive management attitude towards safety at workplace to be adequate develop emotional

attachment to their organization. The reason for this result could be attributed to the fact that management within the mining industry could be committed to health and safety management by implementing safe systems of work and encouraging the reporting of incidents and creating opportunity for improvement which ensures the protection of employees by reducing accidents on the job.

Further, co-worker safety practices also showed a significant effect on affective commitment. Accordingly, employees who observe that their colleagues at work follow safety rules and procedures to ensure their safety and that of other colleagues' will develop emotional attachment to the organization. The explanation for this finding could be that, employees' safety behaviour at work contributes to accident free environment. That is employees undertake safety activities that bring about workplace safety (safety compliance) and create an environment that supports safety (Neal & Griffin, 2002).

Conversely, job safety, supervisors' safety practices and safety programs did not impacted on affective commitment. This means that the safety inherent in a person's job, supervisor's safety practices and safety programs at the workplace could not influence employees' affective commitment. The justification for these results could be attributed to probably the hygiene factors present within the working environment. It could be possible that, there are safety programs that clearly define actions to implement safety policies and supervisors ensure the compliance of safety rules and safety participation. However, without the presents of certain hygiene factors within the working environment, could lead to dissatisfaction hence less commitment to the organization. According Herzberg (1966) there are motivation and hygiene factors that employers could apply to improve employee satisfaction and increase the commitment level in the workplace. Hygiene factors relate to the context within which the

work is performed and when present do not motivate employees but absent cause dissatisfaction and decrease commitment level (Nichols, 2004). Thus hygiene factors such as working conditions and interpersonal relationship with supervisors could affect employees' emotional attachment and identification with the organization when they are not present.

Hypothesis two was therefore partially supported. This is consistent with the findings of Sui (2002) who found a positive and significant impact of employees physical well being on the job on affective commitment among workers in China. Again, this result is in line with the affective event theory which holds that employees' emotions are affected by the working environment either positively or negatively. The model states that there is a relationship between the employees' internal influences (such as emotions) and their reactions to incidents that happen during their workday that affect their performance, job commitment, and long-term job satisfaction. Thus when employees have the fear of their safety on the job could affect their mental and emotional well being on the job which could translate in their affective commitment, job satisfaction and job performance. Additionally Amponsah-Tawiah and Dartey-Baah (2011) also share the assertion that in order for employees to perform their duties, they must be physically, mentally and emotionally sound. According to Zeidan (2006), employees in high affective commitment demonstrate emotional attachment identification with and involvement with the organization and such employees are less likely to engage in withdrawal behaviour. Moreover affective commitment has been found to be the strongest predictor of turnover and absenteeism.

In conclusion, management within the mining industry of Ghana must recognize the fact that workers, who feel healthy and safe at work and in the performance of their duties, are those who are most likely to develop emotional attachment and identify themselves with the goals and objectives of the organization and less to quit and absent themselves from work.

#### 4.5.4 Occupational Health and Safety and Normative Commitment

**Hypothesis 3** stated that occupational health and safety will significantly influence normative commitment. Consistent with the research expectations, employees who identify that their organizations implemented occupational health programs that prevent ill-health emanating from workplace conditions and safety programs that prevent accidents and with minimizing the resulting loss and damage to lives are likely to have emotional attachment and sense of obligation to their organization.

In terms of the sub-hypothesis for hypothesis 3, co-worker safety practices showed a significant positive effect on normative commitment. That is how employee perceives their Co-workers or colleagues valuing safety influenced their normative commitment. As predicted, employees who perceive that their colleague care for their safety may be pushed to reciprocate with similar behaviours by feeling obligated to take step to eliminate hazard, accidents and also warn others who acts unsafely and this would affect others normative commitment. Ford and Tetrick (2008) asserted that, workers' safety oriented behaviour can be scaled by the extent to which they engage in actions that promote safety and avoid those that decrease safety. Furthermore, management commitment safety practices also had a significant positive influence on normative commitment. That is employees' perception of dedicated management's action to safety which results in accident reduction could affect employees' normative commitment.

However, sub-hypothesis 3a, 3b, 3c were not supported, that is job safety, supervisors safety and safety programs and their impact on normative commitment were also not supported. The justification for these findings could be that, there are no inherent dangers in the roles or jobs of employees or employees' job may not pose threat to their health, however, the nature of

individual work itself might cause dissatisfaction. Also, supervisors may be following safety rules but their commitment to safety issues on the job may be inadequate. Thus their investment in safety performance might be insufficient and unsatisfactorily. Similarly, safety programs in the workplace may not inculcate the recognition and opinions of employees' on safety in decision making. Also safety programs at may not be applicable to employees workplace and also most likely that those safety programs might not be functioning efficiently and effectively. Thus these hypotheses were not supported because probably the organization investment into health and safety management is not sufficient and therefore cause dissatisfaction among employees and reduce their sense of obligation to their organization.

On a whole, hypothesis 3 was also partially supported, which is in line with the assertion of cooper (1995) who explains that in order for management to develop loyalty of employees especially those working in highly hazardous organization their health and safety must be top management priority. That is if employees perceived the risks of a given job to be underrated by management, it is likely that the employees commitment and loyalty to that organization will be undermined as the employer will be perceived to be unwilling to provide a safe working environment. According to Meyer and Allen (1991) normative commitment may be developed when an organization incur significant costs in providing employment such as investing in health and safety training for employees. Acknowledgement of such investment on the part of employees could create imbalance relationship and cause employee to feel obligated to reciprocate by devoting themselves to the organization until the cost has been paid. Also in China, Yao and Wang (2006) studied the predictability of normative organizational commitment for turnover in Chinese companies and found that whereas

affective commitment was an important determinant of organizational satisfaction, normative commitment was the most significant antecedent for employees' job changing behaviour.

In summary, management at the mining industry must understand that, investing in employees by providing the necessary resources to keep individual safe at work would create a sense of obligation on the part of employee and cause them to be devoted to the organization. That is, management in the mining industry must understand that, employees who feel safe on the job are those who will exhibit a sense of obligation to their organization.

#### **4.5.5 Occupational Health and Safety and Continuance Commitment**

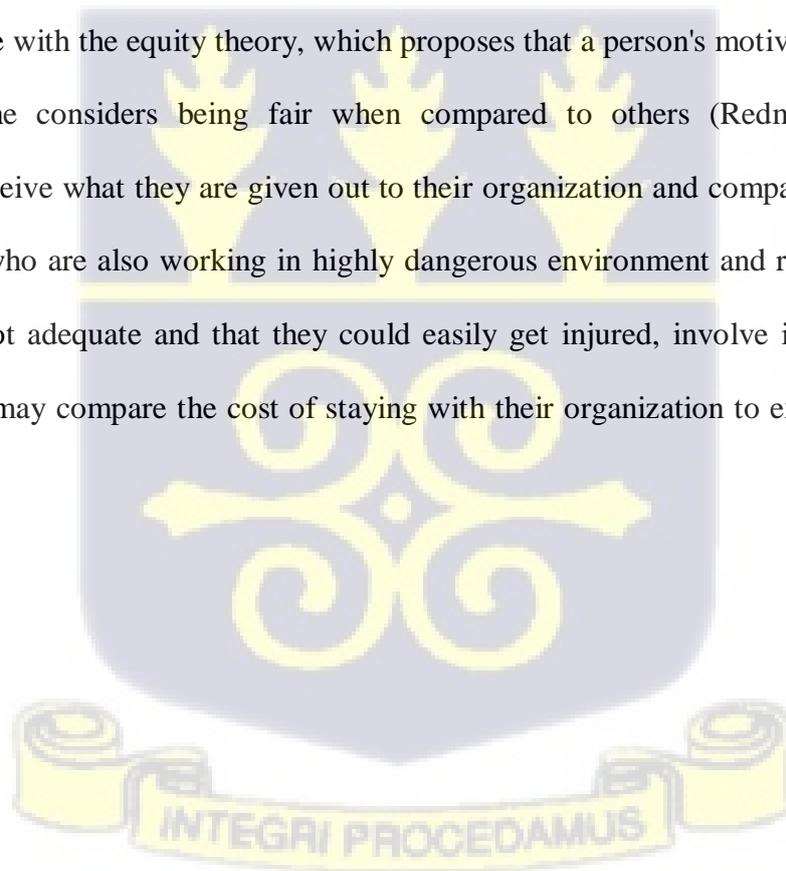
Lastly, the study sought to found out if occupational health and safety would have significant effect on continuance commitment. The findings of the study pointed to a significant positive influence of occupational health and safety on employees' continuance commitment. That is, when organizations strictly adhere to stringent protection of employees in the performance of their duties to reduce occurrence of accidents and ill-health, will decrease employee turnover. Additionally, job safety, supervisors' safety, safety programs, co-worker safety and management safety practices were also used to assess their impact on continuance commitment. The result indicates that management safety practices and co-worker safety had a significant effect on continuance commitment. As such employees who perceive management to care for their safety and co-workers protecting them on the job will be less to quit their job.

On the other hand job safety, supervisors' safety and safety programs did not predict continuance commitment. Justification for these results could be attributed to the motivational factors within the working environment. Thus it is most likely that aside

investing in health and safety, the organization do not provide support for employees' career development. According to Herzberg (1966) motivational factors such achievement, recognition, responsibility and advancement increase motivation. If those factors are not present could cause dissatisfaction which leads to less commitment to the workplace.

The hypothesis 4 was also partially supported. This finding is in line with the assertion of Sinclair et al., (2005) who advanced that when organization failed to address poor working conditions such as health and safety issues would affect employees' continuance to the organization. Thus employees judge the cost of staying with their organization to exceed the cost of leaving. In other words to get devoted employees to work within highly hazardous organization there is the need to provide effective safety and health systems that safe guard employees health and safety.

This also in line with the equity theory, which proposes that a person's motivation is based on what he or she considers being fair when compared to others (Redmond, 2010). As employees perceive what they are given out to their organization and compare their safety to that of others who are also working in highly dangerous environment and realized that their protection is not adequate and that they could easily get injured, involve in an accident or even die, they may compare the cost of staying with their organization to exceed the cost of leaving.



## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.0 Introduction

This chapter presents the summary of the key findings, conclusion and recommendation based on the results from the study. It provides the summary of the findings of the study, the conclusion drawn from these findings and the recommendations for future research and for both practitioners and management to adopt and apply to their organizations.

#### 5.1 Summary of key Findings

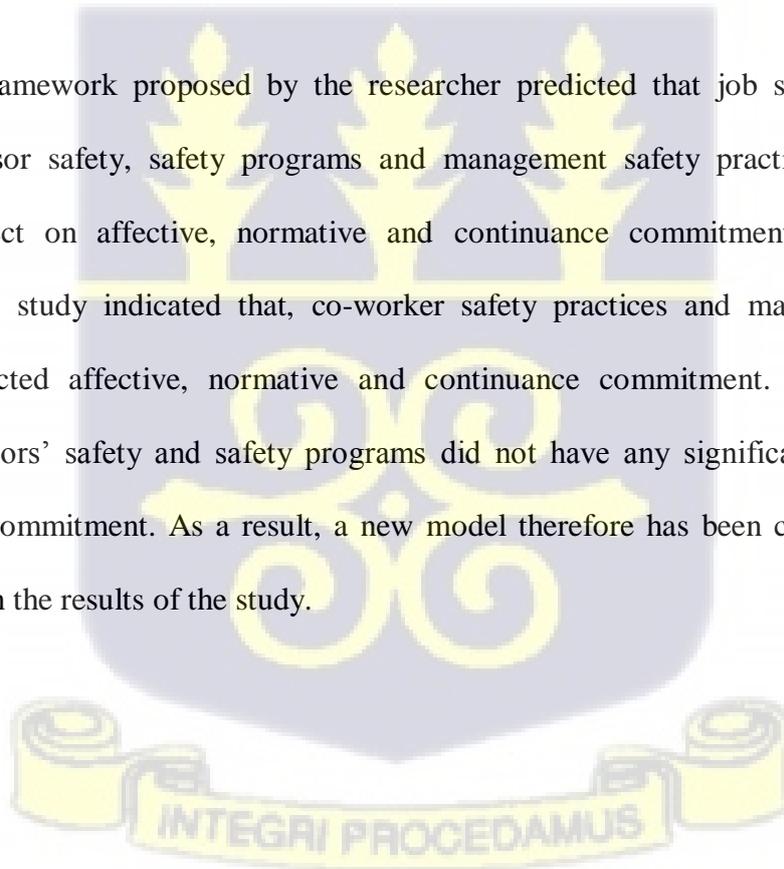
From the survey, the following results were recorded and thus have been listed below in conformity with the research objectives and hypotheses.

1. The majority of the respondents who participated in this study were males.
2. Most of the participants fell within the age range of 20-30 years.
3. Further, the study showed that most of the participants were married and most of the respondents had worked with their respective organizations between 1-5 years.
4. Similarly, majority of the employees who partook in this study were first degree holders.
5. The study also indicated a positive significant relationship between occupational health and safety and affective commitment. Again, the study established a positive significant relationship between occupational health and safety and normative commitment. Likewise, the results recorded from the study showed positive significant relationship between occupational health and safety and continuance commitment.

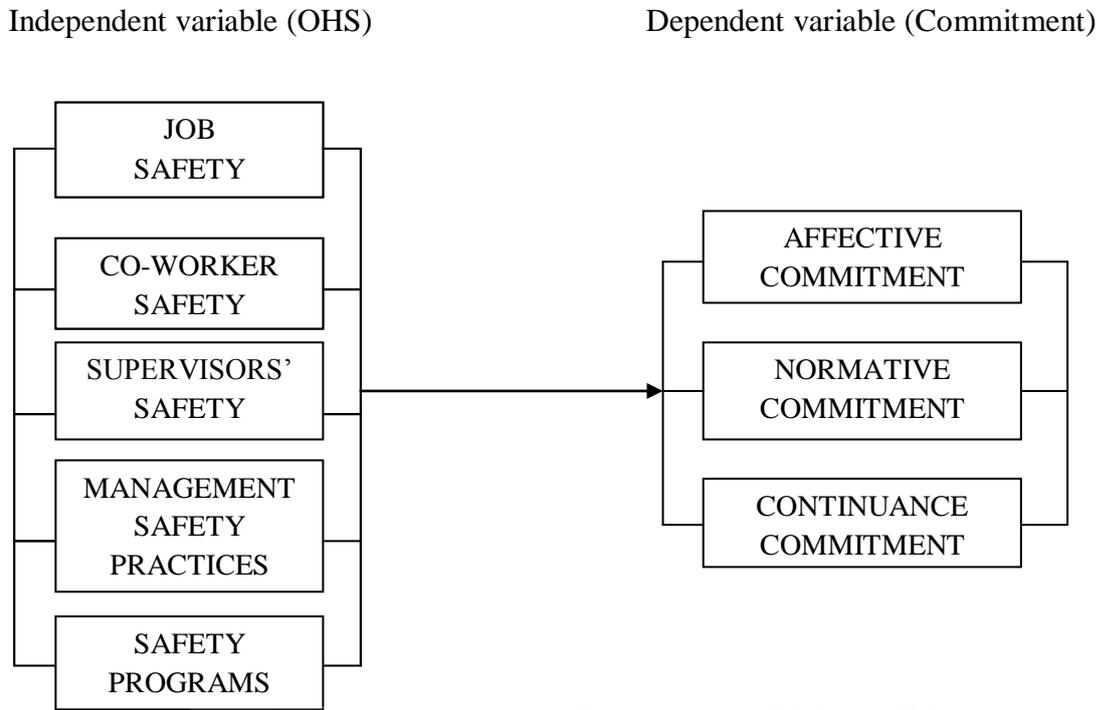
6. Additionally, the study indicated that job safety does not have a significant effect on affective, normative and continuance commitment.
7. The study also showed that supervisors' safety does not have significant effect on affective, normative and continuance commitment.
8. Furthermore, the study established that safety programs were also not significant predictor of affective, normative and continuance commitment
9. Co-worker safety was however found to be significant predictor of affective, normative and continuance commitment.
10. Finally, management safety practices were also found to have significant effect on affective, normative and continuance commitment.

## 5.2 Revisiting Research Framework

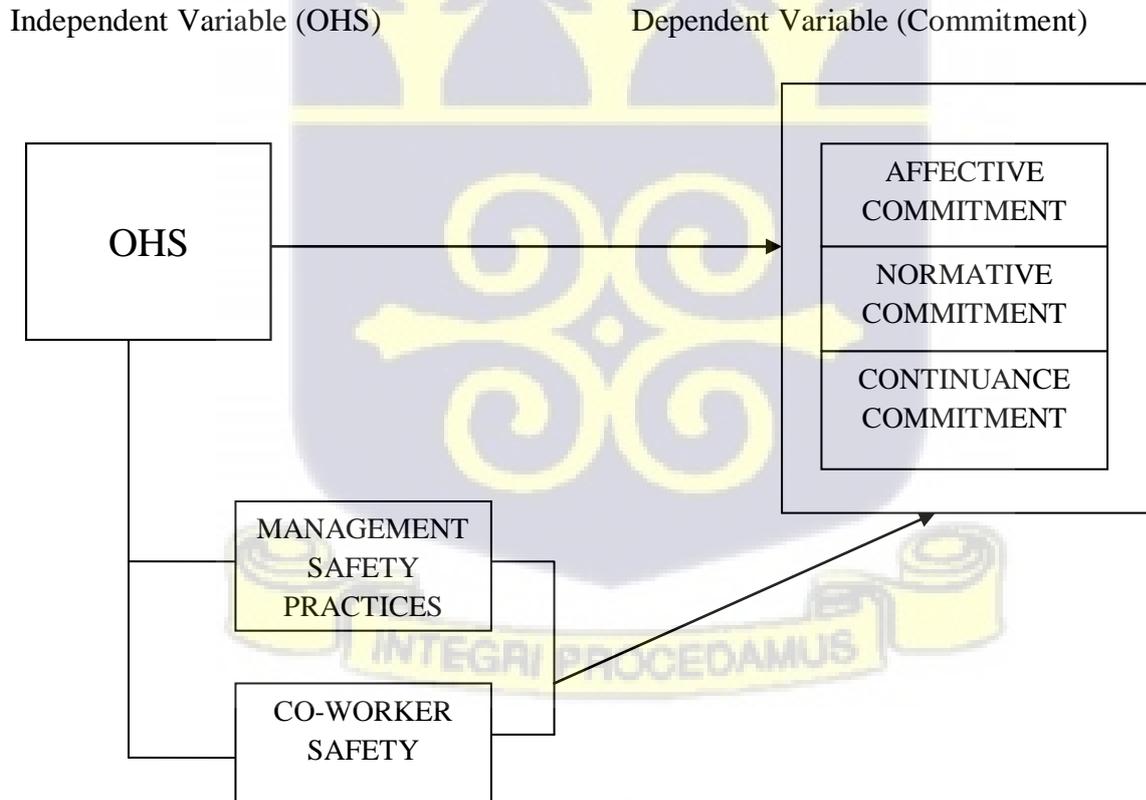
Initially, the framework proposed by the researcher predicted that job safety, co-worker safety, supervisor safety, safety programs and management safety practices will have a significant effect on affective, normative and continuance commitment. However, the findings of the study indicated that, co-worker safety practices and management safety practices predicted affective, normative and continuance commitment. Conversely, job safety, supervisors' safety and safety programs did not have any significant effect on the three form of commitment. As a result, a new model therefore has been conceptualized in accordance with the results of the study.



**Figure 5.1 The Proposed Research Framework**



**Figure 5.2: The New Conceptualized Model**



### 5.3 Conclusion

This study explored the relationship and the effect of occupational health and safety on employee commitment, thus affective, normative and continuance commitment. The three types of commitment were examined in association with the various aspects of workplace safety as developed by Hayes et al., (1998) that is job safety, co-worker safety, supervisors' safety, management safety practices and safety programs. Based on the results of the study, the following conclusions are drawn.

Firstly, the study found a moderate positive significant relationship between occupational health and safety and affective commitment. Thus improvement of occupational health and safety issues at the workplace to reduce occurrence of accidents and ill-health will cause employees to have strong emotional attachment and identification with the organization and an employee with such commitment remains because they want to and hence exhibit positive work behaviour such as increase performance, reduce absenteeism and reduce turnover. Also, the findings showed positive significant relationship between occupational health and safety and normative commitment. Hence, as organizations invest in employee safety and health at the workplace to protect and eliminate injuries and ill-health from the working environment, employees feel obligated towards their organization and remain because they ought to. Likewise, the study recorded a positive significant relationship between occupational health and safety and continuance commitment. Thus employees with continuance commitment remain with the organization because they need to as a result of laid down safety policies.

Secondly, the study indicated that management safety practices have significant effect on affective, normative and continuance commitment. However, safety programs showed insignificant influence on the three forms of commitment. This means that management

commitment to safety programs at the workplace is crucial in terms of increasing employees' commitment. Because the process of occupational health and safety management includes implementation of safety programs, staff behaviour and capabilities, working conditions, safety related design of the workplace, and quality of protective equipment with many of these factors being influenced by decisions taken at the management level.

Again, even though the correlation analysis showed a positive significant relationship between job safety and the three forms of commitment, the regression analysis revealed that job safety does not have a significant effect on affective, normative and continuance commitment. Additionally supervisors' safety also showed insignificant effect on the three dimensions of commitment used in the study. Thus the development of employees' commitment within the mining sector will not depend on job safety and supervisors safety practices exhibited at the workplace but depend on other factors beyond safety measures. As proposed by Herzberg (1966) there are certain factors (motivational and hygiene factors) that needs to be present within the working environment, absent of those factors may create dissatisfaction and decrease commitment level to the organization.

Finally, the study also recorded a significant influence of co- worker safety on affective, normative and continuance commitment. This implies that as co- workers protect themselves and ensure the safety of their colleagues on the job, will have significant effect on the three types of commitment.

#### **5.4 Recommendations**

The findings of this study have practical implication on practitioners and managers who want to increase employee commitment and retention of qualified employees in highly hazardous organizations. Based on the findings of the study, the following recommendations are made;

1. Occupational health and safety management was found to have positive significant relationship with commitment. That is when health and safety systems at the workplace guard the lives and reduce injuries and fatalities among employees, their commitment also increases. It is therefore recommended that issues concerning health and safety at the workplace must be seen as paramount by management within the mining sector. Simpson and Widdas (1992) found that certain features inherent in the mining system lead to slips, lapses, mistakes or violations that result in serious consequences such as most accidents which could cause serious injuries, disabilities and even death. This is consistent with Amponsah- Tawiah et al., (2013) who found that the experience of injuries, accidents and near misses was associated with mining conditions. This shows that accidents and fatalities are characterized within mining activities and to retain qualified and committed employees, effective health and safety systems must be implemented to ensure safety and eliminate health implications associated with performing mining activities. Further, efforts to increase employees' commitment within this sector should focus on creating safety culture that shows the value of employees and respects their contribution to the organization. For instance, the mining industry must develop health and safety policies, conducting risk assessment which identifies the hazards and assessing the risks associated with individual jobs, carrying out health and safety audits and inspections, managing stress, preventing accidents, measuring health and safety performance, communicating the need for good health and safety practices, training in good health and safety practices in order to eradicate occurrence of accidents and injuries at the workplace.

2. Additionally, the study revealed positive significant relationship between management safety practices and commitment. In support to the above, the regression analysis revealed management safety practices to have significant impact on commitment in the mining sector.

Based on this finding it is recommended that, management within the mining sector must devote their time and resources to safety and health issues at the workplace. Thus organization top management must demonstrate positive and supportive safety attitudes toward their employees. Employees would comply with safety rules and procedures and participate in safety programs when top management provide required safety equipment and materials and employees are enforced to use them. Top management must value the safety and health of employees and support them because committed employees are those that undertake work activities that contribute to an organization's primary task as prescribed by formal job descriptions and voluntary contribute to activities that strengthen safety in the organization.

**3.** Again, the study indicated positive significant relationship between co-worker safety and commitment. Also, the regression analysis showed co-worker safety to have a significant influence on commitment. Based on this result, it is recommended that co-work safety must be one of the important issues to be addressed by management. Co-worker safety plays an important role in the reduction of occurrence of accidents. Safety behaviour encompasses all activities undertaken by individuals in their workplace to ensure their personal safety, the safety of their co-workers and the safety of their organization at large. Management within the mining sector must endeavor to ensure employee cultivate the habit of protecting themselves and take the due diligence to care for their colleagues in terms of performing their duties. Occupational accidents and injury in the workplace will increase if there is no proper integration between the people who tend to be safe and unsafe behaviour as per their feedback among colleagues. The most important motivational factor for a worker is to create a safety culture in recognition to their attitudes and on their co-workers. Also management

can enhance co-worker safety by developing policies, systems and structure that employees perceive as benign thereby creating a safety climate shared by members of the organization.

4. Additionally, the study showed insignificant influence of job safety, supervisors' safety and safety programs on affective, normative and continuance commitment. Based on these findings it is recommended that, safety inherent in employees job, supervisors ensuring compliance of safety procedures and establishing safety policies and training at the workplace may not be enough to ensure job satisfaction and increase commitment level among employees in the mining sectors. Management within the mining sector in order to develop and retain highly qualified and committed employees must look beyond health and safety management. Thus they must look at other motivational factors (achievement, recognition, nature of the work itself, responsibility and advancement) and hygiene factors (company policy and administration, supervision, salary, interpersonal relations with supervisor, and working conditions) prevalent at the workplace (Herzberg, 1966). Because absent of these factors may cause dissatisfaction, decrease productivity and commitment level.

#### **5.5 Limitations for the study**

The study has some limitations that need to be taken into consideration when interpreting this result. The researcher gathered data during a time of uncertainty in the mining in the mining industry. During the period of data collection all the mining companies which participated in the study were lay off workers which cause most employees to be unsure about their jobs. This could have affected them in providing accurate information because it is likely for them to assume management would assess their commitment to the organization through the information that was given.

Further the use of quantitative methods and employing cross-sectional data as the source of information of proving and making causal statements about the hypothesized relationships between variables is considered valuable. Conversely, cross-sectional design is considered a weak approach when authenticating relationship between variables. Likewise, the cross-sectional design in this study only depicted the status of employees' health and safety at the period within which the study was conducted but cannot give true picture of trends in health and safety among employees in the mining industry.

Another limitation of the study is the use of self-report surveys, causing common methods bias and sample was limited to three mining companies. Finally, the survey used to gather the data for the study contained too many items and there were similarities in the items that are likely to confuse respondents and could cause them to lose their patience in providing accurate responses.

#### **5.6 Direction for future research**

Future study could investigate occupational health and safety management and other outcome variables such as absenteeism with or replicate this study after the restructuring with respect to mining industry in Ghana.

Further work can be carried out on safety climate and occurrence of accidents moderating role of management commitment to safety management with in the mining sector in Ghana since the study showed a significant effect of management safety practices on commitment.

Also, another variable that can be used as an independent variable in another study could be safety leadership and safety performance the mediating role of co-worker safety in the mining sector as the study indicated significant influence of co-worker safety on commitment.

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**APPENDIX I**

**LETTER OF INTRODUCTION**



October 24, 2013

The Human Resource Manager  
Golden Star Resource Mining  
Company Limited  
P. O. Box 11  
Bogo/Prestea – Western Region

Dear Sir/Madam,

**LETTER OF INTRODUCTION:  
PATRICIA MUAH  
ID NO.: 10250309**

This is to introduce to you Patricia Muah, an MPhil student (HRM Option) of the University of Ghana Business School.

As part of the requirements for the award of the degree, she is expected to write a thesis for which she has chosen the topic "*Occupational Health and Safety: As a Predictor of Commitment among Workers in the Mining Sector*".

She has intentions of using your institution as part of her population sample which would require the administration and collection of questionnaires for data gathering purposes. This is to enable her meet the objectives of her research.

I should be very grateful if you could provide the necessary information and assistance required for the successful completion of her thesis. I must emphasize that this information is for academic purposes only.

Thank you for your anticipated cooperation.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'K. Amponsah-Tawiah', is written over a horizontal line.

Dr. K. Amponsah-Tawiah  
SUPERVISOR

Department of Organization and Human Resource Management  
P. O. Box LG 78, Legon, Accra, Ghana  
Telephone: 233-21-500593 | Facsimile: 233-21-500024 | Email: [ugbs@libr.ug.edu.gh](mailto:ugbs@libr.ug.edu.gh)

**INTEGRI PROCEDAMUS**



October 24, 2013

The Senior Human Resource Manager  
AngloGold Ashanti  
P. O. Box 10  
Obuasi - Ashanti Region

Dear Sir/Madam,

**LETTER OF INTRODUCTION:  
PATRICIA MUAH  
ID NO.: 10250309**

This is to introduce to you Patricia Muah, an MPhil student (HRM Option) of the University of Ghana Business School.

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Yours faithfully,

A handwritten signature in black ink, appearing to read 'K. Amponsah-Tawiah', written over a large, faint watermark of the University of Ghana crest.

Dr. K. Amponsah-Tawiah  
SUPERVISOR

Department of Organization and Human Resource Management  
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Telephone: 233-21-500593 | Facsimile: 233-21-500024 | Email: [ugbs@libr.ug.edu.gh](mailto:ugbs@libr.ug.edu.gh)





October 24, 2013

The Human Resource Manager  
Gold Fields Mining Ghana Limited  
P. O. Box 26  
Tarkwa – Western Region

Dear Sir/Madam,

**LETTER OF INTRODUCTION:  
PATRICIA MUAH  
ID NO.: 10250309**

This is to introduce to you Patricia Muah, an MPhil student (HRM Option) of the University of Ghana Business School.

As part of the requirements for the award of the degree, she is expected to write a thesis for which she has chosen the topic "*Occupational Health and Safety: As a Predictor of Commitment among Workers in the Mining Sector*".

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A large, faint watermark of the University of Ghana crest is centered on the page. It features a shield with a cross and four lions, topped with a crown. Below the shield is a banner with the Latin motto 'INTEGRI PROCEDAMUS'.

INTEGRI PROCEDAMUS

**APPENDIX II**  
**QUESTIONNAIRE**



**UNIVERSITY OF GHANA BUSINESS SCHOOL**  
**DEPARTMENT OF ORGANIZATION AND HRM**

This study is undertaken by second year Master of Philosophy student in University of Ghana Business School, as a requirement for the course. The objective of this study is to ascertain the importance of occupational health and safety policies and practices and how it influences employee decision on being a member to an organization specifically in the mining sector. You are humbly entreated to respond to the questions as frankly as possible. Information provided will be used absolutely for academic purposes, and will be treated anonymously and privately. Thank you.

**SECTION A**  
**BIOGRAPHIC DATA**

Please circle the box that apply

1. Gender:            Male ( )                      Female ( )
2. Age:                Below20 ( )            20-30 ( )            31-40 ( )  
                          41-50 ( )                51-60 ( )            Over 60 ( )
3. Marital status: Single ( )            Divorced ( )            Married ( )
4. Educational level: Basic Certificate ( )            SSCE ( )            Diploma ( )  
                          First Degree ( )            Professional ( )            Post Graduate Degree ( )
5. Years spent with the organization: less than 1year ( )            1-5years ( )  
                          6-10years ( )            11-15years ( )            16-20years ( )            Over 21 years ( )

**SECTION B**

The statements below give a description of safety management perception to various dimensions of occupational health and safety management. This survey has five dimensions made up of job safety, co-worker safety, supervisor safety, management safety practices and safety programmes. Indicate your level of agreement or disagreement with each of the statements by circling the answer that applies. Please circle one answer for each statement using the scale.

**1= Strongly Disagree      2= Disagree      3= Neutral      4=Agree      5= Strongly Agree**

<b>Job Safety</b>						
	Think about your job. Do you agree or disagree that each of the following words or phrases describes your job?					
<b>1</b>	My job is Dangerous	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>2</b>	My job is Safe	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>3</b>	My job is Hazardous	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>4</b>	There are risk factors associated with my job	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>5</b>	My job is Unhealthy	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>6</b>	Could get hurt easily with my job	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>7</b>	My job is Unsafe	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>8</b>	There is fear for health implication with my job	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>9</b>	There is the chance of death with my job	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>10</b>	My job is scary	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Coworker Safety</b>						
	Think about the people you work with. Do you agree or disagree that each of the following words or phrases describes these people.					
<b>11</b>	My co-workers ignore safety rules	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>12</b>	They don't care about other's safety	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>13</b>	They pay attention to safety rules	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>14</b>	They follow safety rules	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

15	They look out for others' safety	1	2	3	4	5
16	They encourage others to be safe	1	2	3	4	5
17	Take chances with safety	1	2	3	4	5
18	Keep work area clean	1	2	3	4	5
19	They are safety-oriented	1	2	3	4	5
20	They don't pay attention to safety rules	1	2	3	4	5
	<b>Supervisor Safety</b>					
	Think about your immediate supervisor. Do you agree or disagree that each of the following words or phrases describes your immediate supervisor?					
21	My supervisor praises safe work behaviors	1	2	3	4	5
22	He/she encourages safe behaviors	1	2	3	4	5
23	He/she keeps workers informed of safety rules	1	2	3	4	5
24	He/she rewards safe behaviors	1	2	3	4	5
25	He/she involves workers in setting safety goals	1	2	3	4	5
26	He/she updates safety rules	1	2	3	4	5
27	He/she trains workers to be safe	1	2	3	4	5
28	He/she enforces safety rules	1	2	3	4	5
29	He/she acts on safety suggestions	1	2	3	4	5
30	He discusses safety issues with others	1	2	3	4	5
	<b>Management Safety Practices</b>					
	Think about your management. Do you agree or disagree that each of the following words or phrases describes your management					
31	Management Provide enough safety train programs	1	2	3	4	5
32	Management conduct frequent safety inspections	1	2	3	4	5
33	They investigate safety problems quickly	1	2	3	4	5
34	They reward safe workers	1	2	3	4	5
35	They provide safe equipment	1	2	3	4	5
36	They provide safe working conditions	1	2	3	4	5
37	They respond quickly to safety concerns	1	2	3	4	5
38	They help maintain clean work area	1	2	3	4	5
39	Management Provide safety information	1	2	3	4	5
40	Management keep workers informed of hazards	1	2	3	4	5

<b>Safety Program (Policies)</b>						
	Think about your safety program at work. Do you agree or disagree that each of the following words or phrases describes this safety program?					
41	Safety program/policies at work are worthwhile	1	2	3	4	5
42	Safety program/policies help prevent accidents	1	2	3	4	5
43	Safety program/policies at work are useful	1	2	3	4	5
44	The safety program/policies at work are good	1	2	3	4	5
45	The safety program/policies at work are first-rate	1	2	3	4	5
46	Safety program/policies at work are unclear	1	2	3	4	5
47	The safety program/policies at work are important	1	2	3	4	5
48	They are effective in reducing injuries	1	2	3	4	5
49	The safety program/policies at work doesn't apply to my workplace	1	2	3	4	5
50	The safety program/policies at the workplace does not work	1	2	3	4	5

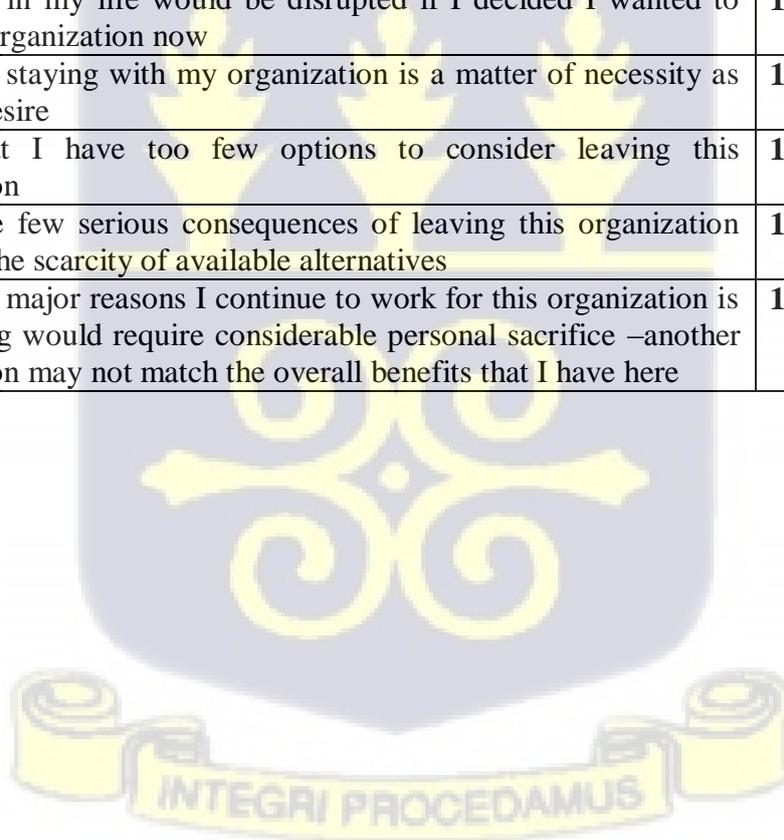
### SECTION C

This section is made up of statements that describe how you feel about your organization. Please answer the questions as candidly as possible. Please indicate the degree of your agreement or disagreement with each statement by ticking one of the five (5) alternatives below;

**1=Strongly Disagree    2=Disagree    3=Neutral    4=Agree    5=Strongly Agree**

<b>Affective commitment</b>						
1	I would be very happy to spend the rest of my career with this organization	1	2	3	4	5
2	I really feel as if this organization's problems are my own	1	2	3	4	5
3	I do not feel like "part of the family" at my organization	1	2	3	4	5
4	I do not feel "emotionally attached" to this organization	1	2	3	4	5
5	I do not feel a strong sense of belonging to my organization	1	2	3	4	5

6	This organization has a great deal of personal meaning for me	1	2	3	4	5
<b>Normative commitment</b>						
7	I do not feel any obligation to remain with my current employer	1	2	3	4	5
8	Even if it were to my advantage, I do not feel it would be right to leave my organization now	1	2	3	4	5
9	I would feel guilty if I left my organization now	1	2	3	4	5
10	This organization deserves my loyalty	1	2	3	4	5
11	I would not leave my organization right now because I have a sense of obligation the people in it	1	2	3	4	5
12	I owe a great deal to this organization	1	2	3	4	5
<b>Continuance commitment</b>						
13	It would be very hard for me to leave my organization right now, even if I wanted to	1	2	3	4	5
14	Too much in my life would be disrupted if I decided I wanted to leave my organization now	1	2	3	4	5
15	Right now staying with my organization is a matter of necessity as much as desire	1	2	3	4	5
16	I feel that I have too few options to consider leaving this organization	1	2	3	4	5
17	One of the few serious consequences of leaving this organization would be the scarcity of available alternatives	1	2	3	4	5
18	One of the major reasons I continue to work for this organization is that leaving would require considerable personal sacrifice –another organization may not match the overall benefits that I have here	1	2	3	4	5

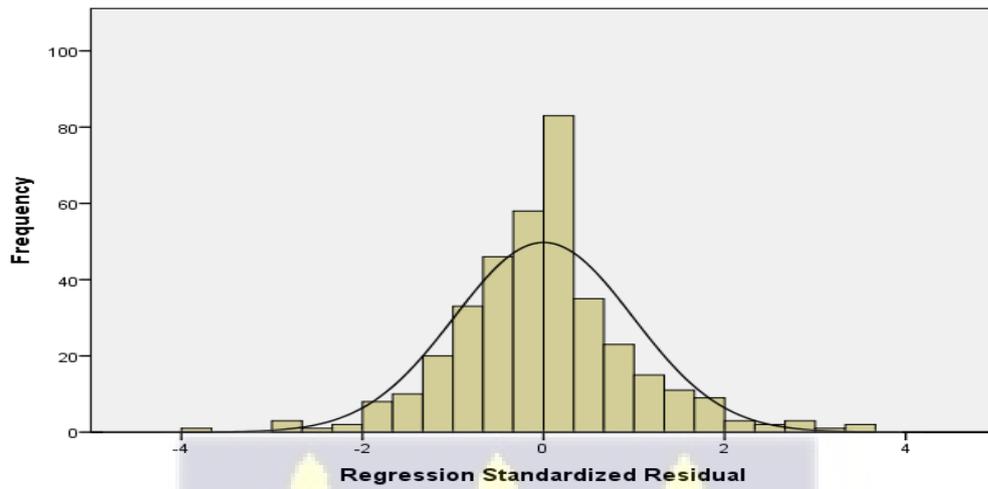


### APPENDIX III

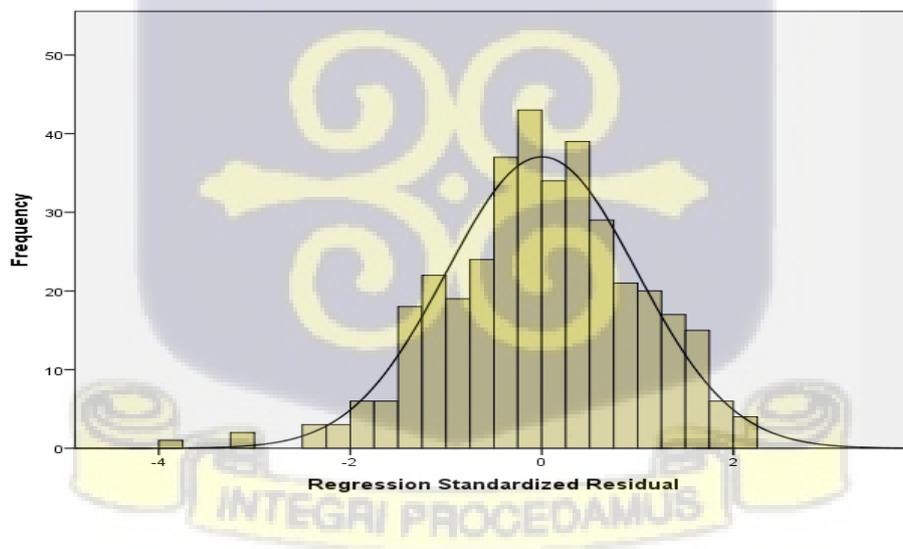
### NORMAL DISTRIBUTION CURVES

AFC

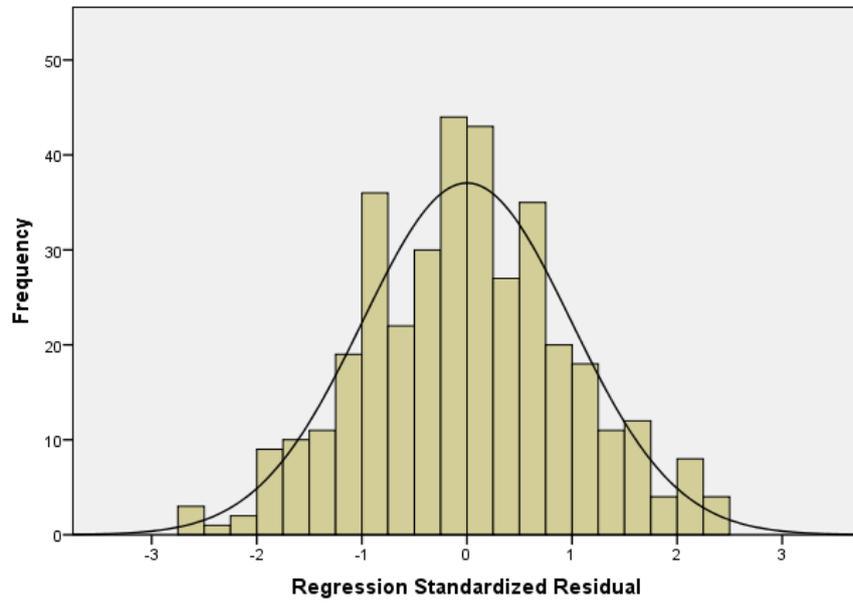
Figure 4.1 Normal Distribution Curve



Normal Distribution Curve for NOC



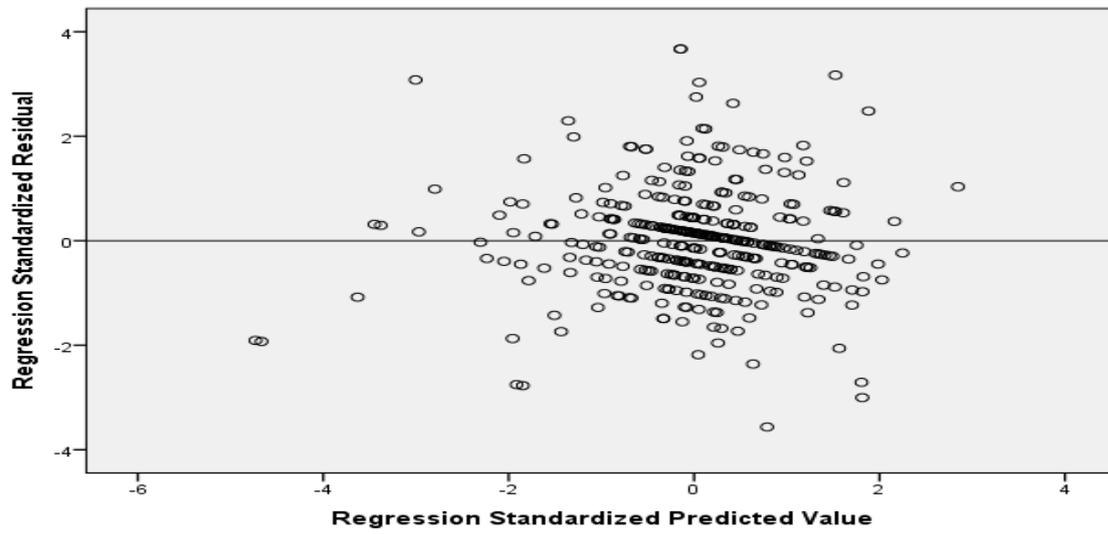
Normal Distribution for COC



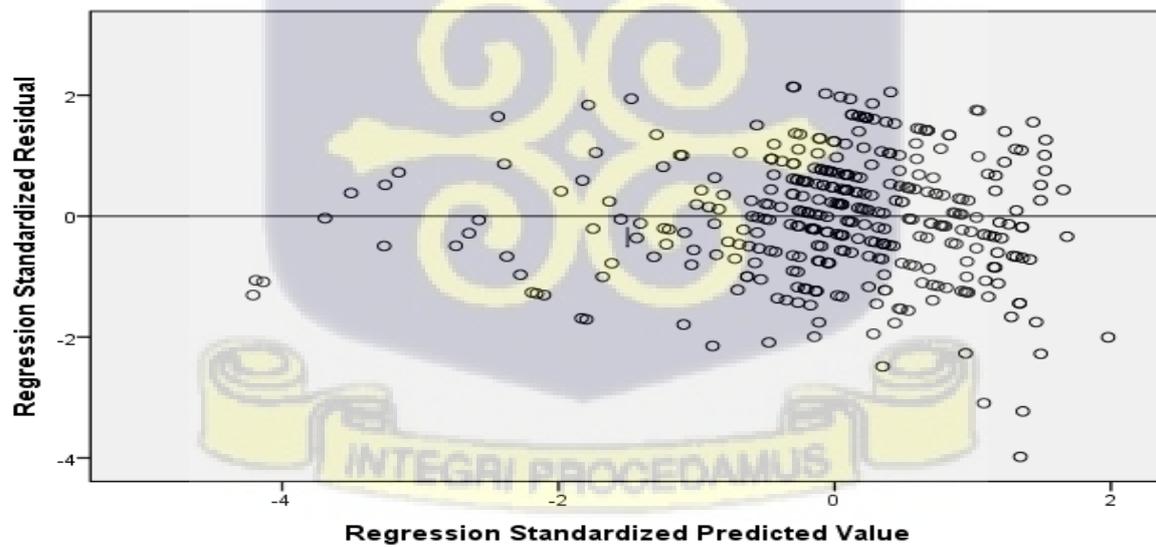
APPENDIX IV

RESIDUAL SCATTERPLOTS

Residual Scatterplot: AFC



ResidualScatterplot for NOC



**Residual Scatterplot for COC**

