

**UNIVERSITY OF MINES AND TECHNOLOGY**

**TARKWA**

**FACULTY OF INTEGRATED MANAGEMENT SCIENCES**

**DEPARTMENT OF MANAGEMENT STUDIES**

**A THESIS REPORT ENTITLED**

**ASSESSING IMPACT OF TECHNICAL COMPETENCIES OF INDIRECT  
EMPLOYEES' ON CONTRACT MANAGEMENT – A CASE STUDY OF  
ABOSSO GOLDFIELD LIMITED**

**SUBMITTED IN FULFILMENT OF THE REQUIREMENT FOR THE AWARD  
OF THE DEGREE OF MASTER OF BUSINESS AND TECHNOLOGY –  
SUPPLY CHAIN MANAGEMENT**

**BY**

**EVELYN ANINAKWA**

**TARKWA, GHANA**

**JANUARY 2022**

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## DECLARATION

I declare that this thesis is my own work. It is being submitted for the degree of Master of Business and Technology Management (Supply Chain) in the University of Mines and Technology (UMaT), Tarkwa. It has not been submitted for any degree or examination in any other University.

.....

(Signature of Candidate)

..... day of .....2022

## ABSTRACT

The extractive industry has evolved over a few decades with major emphasis on its core activities with the sole purpose of maximising profit. The major concern has been focusing on their key departments, such as mining and maintenance. Until recently, little emphasis was placed on the other service areas as they were not directly involved in the core activities within the industry. However, a major shift to focus on other service delivery areas confirmed that the extractive industry can greatly reduce costs and maximize profit if efficiently managed. Among the service areas which were given prominence is the supply chain function. Supply Chain Management is one of the key components responsible for balancing demand and supply along the entire value-adding chain, including contract management. Workers' skills are the most important asset that contributes to market growth. Many companies have established their contracting forces without investing in qualified and competent contract management. This study seeks to assess the technical competencies of indirect employees involved in the contract management cycle and its impact on contract management at Abosso Goldfield Limited. The primary objective of the research was geared towards assessing the existing indirect employee's technical competencies and their impact on the contract management cycle, as well as strategies to improve deviations in the contract management cycle. The primary data collected was analysed using Excel and SPSS for statistical and inferential analyses respectively. The research established that indirect employee technical competencies significantly impact contract management. Therefore, it is paramount that cogent reforms such as effective recruitment processes and specific training such as on the job training are implemented to enhance their competencies.

## **DEDICATION**

I dedicate this project to my loving and caring family, who have provided me with support and motivation.

I also dedicate this thesis to

My mother

Miss Elizabeth Quaye

My brothers

Isaac Aninakwa, Maxwell Quaye, Jonathan Quaye, and Michael Asare Brown

All Lecturers in the Management Studies Department and Colleagues, especially my supervisor, Dr Akyene Tetteh.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

“Competency” has been a prevalent phrase in contract administrators’ vocabulary. “Competence” was defined by White (1959) as a notion for performance motivation. Because of the shifting roles of private and public functions, the competencies necessary in professional organisations have altered. A complex arrangement is made between internal stakeholders and suppliers, from a buyer to a professional managing strategic long-term connections (Faes et al., 2001). Professionals must possess a set of skills and competencies for competencies to be strategic (Carr and Smeltzer, 2000). Competencies are traits, behaviours, skills, attitudes, and knowledge that people have (Jokinen, 2005; Fiattor, 2015).

Competence is defined by Fiattor (2015) as the capacity to do a certain behavioural activity, a specific behavioural task, or a specific cognitive process linked with a specific task. One of the most crucial components for balancing demand and supply across the full value-adding chain and various organizations’ diverse operations is the Supply Chain Management department (Dmitry Ivanov, 2018). Workers' skills are the most important asset that contributes to market growth. Unfortunately, many companies have established their contracting forces without investing in qualified contract management.

According to Gutters (2007), a contract can be described as a comprehensive activity regulating the parties’ conduct. It further provides roles and responsibilities, specifications, communication channels, and even the procedure for addressing conflict and the contract is concerned (Zaghloul, 2005). Haapio and Hagan (2016) suggest that contract management

is interpreted differently in different contexts. However, according to Henschel *et al.* (2011), “Contract Management can be defined as an advance method in which an organisation applies quality principles to its business terms, policies, practices and processes to improve and optimise the negotiation, execution and governance standards of its contracts.” Therefore, contract Administrators must have knowledge and skills in various areas, including interpersonal, communication, negotiation, project management, and legal.

In many nations, including Ghana, the technical competency role has evolved from reactive to strategic to keep up with organisational operations and improve performance (Dimitriades and Maroudas, 2007). It is not uncommon to hear variations of the phrases “behavioural,” or knowledge and skills,” or “communication and collaboration,” all because of budget compliance. (Frederick, 2010). According to Carr and Smeltzer (2000), professionals require a comprehensive combination of administrative and technical professional skills known as competence. According to Ryan *et al.* (2009), competencies differ dramatically from abilities in that abilities tell you what a person can accomplish, but competencies tell you what a person can and will do. Competence of employees has great benefits, especially in contract management. This study thus aims to assess the impact of indirect employees’ technical competencies on contract management at Abooso Goldfields Limited.

## **1.2 Statement of the Problem**

Contract management, also known as contract administration, is the process of ensuring that a contract’s provisions are being followed. Depending on the project's scope, contract management can be simple or complex (Garrett, 2007). Contract management ensures that all contract parties meet their obligations as efficiently and effectively as possible while also supplying the contract with the business and operational inputs it requires and giving good

value for money (Anon., 2006). According to Van Weele (2014), contract management entails determining the appropriate contract type for the product, service, or project to be provided and administering the contract after the discussions are completed.

Public and private sector organisations are under increasing pressure to reduce expenses and enhance their financial and operational performance. It is important to note that technical competency is now a global discipline with global leaders possessing desirable mental characteristics such as confidence, self-regulation, social judgment skills, empathy, willingness to function in all environments, cognitive skills, and recognition of ambiguity and its contradictions (Jokinen, 2005). Employees are a company's most valuable asset, and the active role in contract management cannot be overstated. The competencies of these workers are the most powerful weapon for achieving business improvement. As a result, to maximize job performance, these unique assets must be equipped through technical training.

According to Kraljic (1983), purchasing management should shift from operational to strategic supply management. Contracts should not be managed independently of indirect employees such as accountants, maintenance personnel, security personnel, etc. Kraljic (1983) emphasizes the need for cross-functional integration and management involvement to develop effective organisational interactions, system support, and personnel skill and competency upgrades. This gives the company a competitive advantage in cost, quality, time, and improved customer satisfaction.

A challenge in contract management is transforming conflict between parties into a productive cooperative agreement to meet set targets. There is a need to overcome conflicting interests. The agency problem is the conflict of interest between buyers and

sellers due to conflicting expectations and information asymmetry. Due to acquired experience and knowledge, direct employees are involved in contract party adherence to contract requirements, ensuring effective communication between contracting parties, managing contract amendments, invoicing and timely payment, and settling claims and disputes.

On the other hand, indirect employees manage the cash flows, budget, and employee welfare and protect the organisation's properties involved in the contract execution (Van-Weele, 2014). Organisations in both the public and private sectors are under pressure to cut costs and enhance financial and operational efficiencies, according to Anon (2013). The relevance and benefits of good contract administration have been recognized due to new legal requirements, globalization, increased contract volumes, and complexity.

Literature has examined the competencies of professionals or employees at different sectors of the Ghanaian economy (Fiattor, 2015). However, a study focused on the mining sector has not been conducted. Other studies conducted in the mining sectors outside Ghana also did not focus on indirect employee technical competencies impact on contract management, therefore their results could not be applied to this research. To bridge this gap, this study will assess the indirect employee's technical competency and its impact on contract management in the mining sector, a case study of Abosso Goldfield Limited.

### **1.3 Research Objectives**

This study aims to assess impact technical competencies of indirect employees' on contract management at Abosso Goldfield Limited. The set objectives are to;

- i. To assess and identify the technical competencies of indirect employee's at Abosso Goldfields Limited.
- ii. To identify the impact of the technical competencies of indirect employee on contract management at Abosso Goldfield Limited.
- iii. To determine strategies to improve the technical competencies of indirect employee's at Abosso Goldfields Limited.

#### **1.4 Research Questions**

- i. What are the identified indirect employee's technical competencies at Abosso Goldfields Limited?
- ii. How does indirect employee's technical competencies impact on contract management at Abosso Goldfield Limited?
- iii. Which strategies can be adopted to improve indirect employees' technical competencies to promote effective contract management Abosso Goldfields Limited?

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

Ghana has a well-developed mining industry that has risen dramatically in recent years to become a significant element of the Ghanaian economy (Debrah et al., 2013). Mining is a worldwide business that may produce jobs, promote innovation, and deliver large-scale investment and infrastructure over lengthy periods, according to Anon. (2017). However, according to Panda and Mishra (2018), the mining industry is a scarce manufacturing industry, with fierce competition among its current players. Therefore, it is necessary to have a competent workforce to compete. In this regard, the study aims to evaluate the



technical competencies of indirect employees that enable successful contract management at Abosso Goldfield Limited.

As part of this study, existing indirect employee technical competencies that promote effective contract management at Abosso Goldfields Limited will be assessed. Furthermore, the competency challenges indirect employees to face ineffective contract management practices at Abosso Goldfields Limited will be identified. Finally, the strategies to improve the technical competencies of indirect employees' ineffective contract management practices Abosso Goldfields Limited will be determined. The findings of this study will serve as a source of information for stakeholders and policymakers to identify some competency challenges faced by indirect employees' ineffective contract management practices in the mining industry.

Similarly, the study's recommendations will lead to measures that may be used to increase indirect employees' technical competencies in successful contract management procedures in the mining industry. This study serves as a source of empirical data and a foundation for future research. This study contributes to knowledge by adding to the literature on technical competencies that promote effective contract management in the mining industry in Ghana. Therefore, this will act as a reference point for future research in related fields and encourage others to perform additional research on the subject.

## **1.6 Scope of the Research**

The definition of the contextual and geographical scope to guide a study is an important element of research. Simon and Goes (2013) define the scope of research as the parameters within which a study functions. The scope of the research refers to what is covered and what

is not. The study's scope includes all of the activities included in the research effort. The study's scope is divided into two main sections: contextual and geographical. The contextual scope of this study will be limited to indirect employees' technical competencies that promote effective contract management at Abosso Goldfield Limited.

The contextual scope of this study is centered on two major parameters: technical competencies and contract management practices. The study will thus focus on assessing existing indirect employees' technical competencies that promote effective contract management at Abosso Goldfields Limited. As part of this study, the competency challenges faced by an indirect employee is ineffective contract management practices at Abosso Goldfields Limited will be identified. Additionally, the strategies to improve the technical competencies of indirect employees' ineffective contract management practices Abosso Goldfields Limited will be determined. The study will be focused on top and middle-level management, project managers, contract managers, indirect employees, service providers, and procurement officers of the Abosso Goldfields Limited.

The study will be in the Abosso Goldfields Limited in the Tarkwa metropolitan. The West African region has world-class gold reserves in Ghana and Mali and is a popular mining destination. Gold Fields boasts exceptional properties in the Tarkwa region and a 17-year (now 27-year) history in Ghana. The Gold Fields brand is well-known in the region, and the company is well-positioned to realize its objective of "becoming the global leader in sustainable gold mining." The Tarkwa Gold Mine is located in south-western Ghana, towards the southern end of the Tarkwa Basin, 300 kilometers west of Accra, Ghana's capital. It is easily accessible thanks to well-developed infrastructure (Tarkwa Gold Mine, 2011).

## **1.7 Limitations of the Study**

Every scientific project faces obstacles. This study's flaws can be seen in the way the data were gathered. As a result of the respondents' hectic schedules throughout the data collection phase, it is anticipated that data retrieval will be challenging. The majority of survey respondents will frequently be busy and may not have enough time to even read the questionnaire, let alone react.

Despite the fact that this hurdle is anticipated, it is anticipated that the few individuals who make time out of their busy schedules would perform well. Nevertheless, the authenticity of the work is unaffected by this restriction. To demonstrate that the response rate will be accurate for subsequent study, this will be accomplished through preliminary tests. This study is also limited in scope to Abooso Goldfields Limited in the Tarkwa metropolis.

## **1.8 Organisation of the Study**

The thesis comprised five (5) distinct but interconnected chapters; Chapter one provided a general overview of the entire study: background of the study, problem statement, research question, research aim and objectives, and the study's relevance. Chapter two presented the literature review.

The chapter offered literature based on material provided by other prominent researchers, identified gaps in the literature that the research intends to fill, and summarized what was discovered regarding the study field. Chapter three also provided an in-depth discussion of the methodology adopted for the research. It also outlined the research design for the study. Regarding the research objectives and questions described in chapter one, chapter four presented an in-depth analysis, presentation, and interpretation of all the data obtained for

the study. The fifth chapter comprised the summary of the study findings, conclusion, recommendations, and finally provides avenues for further research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter delved into the conceptual review, theoretical underpinning, and empirical review of the impact of indirect employee's technical competencies on contract management. First, the chapter began defining competencies, technical competencies, and contract management. Next, it delved into contract mining and management by perusing the Ghanaian mining industry's perspective. The Human Capital Theory and institutional theory by Selznick (1948) underpinned this study. Ghana Extractive Industries Transparency Initiative (GHEITI) (2018); and the International Atomic Energy Agency (2020), among other authoritative sources provided the conceptual, theoretical and empirical basis of this research.

#### **2.2 Conceptual Review**

##### **2.2.1 Defining Competencies**

Personnel, human resource specialists, professional associations, and educators regard competencies as a vital instrument for preparing, recruiting, and developing employees. The first step in determining what capabilities are required for an individual to succeed in a given profession or job function is to define what competencies are required. There is no single, globally acknowledged definition of competencies that academics or industry practitioners have agreed on (Le Deist and Winterton, 2005; Ley and Albert, 2003).

According to Le Deist and Winterton (2005), the concept of competencies has evolved and may be influenced by academic, geographic, and cultural contexts. Furthermore, a body of

research has looked into the relationship between competence and competencies, one being work-related and the other being personal (Le Deist and Winterton, 2005; Dainty et al., 2005). Despite the differences, there are some commonalities in the definitions, as discussed below from recent and ongoing studies.

Competencies are the information, skills, qualities, or traits that contribute to exceptional success in a specific career. They are described to be measured, graded, and observed. Competencies move the focus from “what” an employee must accomplish (as outlined in a typical job description) to “how” the person performs the necessary tasks (ARMA International, 2007). Competence is a set of highly interconnected knowledge, skills, abilities, and other characteristics (KSAOs) that effectively result in the behaviours needed to do a job (SHRM, 2011). According to Trinder (2008), competency uses knowledge and abilities to achieve a certain goal. It is the ability to do tasks inside a job, function as expected at work, and perform under various circumstances, including dealing with unexpected events.

Jorda and Regueiro (2020) opined that competencies are the qualities that a person must possess to be successful in a job, position, purpose, or obligation, function, in the broadest sense. Professional knowledge/skills (what a person knows/demonstrates about information, a career, technology, procedures, a job, and roles), motivation (how a person feels about a job, organisation, or geographic location), and job-relevant actions (what a person says or does that contributes to good or bad performance) must all be included. As a result, competency is defined as the capacity to correctly and efficiently accomplish a task.

According to the International Labour Organisation (2015), competency is defined as the capacity to consistently apply all relevant skills, expertise, and attitudes to inappropriate workplace conditions when completing specified tasks and obligations to the level of performance expected in the workplace. Competencies encompass knowledge, skills, attitudes, and qualities in addition to behaviours (Kang and Ritzhaupt, 2015).

It is also feasible to have technical or behavioural skills. Behavioural competencies include experience, abilities, competence, and other characteristics that promote technical knowledge to work-related activities. Technical competencies are the skills that a professional in a given field need to perform a specific task. The use of behavioural competencies is broader than that of technical talents. The Society for Human Resource Management (2011) classified eight behavioral skills into three groups. Leadership has three sub-competencies: Leadership (leadership and navigation; ethical practice); Business (relationship management; communication; global and cultural effectiveness); and Interpersonal (relationship management; communication; global and cultural effectiveness) (business acumen; consultation and critical evaluation) (leadership and navigation; ethical practice).

Professionals and politicians increasingly use competency criteria to determine the credentials required to practice a specialization. They explain a set of competency levels and the skills acquired at each level (Trinder, 2008). Competency models are collections of information, skills, abilities, and other qualities (KSAOs) necessary for job success (Schippmann et al., 2000; Rodriguez et al., 2002). Champion et al. (2011) opined that certain KSAOs or combinations of KSAOs are competencies, and the competency model is a collection of competencies. Motsoeneng *et al.* (2013) opined that the mining industry's

ability to sustain efficiency and safety standards might be severely hindered by a lack of employee competencies (technical or managerial).

### 2.2.2 Technical Competencies

The knowledge, skills, and/or abilities required to perform job tasks, duties, and responsibilities are technical competencies (Federal Authority for Government Human Resources, 2016). Applying subject matter or terms in a specific area is what technical skills/competencies are all about (Bailey, 2010). Technical competence refers to a detailed understanding of the subject matter and all aspects of the contract (e.g., technical requirements, terms of reference, contract conditions, solutions, etc.) as well as their interdependencies (The World Bank, 2018). Technical competencies protect the different areas of knowledge related to the particular works. Technical experience is at the core of everything we do (OECD).

### 2.2.3 Contract Management

A contract is a written agreement between two or more parties to create legally binding responsibilities (Midwestern State University, 2016). Even if the parties are not legally bound, the Saskatchewan Ministry of the Economy (2012) defines a contract as an agreement or mutual consent between two or more parties (typically resulting from an offer by one party and acceptance by another), an intention to enter into a binding agreement on both parties' parts, legal subject matter, and consideration (example: something of value to be shared between the parties). According to the Commonwealth of Australia (2019), a contract is a legally enforceable arrangement between two or more parties that defines each party's rights and responsibilities in executing the contract. A contract is a business document that makes sense for both parties and cannot be created in a vacuum (International



Association for Contract and Commercial Management, 2013). According to the Saskatchewan Ministry of the Economy (2012), there are six primary rationales to enter into a contract with another party: to formalize obligations and rights; to monitor and distribute risk; to lock in benefits; to exclude the need for negotiation; to agree on how exceptions will be handled; and for some other benefit.

Contract work naturally affects normal workflow and may result in an additional and shared risk. In a contract, the contractor assumes general obligations for staff, subcontractors, tourists, and representatives of the general public and a duty to work with the client and subcontractors and organize operations. The contractor is responsible for his onsite conduct, owes a duty of care to both parties, and is equally liable for his employees' irresponsible acts. Contract management is the process of inspiring, encouraging, and empowering a contractor to add value beyond what was originally stated in the contract and observable against the original contract's criteria. Method innovation, cost savings, and service enhancement are examples of added value. (Midwestern State University, 2016). According to The Interagency Procurement Working Group (IAPWG) (2006), Many people use the words "contract management" and "contract administration" interchangeably.

Contract management is the process of managing contract planning, creation, execution, and evaluation from start to finish to maximize financial and operational efficiency while reducing risk (Midwestern State University, 2016). Contract management is a broader and more strategic phrase that includes the full procurement cycle: planning, implementation, administration, and termination, and extends beyond day-to-day administrative tasks, according to the Interagency Procurement Working Group (IAPWG) (2006). Contract management is the process of ensuring that all contract parties are completely aware of their

obligations and that they are fulfilled as efficiently and effectively as feasible in order to provide the most value for money.

This gives the idea that contract management is being approached in a “competitive” manner. The contract manager’s job is practically supervisory, as they ensure that the contractors fulfil their “obligations.” oversees the entire procurement cycle, including planning, execution, administration, and closure, and goes beyond the day-to-day administrative responsibilities. Contract management is also defined as the process of ensuring that all contract parties fully understand their responsibilities and that they are met as properly and successfully as possible in order to provide the best possible value for money. This gives the idea that contract management is taken “adversarial” manner. The contract manager’s job is nearly supervisory, as they ensure that the contractors fulfil their “obligations.”

Asia is home to the Asian Development Bank (2018). Contract management is described as the process of monitoring and regulating the output of contractors output to ensure that a contract generates the best possible results. Creating contact pathways and processes, tracking progress toward contract deliverables, making payments, monitoring deviations, reviewing contractor performance, and closing the contract are all part of this process.

When a contract is awarded, and during the contract administration and implementation phase, contract management guarantees that all parties fulfil their contractual obligations (The Asian Development Bank, 2018); the value, risk, and complexity should be considered when managing it. More desirable contract outcomes; improved service quality and customer focus; accomplishing value for money and financial control; reduced risk; clarity

of the contract manager's, contractor's, and end users' roles and obligations; early detection and resolution of inadequate results, other issues, or conflict are just a few of the benefits of successful contract management. In addition, contract management ensures that all contract parties complete their obligations as quickly and efficiently as possible, achieving their business and operational goals while ensuring fair value for money. It also safeguards the parties' interests and guarantees that the requisite performance is met in the event of a change in circumstances (Interagency Procurement Working Group (IAPWG), 2006).

#### 2.2.4 Contract Mining and Management in Ghana

Rock breaking, mine design, equipment maintenance, materials handling, scheduling, and budgeting are just a few of the processes that are involved in mining (Suglo, 2010). Ghana has abundant mineral resources and a well-established mining industry that substantially contributes to the economy. Gold, diamonds, bauxite, and manganese are all mined in the region by large-scale mining firms. Small-scale and artisanal mining operations are also common in Ghana (Ghana Extractive Industries Transparency Initiative (GHEITI), 2018).

The mining industry attracts over half of all foreign direct investment, provides over a third of all export revenue, is the largest taxpayer, and contributes significantly to GDP and employment (International Council on Mining and Metals, 2015). According to GHEITI (2018), the mining industry generated 1.2% of the country's GDP in 2015, while minerals accounted for 31% of overall exports, with gold accounting for 96% of total mineral exports. Gold continues to be the most profitable mineral. In 2015, the mining sector brought in GHC 1,285 million in revenue to the Ghanaian government, up from GHC 1,193 million in 2014, a 7.79% rise.

According to Rupprecht (2015), many small mining enterprises have resorted to contracting mining and processing. The mining company oversees the business but allows contractors to conduct the day-to-day mining and/or processing operations. Mine management must always decide whether to carry out a significant mining project with their equipment and personnel or contract the job out to a specialist mining contractor at some point, according to Suglo (2010). According to Rupprecht (2015), expert availability is one of the biggest contrasts between small and medium mining enterprises and corporate mining houses.

This determines whether contract mining or owner mining is used. Contract mining is a reasonable option if your business lacks the requisite expertise. Most mining companies in Ghana and worldwide are either contract or owner-operated (Suglo, 2010). Drilling, blasting, loading, hauling, day works, ground conditions, and water inflows are all areas targeted for contract mining, according to Dunlop (2004). Contract mining has a major advantage over owner-operated mining in reaching high advance prices (Rupprecht, 2015). Contracting out one or more mining operations allows mining companies to concentrate on their main businesses (Suglo, 2010).

Since the 1990s, Ghana has seen a remarkable increase in contract mining. Before the 1960s, Ghana had almost no contract miners, except for the Mining and Building Contractors (MBC), who was hired to manage all major building work at AngloGold Ashanti's underground mines (Obuasi Mine). In the late 1980s, the first mining contractors to enter Ghana were Minproc, Lycopodium Marple, Ausdrill, Stanley Mining Ltd., and Public Works. Tarkwa has the highest concentration of mining companies in Ghana. The mining industry is most concentrated in Tarkwa. Gold Fields Ghana Ltd. (Tarkwa and Abosso

Mines), Ghana Manganese Company, Nsuta-Wassaw, AngloGold Ashanti (Aduapriem Mine), and Golden Star Resources (Wassa) Mine are the mining businesses in Tarkwa (Suglo, 2009).

## **2.3 Theoretical Review**

### **2.3.1 Human Capital Theory**

Human capital is a difficult term to understand (Tittenbrun, 2017). Scholars have discussed the meaning and evaluation of human capital and its effect on organisational outcomes, for decades, from opposing perspectives (Samad, 2012). Human capital is characterized as people's ability and capacity to add value to the goods and services they create at work.

According to Coleman (1988), human capital refers to an individual's knowledge and abilities that require changes in behaviour and economic growth. Employee integrity, employee attitude, and employee imagination are part of the human capital definition (Chen et al., 2004). Human capital is also defined as the value of an organization's individual knowledge and talent, including know-how, capacities, expertise, attitude, mental agility, and creativity (Samad, 2010). Human capital is divided by Santos-Rodrigues et al. (2010) into competencies such as skills and know-how and employee dedication such as loyalty to their job and business.

Meanwhile, Pena (2002) introduced the concept of human capital, which includes education, industry, and motivation. Human capital, according to Acemoglu *et al.* (2014), refers to any stock of skills or characteristics that a worker possesses (whether natural or acquired) that contributes to their "productivity." People, their success, and their ability in the organisation are all examples of human capital (Thomas *et al.*, 2013). Employee

competencies (and possibly stakeholder competencies), education, age, developmental stage, motivation, employee know-how, attitudes and morale, participation and other job habits, diversity, and work-non-work orientations are all examples of human capital (Keenan, 2000). Increased labour investment, particularly through education and training, is equivalent to increased physical capital in that it boosts labour productivity (Toner, 2011).

According to HM Treasury, human capital is one of the most important factors of labour efficiency (2004). Toner (2011) says that improving labour quality through education and training improves labour-capital complementarity. Higher-quality labour boosts capital efficiency, encourages more capital spending, and increases demand for skilled labour. Individuals' skills and abilities can be acquired through various methods, including formal education and training (Coleman, 1988). According to Acemoglu et al. (2014), human capital is derived from various sources, including natural talent, education, school efficiency, non-schooling investments, training, and pre-labour market factors. Human capital is only available for rent as part of a job or on a more restricted contractual basis: individuals, not businesses, own human resources (Tittenbrun, 2017). Human capital does not belong to a corporation, according to Politis (2004), but managers must do everything possible to keep it. Competence, temperament, and intellectual agility are the three main components of human capital.

### 2.3.2 Institutional Theory

The institutional theory was first suggested by Selznick (1948), who asserted that the behaviour of a firm could be influenced by its institutional environment. Institutional theory has grown in popularity and successful explanation for human and organisational behaviour (Tina Dacin *et al.*, 2002). According to Selznick (2011), understanding the organisation

should go beyond productivity and the organisation itself since it is more than just a system that meets technological requirements; it is also a social organism.

According to Greenwood *et al.* (2008), Institutional theory has grown in popularity as a useful tool for explaining the actions of both people and groups. It emphasizes both the reliance of actors' actions on institutions and the impact of human initiative in institutional change. According to John *et al.* (2001), the foundational idea of institutional theory is that organisations must comply with the laid down rules and norms of leading institutions to gain acceptance and legitimacy. Institutional theory is a set of ideas that together form a consistent view of the processes that sustain and limit social behaviour, but it is not a cohesive system of laws (Scott, 2001).

Institutional theory is a continuation and expansion of the academic movement that started in the 1960s when the principle of open structures was first introduced into the study of organisations (Scott, 2001). Scott (2008) posited that the institutional theory provides a non-economic explanation of organisational behaviour and strategies. An equally important but less explored phenomenon of institutional theory is deinstitutionalization. According to Scott (2001), deinstitutionalization is when institutions weaken and disappear. Chen (2015) categorised institutional theory into formal institutional context and informal institutional context. According to Porta *et al.* (2008), formal institutional context encompasses regulations, laws and industry self-regulation. For informal institutional context, it is identified as religious beliefs, ethics, traditions, norms, culture and values.

## 2.4 Empirical Review

### 2.4.1 Existing Indirect Employee's Technical Competencies Morkun *et al.* (2016),

In a recent study, identified some competencies as required of mining engineers. The study represented a structured system that comprised 49 competencies inclusive of the core of new sectoral standards for preparation for mining engineers. They include general competencies, underground mining competencies, open pit mining competency, environmental competency, and mining management competency.

Ascertain the risk management system; interact with local emergencies and incidents; perform safety and health investigations; convey information; remove, repair, and refit tyres and tubes; service mine plant and equipment; perform non-slewing crane operations; conduct slewing crane operations; operate an articulated vehicle; establish the statutory compliance management system; initiate, monitor, and supervise contracts.

Apply and monitor mine transport systems and production equipment; enforce mine services and infrastructure systems; submit and monitor mine services and infrastructure systems; apply and monitor mine emergency preparedness and response systems; conduct skip operations; operate automated winder, and conduct cage operations, according to Morkun *et al.* (2016). Others included open pit mining competency (implement pit plan; conduct bulk water truck operations; conduct scraper operations; lay and recover cables and hoses, and operate elevated work platforms); mining management competency (establish ground control and slope stability systems); and environmental competency (acceptance and perception of ethical behaviour norms in relation to other people and nature [bioethics principle]; environmental literacies) (Morkun *et al.*, 2016).



Heath (2000), in a study of the technical and non-technical skills needed by Canadian-based mining companies, identified the following technical competencies: outcrop – examination sampling and recording; detailed mapping; structural geology; regional mapping; drilling and coring and surveying. Ali *et al.* (2016) added the ability to troubleshoot prob, fulfil reports, analytical skill and safety compliance (safety conscious; personal and property); supervisory ability; as technical competencies.

Workplace communication; plan and organise individual work; apply local risk control processes; work safely; contribute to quality work outcomes operate light vehicles; identify and assess environmental and heritage concerns; conduct truck and conveyor operations; perform initial response first aid; install ground support; conduct slurry pump operations; apply operational maintenance skills; service mine plant and equipment; transport plant; equipment and personnel; position and set up mobile lighting; suppress dust in the open cut environment; operate from elevated work platform; operate roller/compacter; operate mine services vehicles; operate a forklift; conduct dewatering activities are listed as technical competencies of mining employees.

Other competencies include the ability to ask questions; assessing and interpreting information; completing documentation; interpret communications (e.g., plans, reports, maps, and conversations); listening for all information; monitoring information provided; reading and understanding; talking clearly; using communications equipment (e.g. telephone, distribution control system, two-way radio); writing; effective teamwork participation; setting goals and reviewing performance in a teamwork environment; negotiating work allocation and follow-up within the work team; mentoring and coaching

other team members and use of computer systems (National Mining Industry Training Advisory Body (National Mining ITAB), 2002).

#### 2.4.2 Impact of Technical Competencies on Contract Management Competencies

An organization's employees to know the behaviours that must be displayed and the required levels of performance to achieve organizational goals. They give the individual a sense of the behaviours that can be monitored and evaluated and are thus critical in setting work criteria and recruiting, retaining, and developing employees (International Atomic Energy Agency, 2020).

Measure employee involvement and morale; identify when poor performance is the result of poor organizational design; determine the most appropriate organizational structure in light of the organization's strategy and objectives; retain a working knowledge of employee literature with senior management, push for initiatives to improve employee engagement; employee morale and engagement are measured; build work plans to conduct employee engagement initiatives; establish viable ways to improve employee engagement; Measure staff productivity and evaluate the effects of employee engagement programs. Create and implement team-based treatments to boost team performance; keep abreast of the organization's vision, purpose, values, and objectives; design a workforce strategy that is focused on the future; predict future talent needs and measure gaps in current talent demands were identified as the impact of employees' competencies by Human Resources Professionals Association (2014).

Others include high and effective performance (Loosemore *et al.*, 2013), providing a competitive advantage in the emerging knowledge economy (Lengnick-Hall and Lengnick-Hall, 2003), fostering a continual learning culture (Fisher *et al.*, 2013). Clear expectations

are set, and staff members are guided as to how they can assume and reinforce behaviours in line with the organization's mission, culture, and goals; a shared language is created to describe what is required and expected in the work environment, resulting in reliable and high-quality performance delivery; skills gaps are clarified, strengths are further founded, and requirements for career advancement are asserted; and a shared language is created to explain what is needed and intended in the work environment, resulting in reliable and high-quality performance delivery (International Atomic Energy Agency, 2020).

#### 2.4.3 Strategies to Technical Competencies of Effective Contract Management

Throughout an employee's career, competency emerges from the three components of education, training, and experience. Competency development is usually based on training requirements (Trinder, 2008). The occupational labor market's training system encourages product and process innovation. Skill shortages are minimized through a strong commitment to training. Furthermore, widely recognized and acknowledged credentials allow geographic and inter-industry labour mobility (Toner, 2011).

According to Trinder (2008), competency is developed through on-the-job training that includes exposure to various tasks that assess an employee's ability to deal with various scenarios. This experience improves an employee's capacity to deal with new problems and circumstances. Employees' ability to cope with uncommon events improves as they gain experience and reach a greater degree of expertise. Toner (2011) cited the following as enhancing employees' competencies: stringent selection procedures, broad job categories, job rotation, work teams, worker initiative, flat management structure, worker voice or unions, incentives, capturing learning, and intensive training. Training staff, establishing or sponsoring training facilities, investing a percentage of annual payroll in skills development,

and paying a levy to national training funds are all examples of skills/competency development listed by Ramdoo (2018).

Competencies can be attained through several means, including formal or informal education and training; job experience; and general life experience (International Labour Organisation, 2015). Federal Authority for Government Human Resources (2016) also identified some strategies: training programs (classroom); on-the-job training; coaching and mentoring; stretched assignments and reading.

## **2.5 Contract Management Performance Indicators**

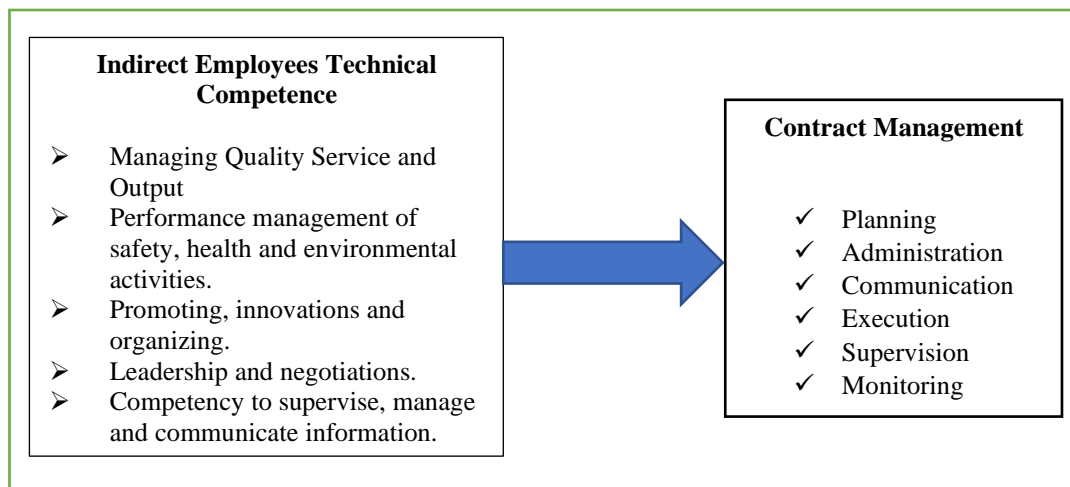
According to The Interagency Procurement Working Group (IAPWG) (2006), contract management indicators are broad and entail planning, execution, administration and closure and go beyond the day-to-day administrative duties. According to the Asian Development Bank (2018), contract management entails monitoring and supervising contract performance to provide the best possible results. The indicators are establishing communication pathways and protocols, monitoring progress toward contract deliverable delivery, managing payments, reducing variances, measuring contractor performance, and concluding the contract.

According to Oluka and Basheka (2014), contracts can be designed to be robust enough to continue operations profitably in the face of expected deviations and unforeseen interruptions. A strong, stable supply network is built on a solid foundation of good supply base management, strong supplier relationships, continual improvement, and a company culture that embraces change and flexibility. In detail, contract management determinants include; putting in place resources and structures, communication, planning, controlling,

monitoring, payment and initiatives and managing risks identified in Oluka and Basheka (2014). According to Rendon (2010), efficient project planning, contract awarding, administration, and performance monitoring are essential components of contract management.

## 2.6 Conceptual Framework

The objective of the conceptual framework is to ascertain concepts and propose the correlations and relationships between the concepts in the study, provide a context for the understanding of the study's results, explain observations, and facilitate the development of theory that is useful in practice. As shown in Figure 2.1



**Figure 2.1 Conceptual Framework**

**Source : Author's Construct 2021**

## 2.7 Chapter Summary

This chapter took a critical look at competencies, technical competencies, and contract management. This chapter gathered data from existing literature to understand and address the study's objectives. Literature mainly was gathered from journals, published works, conference papers, thesis reports, etc.

Morkun et al. (2016) System of competencies for mining engineers found out that developing educational qualification profile and training program for Mining engineers could enhance output. The flaw was that this study omitted to take into account how competencies affected project performance. Again, the study was limited in scope to Ukraine. Motsoeneng et al. (2013) also focused on Skills needed by engineers in the platinum mining industry in South Africa and came out the results of the study indicated that theoretical knowledge, technical skills, management skills and engineering principles were skills needed for technology-based engineering in the platinum mines under study. This study was limited to Platinum firms in South Africa. Further, the study considered only engineers in the Platinum firms

Workforce skills and innovation: An overview of major themes in the literature was reviewed by Toner (2011), This study identified the following indirect competencies; Good social skills and communication skills, Leadership, initiative and accepting responsibility for one's own work and that of the team, Constant vigilance regarding quality, Teamwork, cooperation, Flexibility, Analytical skills and creative problem solving. The gap was the study generalized competencies across all industries.

Trinder (2008) focused on Competency Standards– a Measure of the Quality of a Workforce and found out that Competency cannot be directly observed and hence it has to be inferred from indirect evidence and is performance based. The gap in this study was that it did not employ any detail and in-depth tools of analyses. Basically, a review.

What is competence? Le Deist and Winterton, J. (2005) focused on A holistic framework is useful in identifying the combination of competences that are necessary for particular occupations and to promote labour mobility. and came out with these findings This work did not employ depth of analysis, investigating competence in greater detail in specific occupations, since it is at this level that competence has most concrete meaning.

Heath (2000) focused on the technical and non-technical skills needed by Canadian-based mining companies and found out that Soft skills are not stressed enough at the university level, particularly communication skills in all forms, and other critical skills are seldom emphasized. These include ethics and teamwork. Companies believe that the tertiary education process should include business training, comprising components of practical ethics, economics, project management, and planning. The gap was that this study was limited in scope to only Canadian-Based Mining Companies.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 Introduction**

This chapter discusses the research methodology adopted for this study. It discusses the research design method, the population frame for the study, the sampling and sampling techniques, data collection methods, data analyses, validity and reliability checks, module specification and formulations. The chapter concludes with a summary.

#### **3.1 Research Design**

Kothari (2004) explained that every researcher should define the theoretical framework for conducting research. The planning of such a design allows analysis to generate maximum knowledge as quickly as possible. Research design is how an investigator chooses an analysis system (Creswell and Plano, 2011). Bell (2014) put forth that research design styles include; action, ethnographic, case study, experimental, and Surveys. Otu-Nyarko (2010) reported. The research design is aligned with the data collecting and analysis framework, which drives the output, and data collection and analysis technology, which connects analytical data with their conclusions in a logic chain, with the original study problem. This research takes a survey design approach with the use of close-ended questionnaires. This was adopted based on the following advantages of the survey design. The survey works based on random sampling, seldom use or desire complete population surveys (Fellows and Liu, 2015). Samples are surveyed by way of questionnaires or interviews. Surveys range from strongly organized to unstructured surveys. The subject of the analysis must be presented to the respondents regardless of the type followed (Fellows and Liu, 2015).



In addition, this study employs a quantitative research method. The research strategy focuses on questioning research goals (Asante, 2013); 3 types of research strategies exist: quantitative, qualitative, and triangulation. The quantitative strategy is acceptable for this study since the scientist needs to test respondents' opinions using a scientific methodology (positivist). As Kothari (2004) stated, the quantitative technique entails the generalization of data in a quantitative format through a large-scale survey research employing tools such as questionnaires or organized interviews.

### **3.2 Population**

A 'universe' or 'population' comprises all the elements under examination in any subject of inquiry (Kothari, 2004). According to Naoum (2012), the study population comprises of all the numerous persons or groups that come within the study and can or are meant to give or need to be assessed to assist fulfill the research's goal. All objects in any subject area or sample constitute the universe/population (Abdullah, 2020). The population for this study was 950 workers (Anon, 2021) comprises the workers at Abosso Goldfields Limited, The respondents included project managers, procurement officers, employees, and other staff. Abosso Goldfields Limited is a company located in a community called Damang in the Western region of Ghana. AGL (Abosso Goldfields Limited) is a Ghanaian company that owns and runs the Damang Gold Mine. The population was chosen due to the competency level expected of the workers in such an environment.

### **3.3 Sampling and Sampling Techniques**

According to Kothari (2004), the researcher must decide on the sample design or select a sample. To put it another way, a sample design is a pre-determined procedure for obtaining a sample from a specific population that is established before any data is collected. This study's sample method is a mixture of simple random sampling (probability) and

convenience (purposive sampling/deliberate). Determination of Sample Size, in ascertaining the population, 950 workers (Anon, 2021) were identified as from the company's registry. For sample size from the population, the Yamane formula was used as observed in (Ernest 2012). The Yamane formula was also used by Agwu (2013) in a similar study on employee performance in the oil sector in Nigeria.

The formula can be seen in Equation (3.1).

$$n = N / (1 + N\varepsilon^2) \quad (3.1)$$

Where  $n$  =sample size,  $N$  = population of the study,  $\varepsilon$  = Limit of tolerance error (using 10%).

With a population size of 950 and limit of tolerance error 10% the sample size generated from equation 3.1 is 90.47, approximately 90.

### **3.4 Data Collection Techniques**

The data collection method includes desk surveys and field surveys. A vital feature of the study is the desk survey (literature review) as it speeds the development of the instrument for field surveys using questionnaires and interviews (Fadhley, 1991) as cited in (Otu-Nyarko, 2010). Primary data will come from on-the-ground respondents, while secondary data will come from a literature review. Validity was determined after a thorough examination of relevant literature and rigorous comparisons. Closed-ended questions were created and distributed to respondents. Simple random sampling was used because every employee of the organization has an equal chance of selection, this was due to the fact that, every department establishes a need for a service work to be done.

#### **3.4.1 Types of Data**

Saunders et al. (2009) separate quantitative data into two categories: category and numerical data. Quantitative data can be divided into many forms using a scale, often in ascending

order of numerical precision, according to Brown et al. (2018). Understanding the discrepancies between quantitative data becomes quite important. The accuracy of the measurement makes it simple for the researcher to select the best alternative for analysis, and analytical tools can create trustworthy information from such sources (Saunders et al., 2009).

### 3.4.2 Questionnaires Development

A questionnaire is a set of written questions that research participants must fill out and return. If the sample space of the research is large, this method is widely used. The respondents read the questions, interpreted them, and marked their responses in the specified space of the questionnaire (Nagaraja, 2020). The questionnaire for this study was in four sections. Section A captured respondents' profile information. Simple questions were asked to ascertain the respondent's qualification to partake in this study. Section B sought the respondent's opinion on a five-point Likert scale on existing indirect employee technical competencies.

Respondents were asked to kindly indicate their level of agreement to some existing indirect employee technical competencies. [1= Strongly Disagreed; 2=Disagreed; 3=Neutral; 4= Agreed; 5=Strongly Agreed]. Section C sought respondents' opinions on the impact of indirect employee's technical competencies on contract management; (unimportant) to 5 (very important). The survey tool's final section asked respondents to score their level of agreement with some recommended techniques for improving indirect employee's technical competencies (Not at all influential) to 5 (Extremely influential).

### **3.5 Data Validity and Reliability**

Suppose a measuring instrument designed to achieve an exact result is used in another method, and unchanged data is collected while the construction is repeated. In that case, reliability tests must be performed to determine if an exact result will be obtained (Thompson *et al.*, 2016). To verify precision in measuring concepts when eliminating the preference for results, the reliability of any research tool, according to (Burra *et al.*, 2018), is crucial. Based on the above review, Cronbach's Alpha Coefficient would check the data's reliability. Cronbach's alpha coefficient of 0.70 is deemed appropriate and reliable (Muijs, 2010).

An instrument's validity relates to how well it measures what it is designed to measure to demonstrate comprehension of a research component (Kimberlin and Winterstein, 2018). Therefore, internal and external validity are important considerations when evaluating a research study or technique (McLeod, 2013). According to Tang *et al.* (2018), analysis of variance is deployed in examining respondents' perceptions in respect to a phenomenon being investigated. The ANOVA employs F values; the larger the F value, the more substantial the variation in perspectives of the individual respondents.

### **3.6 Data Analysis Techniques**

According to Antwi (2017), data analyses can occur after obtaining the data, including coding to interpret the collected results accurately. Data review is carried out in a testing method to generate empirical results and address study questions based on research goals (Saunders *et al.*, 2009). Data can be statistically tested in various ways. The decision to use one method over another is influenced by the type of analysis, the accuracy of the work, and the type of information that the researcher wishes to obtain from the primary data. The data

collected would be screened and coded in MS excel. The input would then be analysed using SPSS.

Descriptive statistics will describe the data in the form of figures and tables. The simplest technique to simplify large data is descriptive statistics (Iron et al., 2019). Tables and figures have been identified as a useful tool for presenting enormous amounts of material in easily understandable modules. SPSS version 20 and Ms. Excel would be the soft wares used for the analysis and linear regression, and Factor Analysis would be the tools for analysis.

### 3.6.1 Model Specification

Regression analysis is a statistical model that uses the values of one or more other variables to predict the values of a variable (Allen, 2004). The variable we are trying to predict is the dependent variable, whereas the variables we are using as predictors are the independent variable. To validate the formulated hypothesis, linear regression would be adopted in the data analysis as shown in equation 3.2;

$$Y = a + \beta X + \epsilon \quad (3.2)$$

$$CM = \beta_0 + \beta_1 IETC + \beta_2 GEN + \beta_3 WE + \epsilon \quad (3.3)$$

Where Y is the dependent variable, X is the independent variable;  $a$  is constant,  $\beta$  is intercept and  $\epsilon$  is an error term. The general regression analysis is shown in equation (3.3), where, CM is contact management (dependent variable), IETC is indirect employee technical competence, GEN is gender and WE is work experience (independent variables).

The scores of the IETC and CM elements would be determined, and the results would be utilised to do a regression analysis to determine the link between the elements.

Van Weele (2014) aver that indirect employee competence affects contract management and improves project performance. In an abridgement, Kraljic (1983) also posited that employee competence affects project overall performance.

### **3.7 Chapter Summary.**

Many researchers explained what research methodology is and what it is not; Kothari (2004) opined that when we discuss research methodology, we should not only speak about testing methodology but also understand the reasoning behind the methods used in our analysis review and why we use a certain technique or tool and why we do not use other methods so that research findings can be tested by the researcher himself or others. The research methodology was presented in this chapter. It captured the adopted design of the research tool, study population, measurement of samples, data collection, and analyses. In a nutshell, this chapter gives the structures or background the entire research lingers upon.

## CHAPTER FOUR

### DATA ANALYSES AND RESULTS

#### 4.0 Introduction

This chapter discusses the data collected for the research. A total of 85 respondents correctly answered the questionnaire, which formed the basis of this analysis. The data was coded in excel and then transferred to a statistical package for social sciences (SPSS). The chapter includes both statistical and inferential analyses. Respondent's background data and reliability checks are also presented in this chapter.

#### 4.1 Demographics

Table 4.1 presents the gender of the respondents in this study. Out of the 85 respondents that took part in this study, 61, representing 71.8%, are males. The remaining 24 respondents representing 28.2%, are females. This buttresses the general notion that engineering fields are male-dominated and the mines are not exceptions.

**Table 4.1 Gender of Respondents**

	<b>Frequency</b>	<b>Percent</b>
Males	61	71.8
Females	24	28.2
<b>Total</b>	<b>85</b>	<b>100.0</b>

Source: Author's Construct (2021)

Respondents were also asked to state their position within the company. Table 4.2 below portray that majority of our respondents (41.2%) are service providers. The professional background of the respondents helps the researcher establish the quality of the data gathered.

**Table 4. 2 Respondents Position in Firm**

<b>Position in a Firm</b>	<b>Frequency</b>	<b>Percent</b>
Project Manager	19	22.4
Contract Manager	9	10.6
Employee	20	23.5
Service provider	35	41.2
Procurement Officer	2	2.4
<b>Total</b>	<b>85</b>	<b>100.0</b>

Source: Author's Construct (2021)

To ascertain the quality of information obtained, respondents' level of work experience was assessed and presented in Table 4.3 below. The results show that 41.2% of our respondents have been in their organisations for more than 5 years; hence the credibility of their responses can be trusted to be a true reflection of the variables under study.

**Table 4. 3 Respondents Level of experience**

<b>Level of Experience</b>	<b>Frequency</b>	<b>Percent</b>
Below 5years	23	27.1
5-10 years	35	41.2
10-15 years	22	25.9
15-20 years	2	2.4
above 20 years	3	3.5
<b>Total</b>	<b>85</b>	<b>100.0</b>

Source: Author's Construct (2021)



The level of education for each respondent was established. Table 4.4 below shows the results. 43 respondents representing 50.5%, had a bachelor’s degree. With this, we can put it into perspective that most of our respondents are university graduates, therefore information can easily be interpreted. Finally, 24 respondents representing 28.2%, had master’s degrees. This depicts that majority of the workers in the mines are graduates by inference. This will help increase in innovation and thereby assist the organisation drive its mission.

**Table 4.4 Level of Education**

<b>Highest level of education</b>	<b>Frequency</b>	<b>Percent</b>
Basic level	2	2.4
Secondary level	6	7.1
HND	10	11.8
Degree	43	50.5
Masters	24	28.2
<b>Total</b>	<b>85</b>	<b>100.0</b>

Source: Author’s Construct (2021)

The descriptive statistics of the respondents are shown in Table 4.5. The mean and standard deviations are shown as follows. IETC, which stands for Indirect Employees Technical Competencies, had a mean of 3.97 and a standard deviation of 0.46. GEN, which stands for Gender, had a mean of 0.72 and a standard deviation of 0.45; WE, which stands for Working Experience; CM, which stands for Contract Management; and IETC, which stands for Indirect Employees Technical Competencies.

**Table 4.5 Descriptive Statistics of Variables**

<b>Variable</b>	<b>Sample Size (N)</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Standard Deviation.</b>
GEN	85	0.00	1.00	0.72	0.45
WE	85	1.00	5.00	2.00	0.99
CM	85	1.00	5.00	4.03	0.79
IETC	85	2.21	4.93	3.97	0.46

## **4.2 Presentation of Results**

### **4.2.1 Results for Indirect Employee Technical Competencies**

In order to verify precision in measuring concepts when eliminating the preference for results, the reliability of any research tool, according to (Burra et al., 2018), is crucial. Cronbach's Alpha Coefficient was calculated based on the above analysis to determine the data's reliability. Cronbach's alpha coefficient of 0.70 is deemed appropriate and reliable (Muijs, 2010). From table 4.6 below, Cronbach's alpha value for all the variables was 0.850. The individual alpha coefficients for all the variables are also tabulated in Appendix Table A.1. The scale was deemed reliable since the alpha coefficient is more than 0.70. Hence further analyses were conducted.

The factors identified were current indirect employee technical competencies adopted from empirical reviews conducted in the mines, respondents were asked to express their opinions on a Likert scale of five points in this section of the questionnaire. A statistical mean test was done to determine if a specific variable was considered important by the population or not (Ross et al., 2017). To explain the decisions given by the respondents, the average

classification of each criterion was created. In addition, each variable's mean is presented, along with its standard deviation and error. The null hypothesis for each variable was that the variable did not mean anything ( $H_0: U=U_0$ ). The  $U_0$  is the critical rating that is considered important for the variable. In this research, the highest ratings of 4 and 5 were chosen for the rating scale as important and extremely important and 3.5 respectively, while the  $U_0$  was set at 3.5. (Kissi et al., 2019). This is based on the 5-point rating Likert, where a success variable is considered important when the mean equals or exceeds 3.5 (Kissi *et al.*, 2019).

Contributing to quality work outcomes attained a ( $t=9.676$ ,  $p$  value= $0.00$ ). This variable had the second-highest test of strength value. The ability to conduct safety and health investigations ( $t=4.874$ ,  $p$  value= $0.00$ ). Ability to communicate information obtained a ( $t=10.457$ ,  $p$  value= $0.00$ ). The  $t$  value represents the test of variable strength and respondent's agreement. The ability to communicate had the highest  $t$  value depicting that our respondents place much significance on it.

Managing knowledge and information had a ( $t=7.326$ ,  $p$  value= $0.00$ ). This variable also had a strong test of strength value depicting its relevance in contract management. Ability to conduct business negotiations obtained a ( $t=3.394$ ,  $p$  value= $0.001$ ). This variable did not obtain a 100% significance value. The basic explanation could be that the respondents considered business negotiations a whole field on its own and hence a direct employee competence. Providing leadership across the organisation had a ( $t=3.039$ ,  $p$  value= $0.003$ ). The factor did not also receive much significance from our respondents. Supervisory competency attained a ( $t=5.703$ ,  $p$  value= $0.000$ ) and Knowledge in performing first aid response had a ( $t=1.285$ ,  $p$  value= $0.202$ ).

**Table 4.6 One-Sample Test**

<b>Indirect Employee Technical Competencies</b>	<b>Test Value = 3.5</b>			
	<b>Test Value</b>	<b>p-value</b>	<b>Mean Difference</b>	<b>Rank</b>
Competency in managing quality customer service	4.445	0.000	0.382	<b>10<sup>th</sup></b>
Contributing to quality work outcomes	9.676	0.000	0.665	<b>2<sup>nd</sup></b>
Ability to conduct safety and health investigations	4.874	0.000	0.465	<b>8<sup>th</sup></b>
Ability to communicate information	10.45	0.000	0.771	<b>1<sup>st</sup></b>
Managing knowledge and information	7.326	0.000	0.547	<b>5<sup>th</sup></b>
Managing innovation and continuous improvement	5.399	0.000	0.465	<b>7<sup>th</sup></b>
Managing environmental issues	4.192	0.000	0.359	<b>11<sup>th</sup></b>
Ability to conduct business negotiations	3.394	0.001	0.335	<b>12<sup>th</sup></b>
Promoting innovation and change	5.071	0.000	0.418	<b>9<sup>th</sup></b>
Planning and organizing individual work	6.880	0.000	0.594	<b>4<sup>th</sup></b>

Providing leadership across the organisation	3.039	0.003	0.300	<b>13<sup>th</sup></b>
Supervisory competency	5.703	0.000	0.535	<b>6<sup>th</sup></b>
Knowledge in performing first aid response	1.285	0.202	0.124	<b>14<sup>th</sup></b>
Assessing and interpreting information	7.463	0.000	0.594	<b>3<sup>rd</sup></b>

Source: Author's Construct (2021)

#### 4.2.2 Impact of Indirect Employee on Contract Management

Reliability and validity for the contract management performance indicators were determined. Muijs (2010) established that a Cronbach's alpha coefficient above 0.70 is deemed satisfactory. The alpha coefficient for the variables was 0.906, which was deemed satisfactory hence further, and detailed analyses were conducted. The Cronbach's alpha values for each variable are presented in Table 4.8.

#### 4.2.3 Determine the Impact of Indirect Employee on Contract Management

To validate the formulated hypothesis below, linear regression, was adopted in the analysis of the data. The mean scores of the ETC and CMP elements would be determined, and the results would be utilized to do a regression analysis to determine the link between the elements. Van Weele (2014) aver that indirect employee competence affects contract management and improves project performance. In an abridgement, Kraljic (1983) also posited that employee competence affects project overall performance.

The following hypothesis is formulated based on those assertions. Hypothesis. Indirect employee technical competencies (IETC) affect contract management performance (CM).

Null hypothesis. Indirect employee technical competence does not affect contract management performance.

**Table 4.7 Summary of Regression Model**

<i>Variable</i>	<i>β-Value</i>	<i>t-statistics</i>	<i>p-value</i>
Constant	1.328	1.823	0.072*
IETC	0.657	3.782	0.000***
GEN	0.093	0.522	0.603
WE	-0.013	-0.162	0.871
<i>R=0.395; Durbin Waston =1.731; F-statistics =4.993 (0.003) ***</i>			

Source: Author's Construct (2021)

**Note: \*, \*\*, and \*\*\* are significant level of 10%, 5% and 1% respectively.**

#### 4.2.4 Analyses of Variance of Regression Model

This stage of the study was to validate the hypothesis formulated above. Reading from the regression model in Table 4.7 above, the  $R^2$  value displayed the coefficient of determination of the predictor variable in the spontaneous effect of indirect employee technical competencies on contract management performance in the mining sector. Considering Model 1 of Table 4.7, indirect employee technical competence had a correlation matrix (R) of 0.391, meaning a moderate correlation between indirect employee technical competencies and contract management performance in the mining sector.

Senthilnathan (2019) said that a correlation range of +0.35 R +0.50 suggests a moderate correlation, whilst a correlation range of +0.50 R +0.70 shows a significantly significant high correlation. The model also showed an  $R^2= 0.153$ , which represents a 15% variance

percentage when indirect technical competencies are shown on contract management and shows a moderately good link (Cohen, 1998). To clarify further, the explanatory variable accounts for a portion of the variability in the result (dependent) variable. Model 1's Durbin-Watson value, which showed the variables' autocorrelation, was larger than 1 but lower than 3. The R<sup>2</sup> of model 1 in Table 4.7 was statistically significant with (sig. (P) 0.05). F(the ratio of the two mean squares) = 14.975, while the degree of freedom (df) = (1).

#### 4.2.5 Coefficient of Regression Model

From Table 4.7, the unknown variables of the regression formula  $Y = a + bX + \epsilon$  can be drawn. The y-intercept (a), represented by the term 'constant' in Table 4.7, is 1.328. The p-value for the corresponding coefficient showed that the constant is significant. The  $\beta$ -value for IETC was 0.657 and was significant at 1%. GEN and WE were both not significant and the Durbin-Watson was 1.731 which is approximately closer to 2 indicating that the model is robust. The same can be said about the F statistics (4.993 with a *p-value* = 0.003). The regression model is explained in equation 4.1

$$CM = 1.328 + 0.657 \text{ IETC} + 0.093 \text{ GEN} - 0.013 \text{ WE} . \quad (4.1)$$

### 4.3 Strategies to Improve Indirect Employee Technical Competence

#### 4.3.1 Reliability and Validity Checks for Variables

The Cronbach's alpha coefficient for the variables was 0.868, which was deemed satisfactory; further, detailed analyses were conducted.

**Table 4.8 Cronbach's Alpha**

<b>Reliability and Validity Test</b>		
	<b>No of Items</b>	<b>Cronbach's Alpha</b>
Results for Indirect Employee Technical Competencies	14	0.85
Impact of Indirect Employee on Contract Management	6	0.906
Strategies to Improve Indirect Employee Technical Competence	15	0.868

Author's Construct (2021)

#### 4.3.2 Factor Analyses

There are large numbers of dependent variables, and therefore, there is a risk that some of them may lead to directly related effects. To establish which distinct variables can measure features of the same underlying aspect, a reduction approach is required. According to Ahadzie (2007), factor analysis is helpful in identifying groups of similar variables, making it simpler to understand many of them by breaking them down into smaller ones. During factor extraction, a variable's shared variance is split into its unique and error variance, revealing the underlying factor structure.

#### 4.3.3 Preliminary Test and Adequacy of Data

In factor analysis, the correlation matrix of the relevant variables is usually utilized, and the correlations require a large sample size before stabilization. The sample size affects the reliability of factor analyses. To avoid computational issues, each variable needs at least ten observations (Decoster, 1998). The sample adequacy measurement Kaiser-Meyer Olkin is



a suitable option provided by SPSS to ascertain whether the sample is large enough (KMO test). The value of the KMO needs to be more than 0.5, according to the body of extant literature. The KMO test result was 0.792, which is good according to Field's report (2005). The Kaiser-Meyer Olkin (KMO) measure of sampling adequacy (>.50), factor rotations (varimax), eigenvalues (> 1), communality (a measure of the percentage of variation), and factor loadings (>.50) are all linked components of the FA (Decoster, 1998). If the significance level is lower than 0.05, the data do not yield an identity matrix (Yong and Pearce, 2013).

The initial correlation is an identity matrix, according to the null hypothesis provided by Bartlett's Test of Sphericity. As a result, for factor analysis to be effective, the variables must be related to one another (R-matrix), indicating that it is not an identity matrix. This is reflected in the factor analysis when the significant value or p-value is more than 0.05. As shown in Table 4.9 below, Bartlett's Test of Sphericity produced an approximation of 545.148 ( $p < 0.05$ ), implying that the data is adequate for FA. Kaiser-Meyer-Olkin Measure of Sampling Adequacy also attained a high value of 0.792.

**Table 4.9 KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.792
Bartlett's Test of Sphericity	Approx. Chi-Square	545.148
	d.f	105
	Sig.	0.000

Source: Author's Construct (2021)

Communalities are used to determine how much an original variable relates to other variables (Ahadzie, 2007). Communality is a squared variance-accounting statistic that indicates how well the latent construct reproduces the measured variables' variance (Field, 2000). The average of the extraction, as shown below, is 0.595. Guttman-Kaiser and the Cattell screen test were employed to determine the number of factors to be extracted. The Guttman-Kaiser rule states that only factors with the value Eigen larger than 1 should be maintained, while the Cattell screen test states that not all additional components should be included after the start of the elbow. In accordance with this criterion, three (3) components should be extracted for the number of major components to be removed.

**Table 4.10 Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	5.359	35.729	35.729	5.359	35.729	35.729
2	2.262	15.080	50.809	2.262	15.080	50.809
3	1.299	8.657	59.466	1.299	8.657	59.466
4	.924	6.158	65.624			
5	.863	5.754	71.378			
6	.756	5.043	76.420			
7	.696	4.642	81.062			
8	.572	3.815	84.877			
9	.498	3.320	88.197			
10	.476	3.174	91.371			
11	.355	2.367	93.738			
12	.264	1.762	95.501			
13	.251	1.672	97.173			
14	.237	1.582	98.755			

15	.187	1.245	100.000			
Extraction Method: Principal Component Analysis.						

The first three (3) components recorded an eigenvalue greater than 1 (5.359, 2.262, 1.299) and consistent with Cardoso and Cruz-Almeida (2016), who asserted that the number of factors in the eigenvalues must be greater than one (1). The total variance explained by each extracted component is the following: The first main component represented 35.729% of the total variance, the second main component represented 15.080%. 8.567% of Component three were reported. The entire extracted component collectively explained 59.466% of the data set's variance. The extracted components must collectively account for at least 50% of this variation in order for the cumulative variance criteria to be fulfilled.

#### **4.4 Discussion of Results**

The ability to communicate information according to the one-sample t-test had the highest mean difference and hence rated 1st. It had a very high test of strength value (10.457). Generally, communication is considered the most vital indirect employee technical competence in an organisation. This is so because most of the organisation's day-to-day running is through communication. This agrees with the findings of (National Mining Industry Training Advisory Body (Anon., 2002). When communication is effective, it even tends to improve direct employee competencies. The importance of communication skills in organisations has been appraised in various studies (Tang, 2019; Dalibi *et al.*, 2018), which are all consistent with the result of this variable. Genc (2018) concurred and added that communication is the process that allows public relations goals to be materialized and achieved; communication is important since it is used to inform, persuade, motivate, and give mutual understanding. Sanchez (1999) emphasized that the successful businesses were those which “more frequently provide channels for upward communication and listen to what their employees say.”

The second highest-rated indirect employee technical competency contributed to quality work outcomes. The literal meaning of this discovery is that regardless of where you work, do proper work. What must be done well? The variable had the second-highest test of strength value (9.676). This is consistent with the report of (Anon. 2002). Raes *et al.* (2013) shared a similar notion and averred that employees' perceptions and evaluations about their competencies could be consequential to their work outcomes. Raes *et al.* (2013) emphasized that emotional, cognitive, and behavioural mechanisms (indirect competencies) play a role in developing production performance. Other researchers with similar results on employee quality work outcomes include (Carr *et al.*, 2003; Bruch *et al.*, 2010).

Planning and organizing individual work attained a mean difference of 0.594 and was rated 3rd. An employee's ability to organize his work and effectively plan is a general competence that cannot be overlooked. An employee who is baled to plan and organize his work would require less supervision and improve overall contract performance. This agrees with the findings of Ali *et al.* (2016). The ability to plan and organize individual work is sometimes referred to as working with minimum supervision. Nurgaliyeva *et al.* (2018) agreed with this competence. They claimed that employees must combine knowledge from numerous and related fields of scientific research to address challenges that need abstract, creative thinking, and creativity when constructing conceptual parts of projects.

Assessing and interpreting information was the fourth-highest ranked variable. This variable is quite related to the first variable as communication is also about interpreting, decoding, and sending out feedbacks. Employees must combine knowledge from many and related areas of scientific study and solve problems that need abstract, creative thinking, and creativity in the development of conceptual aspects of projects, according to Nurgaliyeva et

al. (2018). Managing knowledge and information was the 5th variable. This variable goes hand in with the fourth-ranked variable.

Generally, the rest of the variables: The ability to conduct business negotiations had a p-value more than 0.00. This variable did not obtain a 100% significance value. The basic explanation could be that the respondents considered business negotiations a whole field on its own and hence a direct employee competence. Further, some researchers classify negotiation as a skill that is taught and requires a concentrated amount of time (Richards et al., 2020). Providing leadership across the organisation had a ( $t=3.039$ ,  $p \text{ value}=0.003$ ). The factor did not also receive much significance from our respondents. This can be attributed to the fact that leadership roles are often seen as responsibilities and duties of managers.

That explains why our respondents did not significantly consider it an indirect employee competence. This is in line with Liu et al. (2020), who posited that leadership is a life-long practice based on experience, skill, and process. Knowledge in performing first aid response had a ( $t=1.285$ ,  $p \text{ value}=0.202$ ). This attribute was not considered very significant by our respondents. The general notion is that first aid specialists or experts should be on call in emergencies; hence our respondents do not consider it an employee competency. Similar claims are made in Danquah (2021)'s work, and he asserts that in order to improve everyone's safety, the right first aid supplies and personnel should be available.

#### 4.4.1 Discussion of the Regression Analyses

From model 1, indirect employee technical competence, which was hypothesized to affect contract management, had  $b = 0.053$ ,  $P < 0.05$ , and  $R^2$  of 0.152. This indicates that indirect employee technical competence has a 15 percent influence on contract management

performance. Regarding the formulated hypothesis, the alternative hypothesis is thus accepted. Thus, indirect employee technical competence affects contract management performance. The null hypothesis is thus rejected. Some researchers found a similar effect. Van Weele (2014) agreed that indirect employee competence affects contract management and improves project performance.

Further, in an abridgement, Kraljic (1983) agreed that employee competence affects overall project performance. These conclusions were supported by a recent study by the International Atomic Energy Agency (2020). It was proposed that competencies enable an organization's employees to know the behaviours that must be displayed and the required levels of performance to achieve organizational goals. To elucidate more, Human Resources Professionals Association (2014) obtained similar results and asserted that the impact of employees' competencies on performance include; assess the impact of employee engagement initiatives; measuring employee productivity; developing and implementing team-based interventions that improve team effectiveness; maintaining understanding of the organization's vision, mission, values, and goals; developing a workforce strategy with the future in mind; identifying talent gaps in the present; and forecasting future talent requirements. Therefore, indirect employee technical competencies should not be overlooked as far as contract management at the mines is concerned. Loosemore et al. (2013) report is also consistent with this study's results as the report averred that indirect employee competencies bring about high and effective performance.

A very interesting discovery made from this regression analysis was that Zaim et al. (2013) studied direct employee competencies and concluded that indirect employee (individual)

competencies and other sociological factors have a 38% influence on overall project performance, which is quite consistent with the results of this study.

**Table 4.11 Summary of Hypothesis**

Hypothesis	Statement	Results
H1	IETC have an effect on CM	Accepted
Null Hypo.	IETC does not affect CM	Rejected

#### 4.4.2 Factor Analysis for Strategies on Employee Technical Competencies

Component one accounted for 35.729% of the total variance and consisted of 12 variables. Training programs (classroom), on-the-job training, and other components comprise component one. Setting up or supporting training facilities, investing a percentage of annual payroll in skills development, coaching and mentoring, stretch assignments and reading Workgroups, Employees are exposed to several activities that put their capacity to cope with a variety of conditions to the test. Incentives, worker unions, and a flat management structure are examples of worker initiative.

Organising training programs (classroom) had an Eigenvalue of 0.620. This variable directly impacts the development of indirect employee technical competencies. The indirect employee technical competencies established earlier include communication, negotiation and customer service. These competencies are best developed through training programs. Kang and Ritzhaupt (2015) shared similar views. On-the-job training is another strategy that could help employees develop some competencies. Employees' ability to deal with new challenges and situations improves due to such training. Trinder (2008) agreed, stating that employees' ability to deal with various situations is established through the growth of on-

the-job training based on their exposure to various activities. Coaching and mentoring guide employees towards harnessing competencies such as negotiation, communication, and other pertinent skills. Toner (2011) also made similar discoveries. Stretched assignments and reading could enhance employee technical competencies.

Further, setting up or supporting training facilities where employees can develop indirect skills could help improve contract management. Similar discoveries were made by Ramdoo (2018). Investing a percentage of annual payroll in skills development is a conscious way of developing employee skills in institutions that could improve contract performance. This was backed by various studies (International Labour Organisation, 2015; Federal Authority for Government Human Resources, 2016). Work teams are another mechanism that can help employees develop their skills. Workers get to learn from each other subconsciously. This is consistent with Toner (2011). Employees' indirect technical competencies could be improved by exposing them to various tasks that evaluate their ability to cope with various scenarios. Worker Initiative is another way to develop an employee's competence. This entails an employee voluntarily taking initiatives at the workplace when problems arise. By so doing, employees are indirectly developing their skills.

Incentives at the workplace of any kind tend sparking morale and general enthusiasm, enabling them to take initiatives for the betterment of the organisation. When employees are given incentives, their appearance, initiative, general response, and adherence to contract principles show in their appearance. Toner (2011) generally agreed to this. Worker Unions are associations of employees. This organisation tends to improve employee skills and competencies. A flat management structure could help employees feel at home and a part of the organisation.



Broad job classifications could give employees more roles and improve their indirect competencies. These variables accounted for 15.08% of the total variance. When an employee is involved in a broad job, the employee gets to meet different people with different skills and could pick and harness most of these competencies. This is also consistent with Trinder (2008). In the findings of Tindler (2011), Rigorous selection procedures can help recruit employees with indirect technical competencies. This is done by not only considering the direct competencies of the applicant but also by paying attention to their extra-curricular activities.

Component three accounted for 8.657 % of the total variance. This explains the significance and relevance our respondents attach to this factor. Job rotation is making employees do different jobs in the organisation. Employees get to work in the various departments and the process, developing their competencies.

#### **4.5 Chapter Summary**

In this chapter, the data gathered from the questionnaire survey was carefully analyzed using a variety of analysis tools since they were most appropriate for the current questionnaire. First, frequency tables were used to analyze the respondent profiles. The initial goal was to assess the technical competencies of current indirect employees, which was done using a one-sample t-test and Cronbach's Alpha Coefficient. A one-sample t-test was performed to determine the relevance of the attributes, and Cronbach's Alpha Coefficient was utilized to evaluate the scale's dependability. The second objective was to assess the impact of indirect employee technical competencies on contract management, which was also analysed using linear regression and Cronbach's Alpha Coefficient. The last objective tackled strategies to

improve indirect employee technical competencies in the mining sector. This was achieved by adopting a factor analysis.

## **CHAPTER FIVE**

### **CONCLUSIONS, RECOMMENDATIONS, AND SUMMARY OF FINDINGS**

#### **5.0 Introduction**

This chapter summarizes the study carried out at Abosso Goldfields Limited to investigate the influence of indirect employee technical abilities on contract management. This thesis was divided into five chapters namely; chapter one was the background of the study, chapter two reviewed literature on employee competencies and contract management, chapter three presented the research methodology adopted for the study, chapter four discussed the data collected for the research and chapter five summarises the findings observed after the entire study, reviews the research objectives under study, recommends and propose policy implications that should be established to improve employee technical competencies on contract management, this chapter also directs future research opportunities to yield successful results and conclusion of the study.

#### **5.1 Review of Research Objectives**

This study aimed to assess the impact of indirect employee technical competencies on contract management performance in the mining sector. Three specific objectives were established in order to accomplish this goal. The findings for these objectives are presented below.

##### **5.1.1 Assessing and identifying Technical Competencies of Indirect Employees**

To achieve this objective, several relevant pieces of literature were appraised. Examining relevant and similar literature on the indirect employee technical competencies revealed some variables that were compounded into close-ended questionnaires. The questionnaires were then sent out to respondents for their feedback. On a Likert scale of 1- 5, 1=not important and 5=very important, respondents were asked to rank each of the 14 identified indirect employee technical competencies. After retrieving all the questionnaires, the data

were subjected to various statistical tests. The significance of the indicated variables was determined using a one-sample t-test. Employees' ability to communicate information was identified as the most significant indirect employee technical competency in the Goldfield Mines. Other identified indirect employee technical competencies include; contributing to quality work outcomes, Planning and organizing individual work, Assessing and interpreting information, managing knowledge and information, Competency in managing quality customer service, Ability to conduct safety and health investigations, managing knowledge and information, Managing, innovation and continuous improvement and Promoting innovation and change.

#### 5.1.2 To identify the impact of the technical competencies of indirect employee on contract management

To achieve this objective, relevant literature was reviewed. The literature revealed some variables used to develop a close-ended questionnaire. The impact of indirect employee technical competencies on contract management was studied using linear regression. The predictors (constants)/independent variables were contracted management performance indicators, whereas indirect employee technical competencies were dependent. The results showed that contract management performance is improved by 17% when employees demonstrate indirect technical competencies in the mining sector (Abosso Goldfields). In other words, 17% of contract management performance is explained by indirect employee technical competencies. In conclusion, the result showed that all the indirect employee technical competencies identified affect contract management in the mining sector (Abosso Goldfields).

5.1.3 To determine strategies to improve the technical competencies of indirect employee's at Abosso Goldfields Limited.

To achieve this objective, literature on various strategies to improve indirect employee technical competencies were reviewed. The revealed strategies were compounded into close-ended questionnaires. On a Likert scale of 1 – 5, 1=not important and 5=very important, respondents were asked to rate the identified strategies to improve indirect employee technical competencies. The data accrued was analysed by employing factor analyses. A factor analysis was performed to determine which specific variables can measure aspects of the same underlying aspect. Final results revealed that Training programs (classroom), On-the-job training, Coaching and mentoring, Stretched assignments and reading, Setting up or supporting training facilities, Investing a percentage of annual payroll in skills development, Work teams, Exposure to a range of activities that test the employees' ability to cope with a variety of different situations, Worker Initiative, Incentives, Worker Unions, Flat management structure have almost the same effect on improving indirect employee technical competence and accounted for 35.729% of the total variance. Broad job classifications and Rigorous selection procedures were the second components with a similar effect on indirect employee technical competence. Job rotation was the third component that can improve indirect employee technical competence.

## **5.2 Summary of Findings**

There has been little or no study conducted in the mining sector to understand the impact of indirect employees' technical competencies on contract management. After the research the findings for these objectives are presented below in accordance with the set objectives;

### **5.2.1 Assessing and identifying Technical Competencies of Indirect Employees**

Among other identified competencies, Employees' ability to communicate information was identified as the most significant indirect employee technical competency in Abosso Goldfield Limited.

5.2.2 To identify the impact of the technical competencies of indirect employee on contract management.

The results showed that contract management performance is improved by 17% when technical competencies of indirect employees in the mining sector are engaged and involved from the initial stage of every project. (Abosso Goldfields).

5.2.3 To determine strategies to improve the technical competencies of indirect employee's at Abosso Goldfields Limited.

Final results revealed that employees' technical competencies can be improved through Training programs (classroom) and on the job training. Broad job classifications and Rigorous selection procedures were the second components with a similar effect on indirect employee technical competence. Job rotation was the third component that can improve indirect employee technical competence.

### **5.3 Recommendations and Policy Implication**

The following recommendations were made based on the study's findings by the researcher. Indirect employee technical competencies impact contract management as established in this study; therefore, it is paramount that cogent reforms are put in place to enhance their competencies. The below recommendations could help improve indirect employee technical competencies and improve contract management.

Organisations should include training programs that develop specific technical competencies for indirect contract management staff. Mining firms should employ on-the-job training to enhance employees' capability to handle different situations regarding contract management. Rigorous employee recruitment schemes should be adopted; the focus should not only be on the direct competencies. Contract kick-off should include indirect employees at the beginning of every project. Relevant contract terms and conditions should be communicated to identified indirect employees for proper support planning, and delivery to avoid delays, increased cost and other benefits for the contract. Training programs geared towards indirect employee technical competencies enhancement should be set up in organisations. On the job training should be enhanced by mining firms to indirect employees' capability to handle different situations.

### **5.4 Directions for Future Research**

This research gives further research opportunities. These additional investigations could yield successful results. Therefore, the following guidelines are provided for future studies:

- i. Focus on specific mining operations such as open pit and underground mining operations.

- ii. Focus on technical competencies in contract management for mining sector employees.
- iii. An appraisal of barriers to indirect employee's technical competencies development in Ghanaian construction companies.
- iv. An assessment of employees' technical competencies evaluation models in the mining sector.

### **5.5 Limitations of Research**

This study was thoroughly organized and carried out albeit it experienced impediments. The element of data collection was where the study's shortcomings were discovered. Because the majority of survey respondents were constantly busy, they did not have time to read the questionnaire, let alone complete it. Despite the challenges, the handful who found time in their tight schedules to participate did an outstanding job. Because the preliminary test confirmed the correctness of the response rate, this restriction did not jeopardize the legitimacy of the work. This study was confined to Abosso Goldfields in order for future research to investigate indirect employee technical skills in other industries such as manufacturing and agriculture.

### **5.6 Conclusion**

In conclusion, indirect employees of Abosso Goldfields Limited have proven that they possess critical competencies such as communication, planning and contribution to quality work due to experience and educational level. However, they do not possess other competencies related to safety which is more important to the mine and contributes to effective contract management.



The study reveals that a unit increase in the IETC will impact contract management by 0.0657 units, and Abosso Goldfields Limited should be interested in involving such employees to contribute to contract management performance by adopting strategies such as training, job rotation and broad job classification.

The goal of the study was to determine how the technical competencies of indirect employees affected the effectiveness of contract management in the Abosso Goldfields mines. The research was presented in a knowing framework to facilitate comprehension, and the thesis was painstakingly separated into five separate but related chapters. The background of the research was covered in the first section. The problem statement, aim and objectives, scope, techniques, and relevance were all provided in the first chapter. The second chapter's literature study looked at the body of knowledge on employee competencies. The researcher found several pertinent theses, books, and journals as a result of this. The concepts such as employee, competence and contract management were all explained in this chapter. The human capital and institutional theories were also appraised concerning the research area. The final part of chapter two provides empirical data that formed the basis of the body of the survey tool used in this study. Current data on existing indirect employee technical competencies were assessed.

Further, the impact of indirect employee technical competence on contract management was also reviewed, and the strategies to improve indirect employee technical competencies were appraised. The creation of a conceptual framework linking every goal of the study was the chapter two's conclusion. The third chapter described the research methodology that was used to accomplish the research objectives, including how the questionnaires should be created, how to collect the data, how to determine the sample size, how to code the data

once the questionnaires are received, and how to use analysis tools. As it was deemed important for the goal under consideration, chapter four used several analytical techniques to thoroughly investigate the data that had been analyzed. The primary topics covered in the study's final chapter were all covered in this chapter.

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**APPENDIX**

**SURVEY QUESTIONNAIRE**

**QUESTIONNAIRE - UNIVERSITIES AND THE EXTRACTIVE INDUSTRY**

Dear Sir/ Madam

I am a Master’s student and I write to invite you to partake in a study entitled “Assessing Indirect Employees Technical Competencies Impact on Contract Management: A Case Study of Abosso Gold Field Limited.” All ethical and moral standard guides this research. The primary aim of this study is to assess indirect employee’s technical competencies impact on contract management at Abosso Goldfield Limited. Therefore, your expertise, experience, and knowledge in this area are required to obtain accurate and representative data for further analyses. This study also explores the existing indirect employee’s technical competencies at Abosso Goldfields Limited, the Impact of Indirect Employee’s Technical Competencies on Contract Management, and the strategies to improve indirect employees’ technical competencies to promote effective contract management Abosso Goldfields Limited. The information you provide will be treated as **STRICTLY CONFIDENTIAL** and used solely for academic purposes, with conclusions from this study made accessible to you upon request.

I understand you have a very busy schedule, and I understand this will take some time away from you. I will politely ask you to assist me with your knowledge because it is critical to the success of this study. I greatly appreciate your effort and efforts ahead of time.

Yours Sincerely,

.....

**SECTION A: DEMOGRAPHIC BACKGROUND OF RESPONDENTS**

Please, kindly respond to the questions by ticking (✓) the appropriate box for each item.

1. Sex:  Male  Female
2. What is your position in the firm? :  Project Manager  Contract Manager  Indirect Employee  Service Provider  Procurement Officer others.....
3. What is your level of experience? :  Below 5 years  5-10 years  10-15 years  15- 20 years  20+ years
4. What is your highest level of education?  Basic Level  Secondary Level  HND  Degree  Masters or higher  Others.....

<b>SECTION B: INDIRECT EMPLOYEE TECHNICAL COMPETENCY</b>					
Kindly rate your technical competence [1= Strongly Disagree; 2=Disagree; 3=Neutral; 4= Agree; 5=Strongly Agree]. Please tick (✓) in the space provided.					
<b>Technical Competency</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Competency in managing quality customer service					
2. Contributing to quality work outcomes					
3. Ability to conduct safety and health investigations					
4. Ability to communicate information					
5. Managing knowledge and information					
6. Managing innovation and continuous improvement					
7. Managing environmental issues					
8. Ability to conduct business negotiations					
9. Promoting innovation and change					
10. Planning and organizing individual work					

11. Providing leadership across the organization					
12. Supervisory competency					
13. Knowledge in performing first aid response					
14. Assessing and interpreting information					

<b>SECTION C: VARIABLES OF CONTRACT MANAGEMENT</b>					
How would you rank the following contract management performance indicators? [1 (unimportant) to 5 (very important), Please tick (√) in the space provided.					
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Monitoring progress of contract deliverables					
2. Planning and defining processes such as timing, management strategies, controlling, scope, execution plan, etc					
3. Executing of contract by clearly defining the responsibilities of the contract manager and the employees.					
4. Administrating contract to ensure compliance with contractual terms and conditions					
5. Supervising contract through regular assessment and evaluation					
6. Communicating to indirect employees to understand what contract is intended to deliver					

**SECTION D: STRATEGIES TO IMPROVE THE TECHNICAL COMPETENCIES OF INDIRECT EMPLOYEES**

Kindly indicate your level of agreement to the following as the strategies to improve the technical competencies of indirect employee's. [Not at all influential) to 5 (Extremely influential)]. Please tick (√) in the space provided.

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Training programs (classroom)					
2. On-the-job training					
3. Coaching and mentoring					
4. Stretched assignments and reading					
5. Setting up or supporting to training facilities					
6. Investing a percentage of annual payroll in skills development					
7. Job rotation					
8. Work teams					
9. Exposure to a range of activities that test the employees' ability to cope with a variety of different situations.					
10. Broad job classifications					
11. Rigorous selection procedures					
12. Worker Initiative					
13. Incentives					
14. Worker Unions					
15. Flat management structure					

Thank you for your time.