UNIVERSITY OF GHANA, LEGON

ENTREPRENEURSHIP AND POVERTY REDUCTION: THE CASE OF THE YOUTH IN SMALL-SCALE MINING IN GHANA.

BY

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DECLARATION

I hereby declare that this thesis is my own work and that to the best of my knowledge neither part nor the whole has ever been presented in this University or any other university for the award of any academic degree except where due acknowledgement has been made in the text.

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DEDICATION

This thesis is dedicated to my late father, Mr. Charles Kala, who supported me in various ways throughout the course of this work.

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LIST OF ABBREVIATIONS

ASM	Artisanal Small-scale Mining
BA	Brong Ahafo
CASM	Communities and Artisanal Small-scale Mining
CPP	Convention People's Party
DAC	Development Assistance Committee
DESA	United Nations Department of Economic and Social Affairs
DFID	Department for International Development
ECA	Economic Commission for Africa
EPA	Environmental Protection Agency
ERP	Economic Recovery Programme
FDI	Foreign Direct Investment
GEM	Global Entrepreneurship Monitor
GDP	Gross Domestic Product
GLSS	Ghana Living Standards Survey
GPRS	Ghana Poverty Reduction Strategy
GSS	Ghana Statistical Service
IDS	Institute of Development Studies
ILO	International Labour Organisation
JHS	Junior High School
MMSD	Mining, Minerals and Sustainable Development
NDPC	National Development Planning Commission
NLC	National Liberation Council
OECD	Organisation for Economic Co-operation and Development
PMMC	Precious Minerals Marketing Company
PNDC	Provisional National Defense Council
SAP	Structural Adjustment Policy

SHS	Senior High School
SME	Small Medium Enterprise
SSM	Small-Scale Mining
UN	United Nations
UNIDO	United Nations Industrial Development Organization
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme

ABSTRACT

Rural livelihoods have been increasingly moving away from agrarian to non-agrarian. For mineral rich countries, attention has been on mineral extraction which has offered numerous entrepreneurial opportunities. The small-scale mining sector, compared to the large-scale sector, is particularly important as it offers several more opportunities for employment of the youth. The youth, who are affected by contracting public sector, turn to small-scale mining which is labour intensive. The purpose of this study was to analyse the resources that the youth in small scale mining rely on in their entrepreneurial activities and whether these activities translate into poverty reduction. The study used sample survey and interviews in Kui and Kenyasi No. 2 in Northern and Brong Ahafo Regions respectively to collect information on the various entrepreneurial activities engaged in by the youth and the resources they rely on to carry out those activities as well as the challenges and institutions within which they operate. The results reveal that the youth were not homogenous in terms of their motivations and the entrepreneurial activities they engaged in. Both contextual and personal characteristics of the youth accounted for the differences. For instance, the youth who went into small-scale mining to take advantage of a business opportunity were more likely to be in the service economy or dealers in gold. Similarly, dealers, membership of informal savings and credit schemes, were significantly associated with poverty reduction. Despite the sector's contribution to poverty reduction, it is faced with several challenges which affect personal health and safety. The study recommends that formalisation process of small-scale mining be made easier to enable the youth access formal financial and technical support.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

Even though there have been global efforts at reducing poverty, it remains intractable, especially in the developing world. Evidence from World Bank show that, using a poverty line of US$1.25 per day, the percentage of the world's population living in poverty more than halved (51.8 to 25.2) between 1981 and 2005. More recent estimates peg world's population living below the poverty line of $1.90 a day at 13 percent in 2013 with global extreme poverty rate estimated to be below 10 percent in 2015 (World Bank Group 2016). In Africa, poverty levels have trended downwards even though it remains at unacceptable levels. Particularly affected by poverty is the sub-Saharan region. In Ghana, poverty has fallen consistently from 51.7 percent in 1991/92 to 39.5 percent in 1998/99 and further to 28.5 percent in 2005/06 (Ghana Statistical Service 2007). The gains in poverty reduction are unevenly distributed as some regions (particularly the three northern regions) still have high incidence of poverty. The Upper West region has actually worsened as far as poverty is concerned as the incidence of poverty increased from about 84 percent in 1998/99 to about 88 percent in 2005/06 (Ghana Statistical Service 2007).

Access to decent employment is key to reducing poverty. The relationship between employment and poverty reduction is a direct one. Employment gives one the income to meet one's nutritional and other needs. However, the youth face challenges with regards to employment. The youth unemployment rate globally was 12.1 percent in 2008 compared to 5.8 percent for total unemployment rate and 4.3 percent for the adult unemployment rate. In 2010, the youth unemployment rate trended upwards to 12.6 percent and stood at 12.5 percent in 2012. Nearly 75 million youth around the world are unemployed (ILO 2012).

The youth are disproportionately hit by unemployment compared to adults in the labour market. The ratio of youth-to-adult unemployment rate globally was 2.8 in 2011 and is projected to be 2.7 in 2012 (ILO 2012). Thus, the youth are about three times (2.8) more likely to be unemployed. In sub-Saharan Africa, 3 in 5 of the total unemployed are youth (Schoof 2006) and on average 72 percent of the youth population live on less than $2 a day.

In Ghana, one reason put forward to explain the higher unemployment rate of the youth compared to adults is the existing educational system. It is argued that there is a mismatch between the skills requirement of employers and skills of prospective workers (Baah-Boateng & Turkson 2005). This is because the education sector continues to produce graduates whose training and aspirations do not match the requirements of modern industry. This usually has to do with the quality of skills and the cost of re-equipping and re-tooling new labour market entrants (who are predominantly the youth) in order to meet the challenges of the workplace. In the view of Baah-Boateng and Turkson (2005, p. 129), the failure of Ghana's educational institutions to produce the requisite skilled manpower to meet the changing labour market requirements in the economy is a major cause of the mismatch in the labour market.

Entrepreneurship has been increasingly accepted as an important means to create jobs and improve livelihoods of young people (Schoof 2006). As traditional job-for-life career paths become limited with a decreasing formal sector, youth entrepreneurship is acknowledged as another way of integrating youth into the labour market and overcoming poverty (Fatoki **&** Chindoga 2011). Consequently, governments and development partners are promoting entrepreneurship with the mind to make the youth job creators instead of job seekers (Langevang & Gough, 2012). Entrepreneurship seems to fit the 'private sector is the engine of growth' mantra of Ghana. There is evidence to show that young people

compared to their adult counterparts face unique challenges and greater barriers owing to their limited resources, life and work experience. Despite this, there is value in promoting youth entrepreneurship. Chigunta (2002) has put forward the following reasons why youth entrepreneurship should be promoted:

- Creating employment opportunities for self-employed youth as well as the other young people they employ;
- Bringing alienated and marginalized youth back into the economic mainstream and giving them a sense of meaning and belonging;
- Helping address some of the socio-psychological problems and delinquency that results from joblessness;
- Helping youth develop new skills and experiences that can then be applied to other challenges in life;
- Promoting innovation and resilience in youth;
- Promoting the revitalisation of the local community by providing valuable goods and services;
- Capitalising on the fact that young entrepreneurs may be particularly responsive to new economic opportunities and trends.

Bryceson, (2000) noted that as a result of reduced global markets for African smallholder agricultural exports rural households have, over the last three decades, searched for alternative sources of income across the continent. The mining sector has been the destination of choice for some of them. This has largely been in the small-scale mining sector as the large-scale sector is limited in its ability to engage low skilled workers. Small-scale mining, mostly undertaken by the youth, is labour-intensive and hence provides an opportunity for large numbers of generally poor and uneducated people to be

employed. Consequently, artisanal and small-scale mining constitute a vibrant economic sector as it provides direct employment for 2.5 million people and subsistence for more than 20 million people in at least 25 African countries (ILO 1999, UNDESA 2003).

In Ghana, the number of people engaged in small-scale mining has swelled over the years. An estimated 80,000 locals were involved in small-scale mining of gold and diamond alone in 2003 (Aryee et al, 2003). As of 2005, an estimated 200,000 people were employed in the sector nationwide (Hilson & Potter, 2005) and the sector provided a livelihood to as many as one million people when dependents are included (Hilson & Banchirigah, 2009). Liberalisation of the mining sector led to reduced employment in the large-scale mining companies due to the introduction of new technologies and labour rationalisation (Aryeetey, 2004). Also, not only have large-scale mining operations displaced thousands of subsistence farmers due to the increasing resort to surface mining, those displaced cannot be employed due to heavy mechanisation. The first phase of Newmont's Ahafo South Project alone contributed to the displacement of 9,500 subsistence farmers from their lands (Planning Alliance, 2005). Some of the affected households turn to small-scale mining. Alternative livelihood projects designed and implemented to reduce participation in illegal small-scale mining have been criticised as 'top down, emphasising the implementation of projects which affected groups are not necessarily calling for' (Hilson & Banchirigah, 2009 p192). Alternative livelihood projects are also unlikely to foster sustainable livelihoods and enhance people's resilience (Tschakert 2009).

There is ambivalence about the motivations of youth in mining as necessity- or opportunity-driven. Small-scale mining, it is argued, is a highly lucrative undertaking that is driven by small group of buyers, mercury dealers, and businessmen, often with support of affluent and influential politicians and other players outside of the actual mining areas

(Tschakert, 2009). There are others who recognise small-scale mining as a desire to get rich quick (Mohan 2000; Hinton 2005; Havnevik et al. 2007). There are others, however, who see small-scale mining as poverty-driven (Aryee et al. 2003; Yelpaala & Ali 2005; Hilson & Pardie 2006). Conference delegates at a World Bank-hosted International Roundtable on informal mining in 1995 reached a consensus that artisanal small-scale mining (ASM) is poverty-driven, attracting individuals with few, if any, alternative income-earning opportunities (Barry 1996, Hilson & Banchirigah 2009).

The environmental concerns of small-scale mining and the hazards of the miners' activities to mining communities have been well documented (Amegbey et al., 1994; Al-Hassan et al., 1997; Amegbey et al., 1997; Tufour, 1997; Amankwah & Buah, 1998; Suglo et al., 1998, Amankwah & Anim-Sackey, 2004). Missing in the literature is the entrepreneurial activities undertaken by the youth in small-scale mining vis-a-vis poverty reduction. Not only is the study of youth entrepreneurship relatively recent (Schoof 2006), but in-depth research focusing on youth entrepreneurship in small-scale mining is very limited.

1.2 Problem Statement

The literature on small scale mining has expanded rapidly over the last few decades with studies on health, environmental and socioeconomic impacts of the sector, technical and definitional issues, and broad sectoral studies. Yakovleva (2007) for instance examined the causes of female participation in the artisanal small-scale mining sector and the consequent impact on women's income, health and families. Issues of child labour, alternative livelihood programmes, and SAPs have also been covered in the literature (Hilson 2008; Hilson & Potter 2005; Yankson 2010). The effects of mining on settlement

growth (Yankson 2010) and the environment (Amankwah & Anim-Sackey 2003) have also been given attention.

According to Hilson (2007), biographical and socio-cultural profiles of the youth in small-scale mining are foundational to understanding their motivations and decision-making behaviour. Few studies have concentrated on the miner. A number of sector studies have been done by several stakeholders. Examples are reports commissioned by Communities and Artisanal Small-scale Mining (CASM) project, UNDP and DESA's Artisanal Mining for Sustainable Livelihoods Project, and DfiD's Small Scale Mining and Sustainable Livelihoods reports. Most of these sectoral studies have been criticised as primarily desk studies based on no or limited empirical data. Also they are often in small-scale mining settlements located at accessible locations with good road connections (Jonsson, 2009). Furthermore, the reports have been criticized for rarely providing in-depth context-specific knowledge on who the small scale miners are and why they do what they do.

In spite of the policy interventions in the small scale mining sector in the late 1980s with the introduction of mining laws, it appears that the purpose has not been achieved as operations are still largely illegal. In view of the benefits of formalising operations by way of training, credit facilities, etc., why do these activities remain illegal? Does it affect operators' entrepreneurial activities in any way? How has the absence of formal institutions or regulations affected entrepreneurial activity? What role has informal institutions played in the absence of formal institutions?

The relationship between mining and poverty is by no means rectilinear. The literature on mining and poverty have coalesced around two debates: that mining has contributed to increased poverty and marginalisation of poor communities; and that mining constitutes an escape route out of rural poverty and may be the solution to rural-urban migration.

Using data from the fourth round of GLSS data, Aryeetey (2004) established that mining has deepened inequality (using income) in Wassa West District, which is the hub of mining in Ghana compared to the Western region as a whole. His analysis was limited to the district level and did not go down to the individual level. Except Hilson and Pardie (2006), who studied how the use of mercury is driving small-scale miners into poverty in Ghana, there has been limited in-depth studies focusing on the individual miners' entrepreneurial activities and how that leads to poverty reduction.

A study in 2002 using both desk study and a field survey to highlight key assets and areas of vulnerability to members of artisanal mining communities recommended, among others, that baseline information be collected and analysed to provide an understanding of the state of poverty in mining communities. The study also recommended an assessment of the level and type of economic activity in selected mining communities, and the current roles of various community level institutions (Mime Consult Ltd., 2002).

Apart from Hilson's (2010) work looking at child labour issues and use of mercury in the Upper East, and Awumbilla and Tsikata (2007), who focused on migration and small-scale mining in the Upper East Region, most of the literature is limited to mining in the Western, Ashanti and Eastern Regions of Ghana. Small-scale mining in the Northern Region and Brong Ahafo region has been little researched. This study was therefore carried out in Kenyasi No.2 in Asutifi North District of the Brong Ahafo Region and Kui in Bole District of Northern Region. These were chosen over others because not much was written about them save Hilson et al (2013) whose scoping study approached small-scale mining in Kui from a livelihood perspective. Kui is also a pure mining settlement. Hence, all the inhabitants have migrated there. Kenyasi No.2, on the other hand, is located close to existing towns with an appreciable physical and social amenities present. It is also properly connected by road to the regional capital (Sunyani) and other regions. The

differences in context are likely to affect entrepreneurship differently and hence poverty reduction.

1.3 Overall Aim of the Study

The overall aim of the study is to analyse the resources that the youth in small-scale mining draw on in their entrepreneurial activities and whether these activities translate into poverty reduction or otherwise.

1.3.1 Objectives of Study

- To analyse the motivations for youth entering into small-scale mining;
- To examine the background characteristics of these youth such as gender, ethnicity, socio-economic status and education levels and how these characteristics affect the type of activities the youth get into;
- To examine the challenges confronting young small-scale miners;
- To examine the ways in which institutions can create an enabling environment for youth in small-scale mining; and
- To analyse how small-scale mining contributes to poverty reduction, or otherwise, of the youth.

Based on the issues raised above, the study sought to answer the following research questions:

- What are the motivations for youth entering small-scale mining?
- Which small-scale mining activities do the youth engage in and how is this influenced by their characteristics such as gender, ethnicity, socio-economic status, relational networks and education levels?

- What are the challenges confronting young small-scale miners?
- In which ways can institutions create an enabling environment for youth in small-scale mining?
- How does youth involvement in small mining contribute to poverty reduction?

1.4 Hypotheses

The youth who go into small-scale mining to take advantage of a business opportunity are more likely to engage in services and dealership than those who are necessity-driven

Males are more likely to reduce their poverty compared to females.

The youth with education are more likely to reduce their poverty than those without education.

1.5 Research Setting and Locations

There are three types of gold mining operations in Ghana: the corporate large-scale commercial mining operations conducted by multinational companies; the formal small-scale mining sector; and the small-scale artisanal mining that operate outside the law, commonly referred to as 'galamsey'. The third type (galamsey) will be the subject of this thesis. This is because the majority of the operators in the small-scale mining sector are in this category. This is also the category that is most adaptive and innovative (Carson et al 2005; Hilson & Banchirigah 2009).

Small-scale mining in Ghana was at first mainly limited to the south-western enclave. This activity has now spread the length and breadth of the country. As Wassa West contains the largest concentration of gold mining operations in Ghana, the district has

been subject to considerable research (see Yankson 2010, Hilson & Yakovleva 2007, Akabza & Darimani 2001, etc). Consequently, this study focused on two mining sites in different regions: Kui in Bole District in Northern Region and Ahafo Kenyasi No. 2 in Asutifi North District of Brong Ahafo Region (see Figure 1.1). Gold extraction began in Kui in the early 2000s with very rudimentary tools and technology. Chanfan machines revolutionised activities in the settlement (Interview with Abdul Rahman Solle in 2010). Small-scale mining in Kui is seen as the panacea to the debilitating poverty in Northern Ghana (Hilson 2013). About 70 percent of people in Upper East, 88 percent of people in Upper West, and 52 percent of people in Northern region fall below the poverty line (GSS, 2007). As at 2013, the population of Kui stood at 7,000 (Hilson et al. 2013). This included citizens from all regions of Ghana, as well as Burkinabes, Nigerians and other nationals. The chief is the allodial title holder of the land in Kui.

Kenyasi No.2, on the other hand, is located in the Asutifi North District. It is located near the Newmont Ahafo concession. Gold mining began there earlier than in Kui. The settlement is located between Kenyasi (which is the district capital of Assutifi North) and Hwidiem. The form of mining here is mostly hard rock, deep pit mining even though alluvial mining takes place on a small scale. The tools and technology used are more sophisticated, involving the use of compressors. The population involved in mining is estimated to be about 10,000 people (Personal communication with chairman of mining committee). The mining activities have transformed the communities close to the mining settlement as they have witnessed increases in housing stock, guest houses, retail businesses and even banking services. Some parts of the settlement close to the main road are connected to the national electricity grid. Kenyasi also has migrants from all regions of Ghana, including other nationals. Unlike Kui, the land on which the mining activities are located in Kenyasi belongs to individuals (see Table 1.1). These differences in

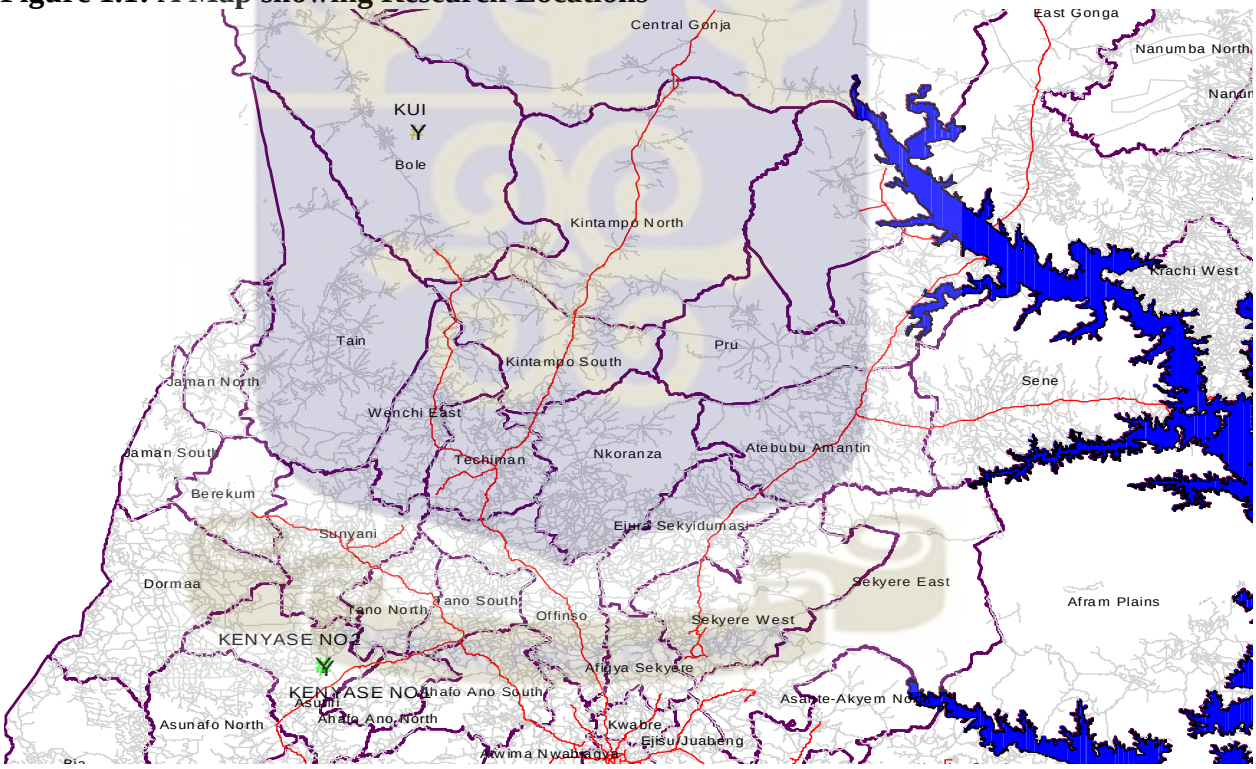
research sites offer appeal for comparative analysis to see the dynamics with regards to the issues to be explored. In addition, these sites have been largely underresearched.

Table 1.1 Characteristics of the small-scale mining settlements

Parameter	Kui	Kenyasi No. 2
Spatial	Northern	Brong Ahafo
Land tenure	Chief	Individual
Method of mining	Largely open cast	Largely deep shaft
Technology	Less sophisticated	More sophisticated

Source: Author's own compilation.

Figure 1.1: A Map showing Research Locations



Source: Marshall Kala

1.6 Justification of the Study

Interventions in the mining sector fail due to a lack of understanding of the sector. Examples of some of the failed interventions include mercury abatement, alternative

livelihood programmes, and the land reclamation fund. The introduction of retorts to extract gold, despite the economic, environmental and health benefits, was not adopted by small-scale miners. The land reclamation fund is another initiative which was implemented by Ghana and required a certain percentage of revenue from small-scale mining to be held by government and used for reclamation programmes. Similarly, Tschakert (2009) posits, with regards to alternative livelihood programmes, that it is largely a reflection that the main driving forces of Ghana's artisanal small-scale mining are poorly understood. Alternative livelihood programmes have also been criticized as 'fashionable drop-in projects' (Aubynn, 2004). Similarly, despite policy initiatives to regularise the small-scale mining subsector, about 85 percent of operators still carry out their activities illegally (Hilson 2001, 2002). Socio-economic research will contribute to an understanding of the barriers to registrations and the attendant problems that come with operating illegally. This study will deepen our understanding of participants and their motivations for engaging in the sector.

In view of the panoply of research in small-scale mining, only a few have approached the sector from the perspective of entrepreneurship. The narratives about the sector highlight it as a problem that has to be solved (Hilson & Garforth 2013) and to an extent influence the measures to control it. This has been mainly through promotion of alternative livelihood programmes and military crack-down.

Several authors have highlighted the different activities participants are engaged in (Awumbilla & Tsikata 2007; Hilson & Garforth 2013). The determinants of activities that participants are engaged in, however, are not analysed using a representative sample and are mostly qualitative. This study therefore employed quantitative analytical techniques to tease out the determinants of which youth are engaged in the different activities in small-scale mining.

Further, institutions are foundational in providing critical assets such as land and water in facilitating the start-up and running of businesses in the small-scale mining. There have been studies concentrating on national level regulatory institutions in Ghana. However, local traditional and/or informal institutions may be more important as far as informal small-scale mining is concerned. There has been dearth of information on the roles played by local institutions in facilitating entrepreneurship by youth in small-scale mining.

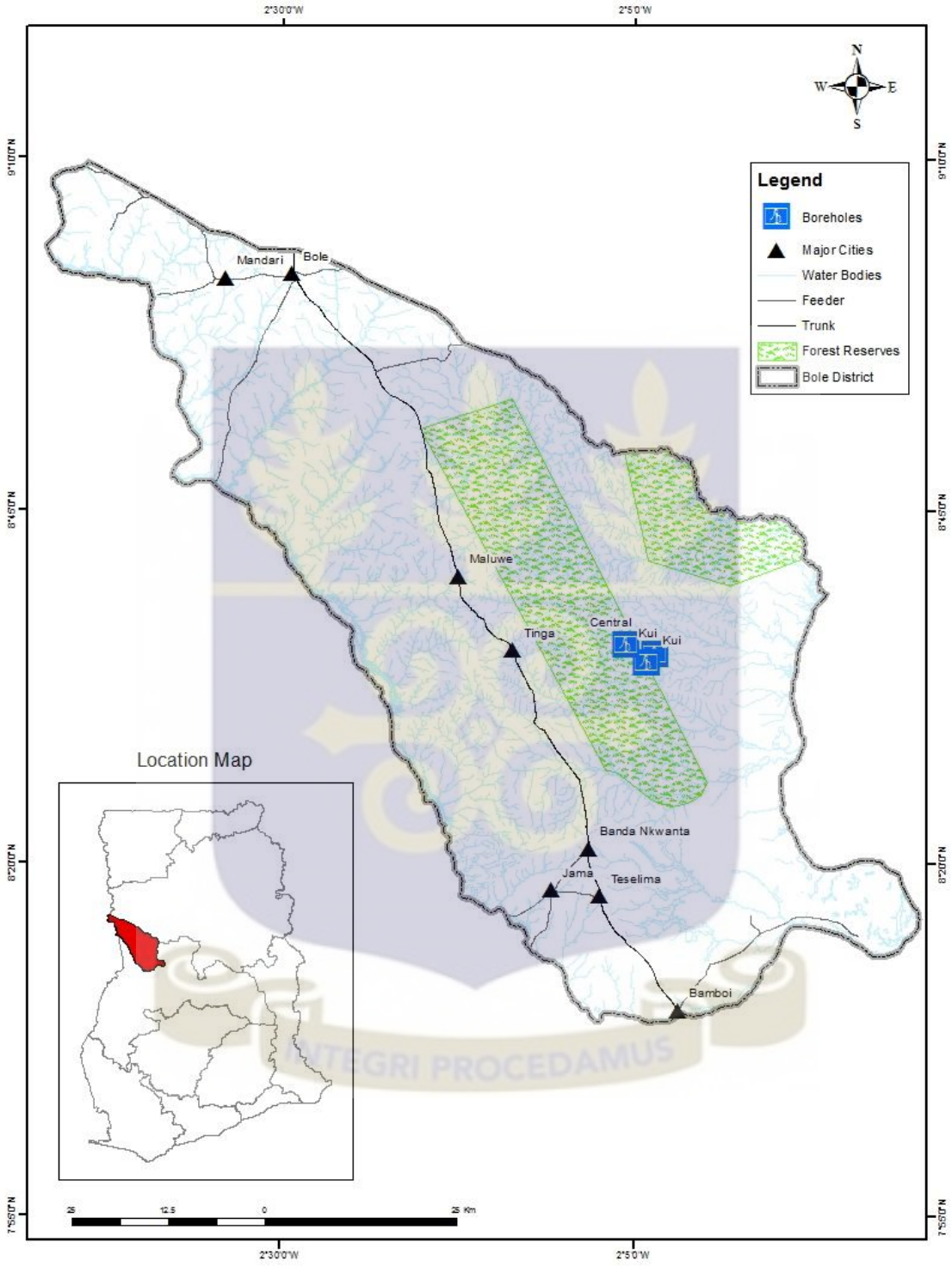
1.7. Study sites

This section presents the characteristics of the study sites and the opportunities therein for the enterprising youth.

Kui

Rainfall for Bole District where Kui (see Figure 1.2) is located starts from May and ends in October. The rainfall is seasonal and characterised by a single maximum. The mean annual rainfall according to the District plan is 1.100mm. The annual rainfall is small with June, July and August recording the heaviest rainfall and the greatest number of rain days as the quarterly rainfall figures in Table 1.2 show. The erratic nature of rainfall coupled with the lack of irrigation facilities makes agriculture a somewhat risky venture. This notwithstanding, 80 percent of the population in the Bole District is in agriculture, which is heavily dependent on rainfall. The rainfall pattern also explains why small-scale mining in Kui is somewhat seasonal as water is required for processing of the ore.

Figure 1.2: A Map of Bole District showing Kui



Source: RSGIS Lab, University of Ghana.

Table 1.2 Quarterly Statistics of the rainfall patterns over the period 2004 and 2005

	Amount (mm)		Wet Days	
Quarters	**2004**	**2005**	**2004**	**2005**
1st	127.7	23.2	5	6
2nd	371.7	469.4	28	30
3rd	559.8	534.0	52	36
4th	170.9	204.9	12	9
Total	**1230.1**	**1231.5**	**97**	**81**

Source: Ghana Meteorological Service Centre-Bole.

In terms of economic activities, the major activities in the district are agriculture (at mostly the subsistence level), trading in foodstuff, fishing along the Black Volta, and shea-nut picking and processing. Cashew is one of the cash crops in the district that is cultivated on a small-scale. Small-scale industrial activities consist of agro-based processing, including brewing, milling, cassava processing; wood-based activities such as carpentry and charcoal burning; clothing such as tailoring and weaving; repairs such as bicycles, vehicles and vulcanising; services such as hairdressing, food processing; metal-based blacksmithing; art-based such as pottery, basketry; and trading in provisions. It must be emphasised that, apart from farming and charcoal burning, many of the activities are concentrated in the big towns.

It is therefore not surprising that the population was heavily concentrated in agriculture until small-scale mining started in earnest in the district. The Bole District Development Plan spells out some of the challenges relating to employment in the district as a whole. Not only are there no opportunities for training to diversify from agriculture to other sectors of the economy, the high illiteracy rate makes it difficult for labour to branch out into other sectors. This is compounded by a high school dropout rate and a lack of employment avenues for school leavers. Finally, non-farm income generating activities are limited if at all existent.

The challenges inherent in agriculture and with general lack of alternative employment avenues may be fueling the growth in small-scale mining activities in the district.

Kenyasi

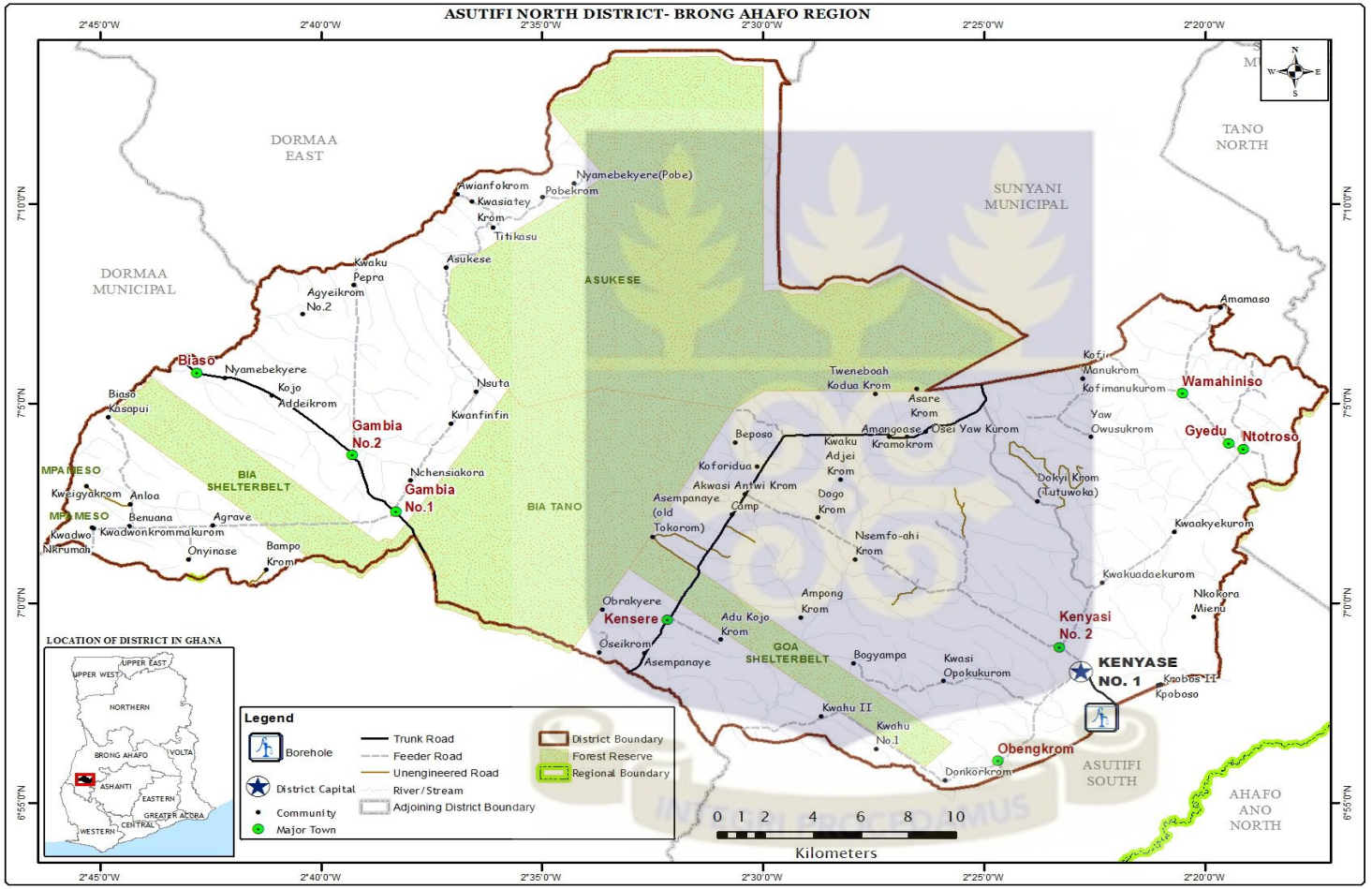
The Asutifi North district (see Figure 1.3) falls within the wet, semi-equatorial zone. It is characterised by double rainfall maxima in June and October. It has a mean annual rainfall of between 125cm and 200cm. The first rainy season is from May to July (maximum) and the second rainy season is from September to October (minimum) when the district comes under the influence of the Wet Maritime Air mass. The beginning of the rainy season is marked by heavy thunderstorms. Two dry seasons intersperse the rainy seasons: the first dry season comes between November and March when the South-West Monsoon winds give way to the dry North-East trade winds. The second dry season comes off in August. Relative humidity is generally high, ranging between 75 to 80 percent during the two rainy seasons and 70 to 80 percent during the rest of the year. Climate is very relevant to the small-scale mining as the activity depends on the availability of water. Heavy rains in the rainy season sometimes disrupt mining activities due to flooding of pits from the rainwater.

This physiographic region is underlain by pre-Cambrian rocks of Birimian and Dahomeyan formations. Birimian formations are acknowledged to be gold-bearing rocks. The Birimian rocks also have a high potential for manganese and bauxite. Newmont Ghana Gold Limited, one of the biggest mining companies in the world, is currently mining gold on a large scale in this area. These areas include Kenyasi No. 1 & 2, Ntotroso, Gyedu-Wamahinso and other smaller communities. However, other exploration activities are on-going in other communities within the district.

Diamond has been discovered at Wamahinso. There is also a widespread deposit of sand and clay in the district. Sand deposits can be found at Kenyasi, Gambia No.2, Hwidiem and Acherensua whilst clay deposits can be found at Nsunyameye and Dadiesoaba. Also, there are rounded outcrops of granite found over the Birimian rocks at Kwadwo Addae Krom, Goa Asutifi, Georgekrom and Konkontreso, which have high potential of iron and bauxite.

The Asutifi North district has soil of high agricultural value. The soil in the district is suitable for the cultivation of several food crops like cassava, plaintain, oil palm and tree crops like cocoa. Hence, 67 percent of the people were in agriculture and 27 percent were in services (socio-economic survey 2006). The migration of people to the district due to the mining activities present opportunities for trading activities. Newmont Ghana Gold Limited is supporting farmers with inputs and extension services to improve their yield. The company has also provided skills to inhabitants of the mine take through its Ahafo Agri-business Initiative (AAGI). The district also has vast forest reserves with timber and other forest products. Opportuities abound for lumbering activities.

Figure 1.3 A Map of Asutifi North showing Kenyasi No.2



Source: RSGIS Lab, University of Ghana.

1.8 Thesis outline

The structure of the study is as follows:

Chapter 1 serves as the introduction to the research. It provides the background of the issues in question, which leads to the problem statement and the research objectives from which the research questions flow. In addition, the study area is introduced. The chapter concludes with an overview of the structure of the study.

Chapter 2 reviews the literature on entrepreneurship and various socio-economic characteristics. The chapter further delves into the relationship between small-scale mining and poverty reduction before turning to the theory undergirding the study.

Chapter 3 explains the research methodology. This chapter elaborates on the design and sampling used in the study, the measuring instrument, the method of primary data collection, and the strategies followed in administering the measuring instrument. The data analyses performed and the statistical techniques applied are described.

Chapter 4 contextualises the study by examining the political economy of Ghana as it relates to small-scale mining and employment of the youth. It reviews the major sectors of the economy – namely, agricultural, industrial and service sectors – and then follows with a discussion of the political economy of mining from colonial times to independence, post-independence to early eighties, and finally, early eighties till present. Finally, mining sector institutions that help to regulate the sector are discussed.

Chapter 5 discusses the institutional context at the national level and at the local level and how these affect businesses at the local level and their operators.

Chapter 6 explores the range of entrepreneurial activities undertaken by the youth in small-scale mining. It will answer the questions of why and who is engaged in what

activity. It further delves into the innovative ways that the youth in mining conduct their entrepreneurial activities.

Chapter 7 delves into the entrepreneurial opportunities for the youth in small-scale mining and the role it plays in poverty reduction, or otherwise. It does this by first assessing the vulnerability of the youth before moving into the mining settlements and during their stay there. Wealth indices are generated and used to relate with socio-economic and location variables to see who is asset poor and who is not. It is argued that an overwhelming majority of the youth in small-scale mining are not poor

Chapter 8 presents the summary, conclusions and recommendations of the research. The contributions and possible shortcomings of this study are also highlighted. Finally, directions for future research are suggested.

CHAPTER TWO

YOUTH IN SMALL-SCALE MINING, POVERTY AND SOCIAL CAPITAL-A THEORETICAL PERSPECTIVE

2.1 Introduction

The aim of this chapter is to provide an overview of the literature and key concepts that form the building blocks for this study. It starts with a review of the literature on social capital, entrepreneurship, and small-scale mining. This is by followed definition of key concepts. The chapter concludes with a discussion of the conceptual framework.

2.2 Social Capital Theory

The theory used for the study is social capital theory. Social capital has emerged as a much-discussed and critiqued topic in government, bureaucratic and academic circles (Portes 1998, p.3). The term was first used by Hanifan (1916) who defined it thus: "social capital… refer(s) to … those tangible assets [that] count for most in the daily lives of people: namely goodwill, fellowship, sympathy, and social intercourse among the individuals and families who make up a social unit" (Woolcock, 1998 p.192). Social capital has been theorized by several authorities. However, the theoretical foundations of the concept is attributed to the the works of Pierre Bourdieu, James Coleman and Robert Putnam. The following discusses the key contributions of the three individuals.

Pierre Bourdieu

According to Portes (1998), Bourdieu was the first to produce contemporary analysis of social capital. Bourdieu defined social capital as 'the aggregate of actual or potential resources which are linked to possession of a durable network of more or less

institutionalised relationships of mutual acquaintance or recognition' (Bourdieu 1986 p.249).

Throughout, Bourdieu's emphasis is on the fungibility of different forms of capital and on the ultimate reduction of all forms to economic capital, defined as accumulated human labour. Portes (1998, p45) indicates Bourdieu's ideas of the benefits that accrue to individuals through social capital thus '….. through social capital, actors can gain direct access to economic resources (subsidized loans, investment tips, protected markets); they can increase their cultural capital through contacts with experts or individuals of refinement (i.e. embodied cultural capital); or, alternatively, they can affiliate with institutions that confer valued credentials (i.e. institutionalized cultural capital)'.

Possession of social capital is conceptualized by Bourdieu to be consequent to investment of both economic and cultural resources. Even though Bourdieu's rendition that the outcomes of possession of social or cultural capital are fungible with economic capital, the processes that bring about these alternative forms are not. Compared to economic exchanges, transaction in social capital is characterized by less transparency and more uncertainty. For example, transactions involving social capital are likely to associated with unspecified obligations, uncertain time horizons, and the possible infraction of reciprocity expectations. Owing to their very lack of clarity, these transactions can help disguise what otherwise would be plain market exchanges (Bourdieu 1979, 1980).

James Coleman

Coleman conceptualizes social capital as the interface of the overly rational and individualistic model and the social and cultural environment. In this conceptualization, economic actions by rational, self-interested individuals are mediated by the social environment (Coleman 1988). Coleman (1990) defined social capital as any aspect of

social structure that creates value and facilitates the actions of the individuals within that social structure. Just as the creation of physical capital involves changes in materials so as to facilitate production, and human capital involves changes in an individual's skills and capabilities, social capital is created when the relations among people change in ways that facilitate instrumental action (Coleman, 1990). "Social capital is defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: They all consist of some aspect of a social structure, and they facilitate certain actions of individuals who are within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible" (Coleman 1988, p. 98).

Stemming from the definition by Coleman (1973), network researchers have formalised and tested theories related to social capital. The first approach to the conceptualisation is weak tie theory (Seibert et al 2001). Ties that reach outside of one's social clique are likely to be weak and according to Granovetter (1973) are often a bridge between densely interconnected social cliques. Bridging or weak ties provide people with access to unique information and resources beyond those available in their own social circle compared to strong ties that produce redundant information (Granovetter 1973). Granovetter (1973) found that weak ties were more likely than strong ties to have been the source of information about job openings for the sample of job incumbents he interviewed.

The second approach is Burt's (1992) structural hole. This approach focuses on the pattern of relations among alters in ego's network. A structural hole is said to exist between two alters who are not connected (Seibert et al 2001). According to structural holes theory, it is advantageous for ego to be connected to many alters who are themselves unconnected to the other alters in ego's network. According to Burt's theory (1992, 1997), networks rich in structural holes provide an individual with three primary benefits: more unique and

timely access to information, greater bargaining power and thus control over resources and outcomes, and greater visibility and career opportunities throughout the social system. Burt (1992) critiqued weak tie theory, pointing out that the structural hole concept gets at the bridging property of ties more directly than the weak tie concept and therefore provides a "stronger foundation for theory and a clearer guide for empirical research" (Burt 1992: p28).

The third major theoretical approach to the conceptualization of social capital is social resources theory (e.g., Lin et al, 1981). Lin (2001) view the notion behind social capital to be that investing in social relations has expected returns. That individuals engage in interactions and networking in order to produce profits. Lin (2001) offers four explanations why embedded resources in social networks will enhance the outcome of actions. Firstly, in an imperfect market situation, social ties can provide an individual useful information about opportunities and choices otherwise not available. Secondly, social ties may exert influence on the agents (e.g. recruiters) who play a critical role in decisions involving the actor. Thirdly, social-tie resources, and their acknowledged relationships to the individual, may be conceived by the organisation or its agents as certification of the individual's social credentials, some of which reflects the individual's accessibility to resources through social network and relations – his/her social capital. The belief is that, standing behind the individual can provide added resources beyond his/her personal capital, some of which may be useful to the organisation. Fourthly, social relations are expected to reinforce identity and recognition. These reinforcements are essential for the maintenance of mental health and the entitlement to resources.

Seibert et al (2001) posits that it is indeed possible to integrate the differing conceptualisations of social capital. Weak tie theory and structural holes theory focus on the structure of a network and social resources theory focuses on the content of a network.

They are thus not mutually exclusive but focus on different points in the process of accumulating social capital. Their overarching social capital construct is seen therefore as '*both* the different network structures that facilitate (or impede) access to social resources *and* the nature of the social resources embedded in the network' (Seibert et al. 2001 p.221).

Robert Putnam

Putnam (1993) in his work 'making democracy work' presents results of an investigation on the institutional performance of the 200 new Italian regions starting from 1970. The major finding was that there are some regions mostly in the North who have efficient, reactive, reliable administrations, to the highest satisfaction of their citizens. There are others mostly in the South where it is the contrary. The difference by the regions in the North and South can be explained, according to him, by people's civic engagement. In the North, the population show a high propensity to associational participation and a high degree of interest in public affairs; in the South, social life is at best apathetic, and political life means populism and corruption. So the quality of a democracy (seen firstly as the efficiency of its administration) as well as the level of economic development can be explained as the result of virtuous (vicious) dynamics, rooted in the features of medieval societies.

His central assessment is one in which causality goes from a high propensity to participate in associations (i.e. a high stock of social capital), to high social, economic and institutional performances. Social capital is defined as:

'those features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions' (Putnam 1993 p. 183).

According to Putnam, two empirical assumptions underlie the concept: networks and norms are empirically associated, and these have important economic consequences. Networks of horizontal relationships were deemed to be more favourable to the creation of high stocks of social capital than vertical ones. The concept was originally limited to associations having positive effects on development. In response to Portes and Landolt's (1996) criticism of social capital as a constraint to individuals' actions and choice, Putnam in 2000 introduced a distinction between bonding and bridging social capital. Bonding social capital refers to closed networks of family and friends. This can be extended to include networks that rely upon relations within homogeneous groups such as within certain business organisations or among ethnic enclaves. Putnam suggested that these types of social capital help people to 'get by' on a day-to-day basis. In contrast, bridging social capital refers to open networks that bridge different communities and thus, is much more heterogeneous. In relation to entrepreneurs, the poor tend to form bonding social capital networks to reduce risk and uncertainties. The poor are also said to rely on their immediate neighbours and friends for credit and support. Economically 'richer' individuals form bridging social networks to improve innovation and share knowledge with the aim of improving profits, productivity and their market share (Woolcock and Narayan, 2000).

Apart from Putnam's bonding and bridging social capital, a number of scholars have started to utilise the term linking social capital. Linking social capital refers to one's ties to people in positions of authority, such as representatives of public (police, political parties) and private (banks, microfinance companies) institutions. Unlike bridging social capital which is essentially horizontal (that is, connecting people with more or less equal social standing), linking social capital is more vertical, connecting people to key political (and other) resources and economic resources.

Following Putnam's seminal work, the World Bank and other organisations have applied the concept in their developmental work. The Organisation for Economic Co-operation and Development (OECD) defines social capital as 'networks together with shared norms, values and understandings that facilitate co-operation within or among groups (Cote and Healy, 2001 p. 41)'. The World Bank is more expansive and indicates that 'Social capital refers to the institutions, relationships and norms that shape the quality and quantity of a society's social interactions..... Social capital is not just the sum of the institutions which underpin a society – it is the glue that holds them together` (The World Bank 1999). Some definitions have been proffered that are suited for groups as in Bourdieu and Wacquant (1992) who define the term as the 'the sum of resources, actual or virtual, that accrue to a group by virtue of possessing a durable network of more or less institutionalised relationships of mutual acquaintance and recognition'. Others such as Portes have offered definitions that are suited for the individual. According to Portes (1998) social capital 'refers to the capacity of individuals to command scarce resources by virtue of their membership in networks or broader social structures'.

Social capital has also been defined as an asset embedded in relationships that facilitate instrumental action among people and the sharing of knowledge and resources from one person to another (Burt, 2000; Coleman, 1988; Leana & Van Buren, 1999; Nahapiet and Ghoshal, 1998). Not only does social capital establish connections which eventuates exchange of resources and effective management of knowledge (Tsai & Ghoshal, 1998), it also increases performance by enhancing commitment, increasing flexibility and fostering intellectual capital (Shaw et. al. 2005). Social capital also reduces organisational costs by increasing an organisation's ability to acquire new knowledge.

Criticisms

In response to Portes and Landolt's (1996) criticism of social capital as a constraint to individuals' actions and choice, Putnam made a distinction between bonding (exclusive) and bridging (inclusive) social capital (2000). Bonding social capital occurs among homogenous populations. It is often parochial and only benefits those with internal access. The poor and insecure tend to rely more on the strong ties than do others. Several studies link strong networks to economic insecurity and a lack of social services (Ericksen and Yancey 1977).

One criticism levelled against social capital is that the strong bonds that allow members of some ethnic groups to gain access to certain trades may prevent members of some other groups. Putnam's attempts to address the criticism through the introduction of bonding and bridging still remains flawed because he fails to recognize that bridging social capital also has exclusionary aspects. Portes (1998) also considers the fundamental problem of Putnam's argument to be its logical circularity in that the concept is simultaneously a cause and an effect. As he puts it, social capital 'leads to positive outcomes, such as economic development and less crime, and its existence is inferred from the same outcomes' (Portes 1998, p.19).

Groups versus Individuals

There are two perspectives in the literature relating to the level at which returns or profit to investment in social relations is conceived. The first perspective focuses on the use of social capital by individuals. It concerns itself with how individuals access and use resources embedded in social networks to gain returns in instrumental actions (e.g. finding better jobs) or preserve gains in expressive actions (Lin et al 2008). The second perspective focuses on social capital at the group level. Discussions have centred on how groups develop and maintain more or less social capital as a collective and how such a

collective asset enhances group members' life chances (Lin at al 2008, Adler & Kwon 2000; Putnam 2000, Gittel & Vidal 1998). The work of Bourdieu (1983/1986, 1980) and Coleman (1988, 1990) discussed this perspective extensively.

Social capital and enterprise development

There has been a flurry of research findings that attempt to quantify the advantages that social capital in various forms may or may not provide to entrepreneurs. Fafchamps (1998) found that social capital in the form of personal networks give entrepreneurs in Kenya and Zimbabwe significant preferential access to supplier credit. The benefits were generally limited to nonindigenous groups such as Europeans and Asians who could easily identify each other and had reliable information about each other.

Barr's (2000) empirical results of Ghanaian manufacturers suggest that social capital in the form of networks should be taken as a possible determinant of economic outcomes. She found that networks were important determinants of enterprise performance. Similarly, Kristiansen (2004 p.1167) using a case study methodology to study entrepreneurs in Tanzania opined that 'networks seem to have a clear impact on the ability to raise entrepreneurial resources and thereby on the chances to enact one's business environment and create success'.

2.3 Entrepreneurship

Push-pull factors have been studied in the Ghanaian small-scale mining sector. Tschakert (2008) using qualitative methods in two mining sites in South Western Ghana, found that the miners were into it because of the need for cash. Disaggregating the operators by age, he found that the younger operators (less than 25 years of age) went into small-scale mining because they dropped out of school and lacked family support. Their major motivation was to make money to pay school fees. The older men on the other hand cited

opportunity to provide for their wives and children as the major motivation for going into small-scale mining. Both groups agreed that the lure of fast money, economic independence, and the potential to accumulate capital for starting a trading business were the most important pull factors. Hinton (2005 p.9) noted that 'poverty is both the catalyst and consequence of artisanal small-scale mining.' Modern artisanal gold miners are motivated less by adventure than by survival. The literature on small-scale mining has largely portrayed the miners as pushed into it by poverty. That they are in it because there are no other alternatives and hence are necessity-driven.

Are the young miners pushed into small-scale mining because they are necessity driven or there are other motivating factors?

2.4 Small-scale Mining

This section explores the issue of small-scale mining in relation to employment generation, poverty reduction, education, gender and the environment.

2.4.1 Employment Trends in Small-scale Mining

The small scale mining sector has witnessed a consistent expansion in employment. The World Bank estimated that the workforce in 1995 was 30,000 (World Bank, 1995). A more recent estimate by Hilson (2001) places the workforce in the extraction of gold and diamond at 200,000 in 2001 and one million in 2006 (Banchirigah 2008).

The rapid growth in the small scale mining sector is attributable to a plethora of reasons. One is the general trend of livelihood diversification away from agriculture into ASM. While some scholars (Mohan 2000; Hinton 2005; Havnevik et al 2007) posit an attempt to get rich quick, others contend that a majority of rural farmers pursuing employment in ASM in Sub-Saharan Africa do that out of necessity (Banchirigah & Hilson 2009). It is argued by proponents of this view that agriculture is no longer able to support rural

inhabitants, which is further aggravated by Structural Adjustment Programmes (SAPs) (Banchirigah & Hilson 2009) thus making smallholder farming less viable. ASM thus plays two important economic roles of supplementing income from agriculture non-harvest season, and of averting precarious financial situations brought about by diminishing returns of agriculture produce.

Most of the large scale mining companies use surface mining methods leading to reduction in agricultural land. Displaced smallholder farmers are offered alternative livelihoods that are not desirable and also exclude ASM populations (Hilson & Banchirigah, 2009). Surface mining by large scale mining companies, as noted by Aryeetey (2004) causes unemployment as it is labour intensive. Displaced farmers and community members have pursued employment in ASM.

Another reason for the expansion of the ASM is the limited job openings in the formal sector. The opportunities for many young people in low-income countries of ever transiting to paid employment in the formal sector are slim (ILO 2010) as 'job-for-life' career paths become rarer (Schoof, 2006).

Coupled with low entry barriers, low technology requirements, and labour intensive nature of mining, ASM is the choice of destination (Dreschler 2001; Heemskerk 2003; Snyder 2006; Hilson 2008). With its low barriers to entry and minimal capital start-up requirements, ASM has become an important source of income for impoverished peasants. Owing to its labour-intensiveness, small scale mining has proved to be labour-absorbing. Opportunities in ASM for the youth and rural inhabitants are diverse and dynamic, and require less experience.

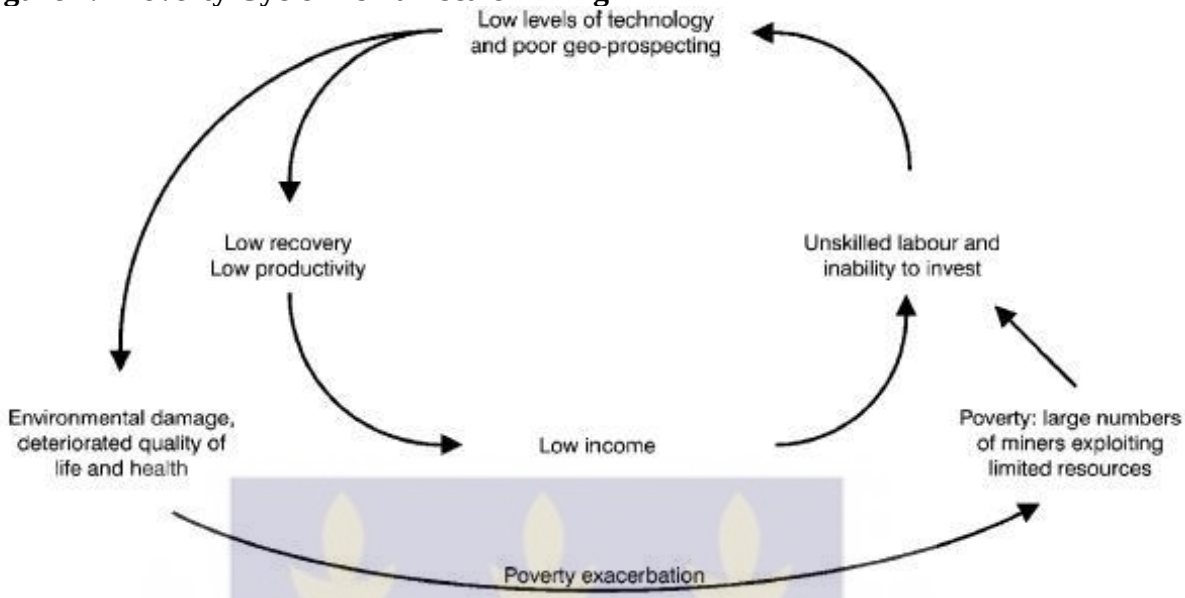
2.4.2 Small-scale Mining and Poverty Reduction

There are two divergent schools of thought on the relationship between mining, on the one hand, and poverty reduction, on the other. One section of the literature views mining as a destination of choice for the poor who want to escape poverty while the other views those going into mining as opportunity-oriented who want to get rich quick. The literature is also diverse on whether mining deepens poverty or delivers those engaged in it out of poverty.

Many scholars and institutions are agreed on the fact that small-scale mining is poverty-driven (Barry 1996, Hilson & Pardie 2006, UNECA 2003). A United Nations Economic Commission for Africa (UNECA), report, for instance, noted that the increasing number of people going into ASM has been impelled by growing economic crises, the effects of structural adjustment, particularly in sub-Saharan Africa, which increased unemployment, mine redundancies in large mine companies due to crumbling mineral prices, and decreasing rural livelihood choices, chiefly in areas affected by natural (mainly droughts and floods) and man-made disasters (UNECA, 2003).

Does mining contribute to poverty reduction? Another argument put forward in the literature is that artisanal miners are trapped in vicious cycle of poverty (Hilson & Pardie 2006). A combination of failings on the part of regulators and an inability on the part of miners are to explain, according to Noetstaller, for the hardship (Hilson & Pardie 2006). Poor policy, inefficient equipment and inability to diversify income-earning activities are identified as the main drivers of the impoverishment. In explaining how small-scale mining perpetuates poverty, Haye (2008) opines that the small-scale mining sector employs inefficient techniques in over-crowded sites thereby reducing the return from the resource for individual miners (see Figure 2.1). Small-scale mining, it is argued, also attracts workers away from more sustainable livelihoods such as farming. Small-scale mining can also have negative ecological footprints as activities deplete the resources on which neighbouring villages depend.

Figure 2.1 Poverty Cycle in small-scale mining



Source: Hilson and Pardie (2006).

Recent empirical records demonstrate that mining rather exacerbates poverty (Pegg 2006). Pegg (2006) using World Bank's conceptualisation of poverty as material deprivation, low levels of education and health, vulnerability and exposure to risk, and voicelessness and powerlessness revealed that mineral-rich countries have not fared better in terms of poverty reduction. It contended that even though there may be sound theoretical reasons to believe that mining can contribute to poverty alleviation, its empirical track record to date has been dismal. One criticism is that the analysis was at the national level and since wealth created at the national level often is not evenly distributed among all categories of the population, it is possible to have growth that will not reflect on the lives of the poor. Aryeetey (2004) also found that inequalities increased considerably in Wassa West which is the hub of mining in Ghana.

One work looking at mining and poverty at the individual level is by Hilson and Pardie (2006). Using data from three sites in Ghana, they posit that the use of mercury as an

amalgamation agent is driving small-scale miners into poverty in three ways: Government licensed gold buyers provide mercury to small-scale miners in exchange for gold at below market prices ('bush prices'); overexposure to mercury and the resulting illnesses exact significant health cost burden to miners; and the absence of efficient processing technology capable of recapturing costly mercury for reuse.

Small scale mining also helps to alleviate poverty. This is done through the growth of lateral or downstream businesses. This will thus increase jobs, local economic growth and tax revenues leading to poverty reduction. As Larsen et al (2009) and Tschakert (2008) noted for Ghana, that the linkages of the mining sector and the rest of the Ghanaian economy are fragile even though Bloch and Owusu (2012) think otherwise. They challenged the view that gold mining is an enclave economy with few linkages. They argue that 20 years of investment and growth have produced an improvement in the breadth and depth of fiscal and consumption linkages.

The Yaoundé Vision Statement "that policies and programs directed towards the sub-sector will contribute to sustainably reduce poverty and improve livelihoods in African Artisanal and Small-scale Mining (ASM) communities by the year 2015 in line with the Millennium Development Goals" underscores the role mining can play in the reduction of poverty. Mining incomes are usually higher and more dynamic compared to farming which has been the main livelihood activity of a greater majority of people in the Sub-Saharan Africa.

The issue is that it is not all in small-scale mining who are poor or are caught in the vicious cycle, the operators are not homogenous and hence the need to know who are caught in the vicious cycle, who are making fortunes in terms of background and activity engaged in.

2.4.3 Education and Small-scale Mining

The debate about the effect of education on mining is by no means conclusive. A number of studies have shown how mining is negatively affecting education in some mining areas of Ghana. Owusu and Dwomoh (2012) indicate that increase in illegal mining activities has brought about retrogression in the educational sector in Ghana and hardship on farmers using Kwaebibirem District as a test case. Similarly, records from Kade Education Office in Ghana show that the rate of school dropout in Kade and Apinamang is on the high side. For instance in Akwatia (one of the towns in the district), out of a total of 88 students enrolled, only 42 were able to complete. The total percentage of school dropout was 52.3 percent. In the case of Apinamang which is also one of the towns in the Kwaebibirem district, the percentage dropout was 42.3 percent.

Interviews conducted with 6 illegal miners who were among the dropouts from school gave their main reason as lack of support from family members to finance their education. They believe that illegal mining gives them all the money they need to start life. Based on the responses of these illegal miners, the researchers were of the view that dropouts from school of illegal miners is due to the high premium they placed on this illegal activity as compared to education (Owusu & Dwomoh, 2012).

In a study by Kyereme and Thorbecke (1991), most of the youth engaged in ASM have a basic education, few have finished Senior High School, and several truncated their education after Basic School in search of employment. A Few of the women interviewed also mentioned going through vocational training. It is not uncommon for children from poor households, to truncate their schooling in order to pursue commercial activities. This enables them support themselves and their family budget, thereby reducing poverty in the short-term.

Stephens, (2000) stated that in relation to education, girls from hardpressed households are more likely to sacrifice their education because they contribute more to household tasks even though the opportunity costs of educating girls is also higher than it is for boys. The evidence suggests that small-scale mining is seen as a lucrative employment among less educated rural women (Yakovleva, 2007).

Reardon (1997) argues that education and skills are important determinants of business start-ups and wages earned in non-farm jobs. These factors place women, structurally in a more disadvantaged position, since it is well established that school enrolment for females is lower than that of males.

2.4.4 Gender and Small-scale Mining

Knowledge about female participation in the small-scale mining is invaluable to facilitating regularization of the sector. This is because of the numerous opportunities the sector presents for thousands of poor women to secure non-farm incomes. Tallichet et al. (2004, p. 213) note that: ‘‘Women’s economic involvement in small-scale mining is growing, and the economic advantages (despite health and welfare disadvantages) would continue to propel their participation’’.

International Labour Organization (1999) estimates that about 13 million people are employed directly in the artisanal and small-scale mining sector worldwide. An additional 100 million people depended on it for their livelihoods. Averagely, females make up 50 percent of this workforce (ILO, 1999). The share of females in artisanal small-scale mining labourforce is 50 percent in Africa compared to between 10 and 20 percent in Latin America and 10 percent in Asia (Hinton et al., 2004). Hilson (2002a) has it that an estimated 74 percent and 50 percent of the artinsal small-scale mining labourforce Guinea and Madagascar, Mali and Zimbabwe are females. The greater share of female

participation in the sector is largely accounted for by the comparatively higher unemployment rates in Africa.

Gunson and Jian, (2001) notes that females participate in artisanal small-scale mining sector directly (i.e. primary engagement in mining operations) and indirect (i.e. servicing the mine sites). Heemskerk (2003, p. 63) provides a detailed description of the roles that women play in the sector: Women are panners, cooks, mining operators, night club entertainers, sex workers, and merchants, among other professions. Females are less likely compared to their male counterparts to occupy decision making positions, own concessions, daelers buying agents and equipment owners (Labonne, 1996; Susapu & Crispin, 2001; Hinton et al., 2004. The greater majority, therefore, occupy marginal positions while a few are managers of multiple mining teams. Even though females engage in panning, sluicing and separation of gold, the final stage of the separation of amalgamation and burning of the amalgam is the exlusive domain of males (Susapu & Crispin 2001).

Ultimately, females receive disproportionately lower financial rewards compared to males (Dreschler, 2001; Chakravorty, 2001). Apart from the unskilled nature of their work (exemplified in loading and transportation), females do not usually work underground (Chakravorty, 2001; Gunson & Jian, 2001; Hinton et al., 2004).

Several factors influence female participation in artisanal small-scale mining. Dreschler (2001) posits for Tanzania that the major contributory factors for female participation in the sector include bottlenecks with subsistence agriculture (low prices of agricultural commodities, effects of droughts on farmlands and lack of farmlands), unemployment, lack of trading commodities, high inflation rate, high birth rate and extended families.

Women, therefore, engage in the sector in order to support their families at the lowest cost despite the health, safety and environmental implications (Shen & Gunson, 2006).

In Ghana, Hilson (2001) observed that some 15 percent of the legalized segment of small–scale mining sector is female, and 50 percent of the galamsey population. He acknowledges the fact that the roles they play, their travails as well as their needs, have been neglected in poliy-making and research circles.

Amankwah and Anim-Sackey (2003) argue that cultural and economic factors militate against effective female participation in ASM. Some of the factors include limited access to credit, lack of education and technical knowledge, further inhibit women from fully engaging more effectively in the full spectrum of activities and processes of the mining business. Furthermore, family commitments and other cultural barriers weigh heavily women, hindering their independence and mobility to take the lead in small-scale mining ventures (Dreschler, 2001).

According to the findings of the Mining, Minerals and Sustainable Development (MMSD) Project, ‘‘although women play a central role in many small-scale mining operations, they have frequently been bypassed by Programs of assistance’’ (MMSD, 2002, p. 328). Here, gender mainstreaming is identified as key to facilitating an increased and equitable participation of women in ASM worldwide.

The literature exploring the relationship of gender and small-scale mining is descriptive. Also, there has not been much analytical studies on education and small-scale mining.

2.4.5 Small-scale Mining and the Environment

There is panoply of literature on the effects of small mining on the environment. Small scale mining affects the environment through the careless handling of mercury, clearing of

the forest and the pollution of water bodies (Hilson 2001, Mime Consult Ltd, 2002). Clausen et al (2011) posit that, ASM is a global economic phenomenon that is widespread especially in developing countries. It provides livelihoods for millions of people, yet is often primarily associated with environmental and social problems.

Offei-Aboagye et al. (2004) opines that mining companies impact negatively on the lives of people in affected communities. This impact manifests itself through environmental degradation, illnesses, and dangerous working conditions. The ecological footprint of especially surface mining consists of pollution of water bodies and the antendant impact on acquatic life, drying up of water bodies and air pollution. These deleterious impacts tend to affect residents in and around mining communities (Offei-Aboagye et al. 2004). Destruction of forest cover, farmlands, pollution of air and communities' drinking water are some of the ways that mining affects people negatively (Offei-Aboagye et al. 2004).

Aryee et al (2003) categorises environmental impacts of ASM activities in Ghana intothree. The first is damage involving the lithosphere or land. The authors note how destroy tracts of agricultural land and triggers soil erosion. Unplanned prospecting and application of rudimentary mineral extraction and processing techniques has caused widespread land degradation. The pits of some of the mines located in or very close to villages, pose major health and safety hazard.

The second category of environmental problems is associated with impacts upon the hydrosphere. Akabzaa (2000) reports of water courses that have been impaired as a result of excessive siltation and discharges of mercury (from gold amalgamation). In fact, a vast proportion of the literature such as NSR (1994), Ntibrey (2001) and Amegbey (1994), Bonzongo et al. (2003), and Bannerman et al. (2003) which profiles the environmental pollution induced by ASM activities in Ghana focuses mainly on aquatic-toxicological issues.

The third, and final, group comprises all impacts on atmosphere. This entails the release of mercury vapour into the admosphere. Mitigation measures have been attempted to minimize this pollution by educating miners and introducing mercury retorts at subsidized rates and sold at district centres. These measures have not been successful.

2.5 Definition of Concepts

With the focus of the research on entrepreneurship and poverty of the youth in small-scale mining, a clear definition of these concepts is presented below.

2.5.1 Social Capital

Social resources approach of the conceptualisation of social capital is one element that is of relevance to the study of entrepreneurial activities in small-scale mining. Owing largely to the dearth of information on the prospects of entrepreneurial opportunities for the youth in small-scale mining especially for the less educated youth, the youth are more likely to depend on their network of friends, family and acquaintance for such information. Also, small-scale miners tend to rely on their social relations for financial resources to start and or run their entrepreneurial pursuits. Getting financial support from formal institutions is a daunting task because of the informal nature of small-scale mining and the lack of collateral security. Another key resource in small-scale mining is land to carry out entrepreneurial activities. Added to these resources is the dependence of social capital in the form of friendship ties in small-scale mining as an economic and social risk minimisation strategy (Grätz 2004). All these resources are drawn upon by individuals in their entrepreneurial pursuits.

Bonding, bridging and linking social capital will be explored in relation to the diversity of social resources that result from them. Linking social capital will be analysed at the

settlement as well as micro level. This is necessary considering that some individuals may engage with institutions at the various levels.

Most studies explicitly or implicitly focusing on the concept of social capital either emphasise the focal actor's (or ego's) external relations or examine relational characteristics for collectives. This study focuses on both.

2.5.2 Entrepreneurship

There is consensus that entrepreneurship is good for economic growth (Kukoc & Reagan 2008; Acs et al. 2008; Mead and Liedholm 1998; Schumpeter 1934; Thurik et al. 2008; Naude 2008; Klapper & Delgado 2007; Klapper et al. 2010). However, the concept of entrepreneurship has been hotly debated by scholars and there is still no consensus on what exactly it is. Entrepreneurship is a multifaceted and heterogeneous activity (Kukoc & Reagan, 2008). One reason for the diversity of definitions/roles of entrepreneurship is the fact that entrepreneurship is studied 'in virtually all disciplines ranging from social anthropology to organizational theory to mathematical economics' (Henrekson 2007:717). Naude (2008) posits that from an economics perspective the entrepreneur is most often approached from an *occupational* definition, a *behavioral* definition, or an *outcomes* definition.

From the occupational definition, a person is said to be an entrepreneur if the person is self-employed based on a categorization of a person as unemployed, self-employed, or in wage employment. Because many of these entrepreneurs are not in self-employment by choice but by necessity, a distinction is often made in the measurement of entrepreneurship between necessity entrepreneurs, and opportunity entrepreneurs. The former is self-employed because of the lack of wage employment, while the latter is self-employed by choice, in order to exploit some perceived 'opportunity' (see the Global

Entrepreneurship Monitor, GEM) or to overcome regulations or avoid taxes. This has been described as 'evasive' entrepreneurship (Henrekson 2007; Coyne & Leeson 2004).

From the behavioural standpoint, the focus of the definition of entrepreneurship is on the particular attributes of the individual in the entrepreneurial process. Schumpeter (1934) equated entrepreneurship with the concept of innovation applied to a business context: "The entrepreneur is the innovator who implements change within markets through the carrying out of new combinations. The carrying out of new combinations can take several forms: 1) the introduction of a new good or quality thereof; 2) the introduction of a new method of production; 3) the opening of a new market; 4) the conquest of a new source of supply of new materials or parts; 5) the carrying out of the new organization of any industry" (Kukoc & Regan 2008 p.17).

Entrepreneurship can also be defined from the outcome perspective focusing on the outcomes that different types of entrepreneurship can have on the economy. This is based on the notion that not all forms of entrepreneurship are good for economic development. Based on this definition, Baumol (1990:895) posits that entrepreneurship can be productive, unproductive (e.g. rent-seeking), or even destructive (e.g. illegal activities). His conception of entrepreneurs is 'persons who are ingenious and creative in finding ways that add to their own wealth, power, and prestige' (1990:p.987).

Another dimension to the concept is whether entrepreneurship is a continuous or discontinuous process. According to Carland et al (1995), virtually all of the empirical investigations assume that entrepreneurship is a discontinuous function. Many authors (i.e. McClelland, 1961; Mancuso, 1975; Carland, Hoy, Boulton & Carland, 1984) discuss entrepreneurs contrasted against other groups. The assumption is that one either is, or is not, an entrepreneur: a dichotomous condition (Carland et al. 1995).

Entrepreneurship can also be conceptualized as a continuum. This perspective conceives of entrepreneurs as having entrepreneurial tendencies with different intensity (Carland et al 1995). Carland et al (1992) presented entrepreneurship as a continuous function which function is a personality trait or drive which is translated into a need to create or create and grow a business venture.

There is another dimension which categorises the definition of entrepreneurship as a personality trait or drive of an individual as against a process. Some researchers focus on the personality of the entrepreneur and decry the need to shift focus from the individual to the entrepreneurial process (Bygrave & Hofer 1991). However, others such as Gartner (1989) and Zimmer (1986) contend that pursuing an understanding of the personality of an entrepreneur will not be valuable since individual behavior is not consistent over time nor can personality traits predict behavior. Klapper et al (2010) and Hisrich et al (2008) definitions could fit into the entrepreneurial process definition. Klapper et al. (2010, p.3) defines entrepreneurship as 'The activities of an individual or group aimed at initiating economic activities in the formal sector under a legal form of business'. Similarly, according to Hisrich et al (2008) entrepreneurship is the process of creating something new with value by devoting the necessary time and effort, assuming the financial, psychic, and social risks, and receiving the resulting rewards of monetary and personal satisfaction and independence. The definition has four parts; one is that entrepreneurship involves creating something new of value; the second is that it requires the devotion of time and effort; the third is that it involves the rewards of an entrepreneur the most of which is independence followed by personal satisfaction.

In this study, entrepreneurship will denote self-employment, i.e. people who start and or manage their own business with or without employees. This definition coincides with that given by several authors (Hanson 2009, Langevang et al. 2015). This definition is

especially appropriate as entrepreneurs vary greatly in Sub-Saharan African context (Spring and McDade 1998). In the mining sector, they will include people engaged directly in mining and those who provide services to the miners, following Heemsherk (2004).

2.5.3 Small-scale mining

One major feature of small-scale mining is its variability in terms of definition. The concept has been defined by different countries using different parameters. Attempts have been made to use aspects such as the volume of production (Colombia), the amount of capital invested (Argentina and Thailand), the number of workers involved (Chile, Pakistan and United States), or the granting of mining title or ownership (Ghana, Zambia and Zimbabwe) (Avila 2003). It must be noted however that the definition is not as simple as it is presented by Avila in the case of Ghana. Granting of mining titles only differentiates formal and informal small-scale mining. Formal small-scale mining refers to registered mining of gold by an individual, a group of persons, a cooperative society or a company (Republic of Ghana, 2006). There is also informal small-scale mining which refers to unregistered mining of gold and other minerals by individuals or a group of persons. This is popularly known in Ghana as galamsey.

Small-scale mining in Ghana is defined as any operation which is based on a land plot measuring less than 25 acres. Other supplementary indicators that are occasionally used for classification purposes include manpower, equipment type and operating time. The Small-Scale Gold Mining Act, 1989 gives interpretation of small-scale gold mining operations as 'the mining of gold by a method not involving substantial expenditure by an individual or group of persons not exceeding nine in number or by a co-operative society made up of ten or more persons'. This interpretation seems to be in line with the Argentine criterion using investment capital.

Owing to the diverse nature of the sector some observers distinguish between artisanal and small-scale mining (e.g. Mwaipopo et al., 2004) with artisanal mining referring to the more rudimentary extraction practices. In this study, both are encompassed within the concept of small-scale mining, which we define as individual or collective labour-intensive mineral extraction, legal or illegal, with limited capital investments using basic tools, manual devices and/or simple portable equipment. Approximately two-thirds of Ghana's small-scale miners are engaged in the extraction of gold, and most of the remaining extract diamonds (Hilson, 2001).

2.5.4 Youth

Youth is a highly debated concept which varies historically and culturally, and also from one context to another. There are many different ways of defining youth including demographic (age), cultural (notions of adulthood), biological (attainment of puberty), social (attainment of maturity or marriage-ability) or economic (ability to sustain oneself) (Gough et al. 2013). Demographically, age is the central feature characterizing the youth. The assumption is that similarities among the age category are more significant than differences. Viewed as an age category, however, takes little cognizance of historical, cultural, social processes, social divisions and social context of the youth.

Youth, therefore is more usefully seen as a relational concept because it exists and has meaning largely in relation to the concept of adulthood. The concept of youth, as idealised and institutionalised (for example in education systems and welfare organisations in industrialised countries), supposes eventual arrival at the status of adulthood. If youth is a state of becoming, adulthood is the arrival. At the same time, youth is also not adult, a deficit of the adult state. This dimension of the concept of youth is evident in the positioning of young people as requiring guidance and expert attention (from professionals) to ensure that the process of becoming adult is conducted correctly.

As a result of the different social processes which affect the experiences of growing up, young people are differentiated not only by social divisions such gender, ethnicity/race but also geographical location. Conceptualisation of youth factoring these different experiences offers an appeal conceptually but is difficult to prosecute in a study such as this. Consequently, this study adopts the demographic or statistical conceptualisation of youth.

Additionally, the Youth Policy of Ghana has adopted the demographic criterion of defining youth by pegging the age limit to 15 and 35 (Government of Ghana/Ministry of Youth and Sports (2010). Further, anyone who is acknowledged by deed as identifying with and committed to youth development may be recognized as youth. The African Youth Charter uses the same age category. This thesis will therefore focus on young people within the 15-35 age range.

2.2.5 Poverty

Defining poverty is of critical importance as the academic literature is not agreed on a unique, commonly accepted definition. It means different things to different people at different points of time (Steiner, 2005). Most attempts for a definition are thus kept relatively open for subjective interpretation.

There has been a debate over whether poverty is objective or subjective. Over time, conceptualisations and measurements of poverty have evolved from a concern with subsistence, to a focus on basic needs, to the notion of relative poverty or deprivation. The notion of absolute or subsistence poverty defines poverty in relation to the minimal physical requirements of human beings, such as food, clothing and shelter. To be poor, from this perspective, is to lack the basic means to survive. The most common way of

measuring poverty thus understood, is to measure the number of people who fall below a specified level of income, usually called the poverty line, to get what is called a poverty headcount measure (Beall & Fox, 2009). Poverty lines can be calculated in a variety of ways. Some rely on income thresholds; others use a basket of consumption (the inability to purchase a pre-specified set of essential goods would classify an individual as poor); and still others on caloric intake (e.g. a daily intake of less than some predetermined number of calories would classify an individual as poor) (Beall and Fox, 2009).

This conceptualisation of poverty as absolute poverty has received several criticisms even though, according to Beall and Fox (2009), it is still relied upon for cross-national comparison. One criticism of the absolute poverty line is that the level of income or basket of goods reveal nothing of income distribution within a context or group (Beall & Fox, 2009). A corrective, therefore, was the notion of relative poverty, with a person understood to be in relative poverty when one's income falls below that of others in a particular country. It captures inequality and hence gives a clearer sense of relative deprivation. It has expanded the scope of poverty to look at social and political factors which are important in determining the experience of poverty. Sen (1999), for instance, views poverty as the deprivation of basic capabilities that allow people to live the kind of life they have reason to value.

The World Bank now accepts that poverty has many dimensions. The Bank, in a statement on poverty in 2000/2001 World Development Report titled "Attacking Poverty", identified four broad categories that together encompassed its conception of poverty. These categories are: 1) material deprivation; 2) low levels of education and health; 3) vulnerability and exposure to risk; and 4) voicelessness and powerlessness (World Bank 2001).

Similarly, the Development Assistance Committee (DAC) of the OECD defines poverty as "the inability of people to meet economic, social and other standards of well-being" (OECD 2001: 37). It distinguishes among five dimensions and two cross-cutting aspects, gender and environment. The economic dimension identifies poverty as insufficient income to meet certain basic needs. The human dimension focuses directly on the question of an individual's access to basic needs, such as education, health, and nutrition, without making specific reference to income. The political dimension refers to the deprivation of basic political and human rights, as well as limited influence on public policy-making. The socio-cultural dimension indicates social exclusion and a lack of dignity within or between communities, while the protective dimension implies vulnerability to social, economic or security-related shocks. Whilst this definition is a useful conceptual definition of poverty, it is difficult to operationalise in empirical research.

The conceptualisations, thus far, have concentrated on the objective view of poverty. There is the subjective view of poverty which involves a value judgement as to what constitutes a good quality of life or a bad one. Gandhi and Knight (2004) argue that an approach which examines the individual's own perception of well-being as a guide to forming that value judgement is less imperfect, or more quantifiable, or both, than other potential approaches. Townsend (1979) is one scholar who relied on the use of people's subjective understandings of poverty. Respondents were asked their opinions about how much income is necessary to maintain their household adequately and whether their present income meets, exceeds or falls short of that amount.

Considering the nature of small-scale mining undertaken by the youth, concentrating on the current status of the youth as poor or non-poor will not suffice. This thesis will go beyond that to look at vulnerability to poverty as somebody may not be poor today but

will be poor tomorrow, and vice versa. An asset index was therefore generated and used as a proxy for poverty.

2.6 Conceptual Framework

Entrepreneurship and Context

Much intellectual effort has been invested in researching the qualities of the entrepreneur. However, there has been recent stream of thought highlighting the importance of context in understanding entrepreneurship. Entrepreneurship, thus seen, is affected by the economic, social, institutional and cultural environment (Steyaert 2007). Context is vital for understanding when, how, and why entrepreneurship happens and who becomes involved (Welter 2011). Entrepreneurial activities are influenced by the socioeconomic environment and result ultimately in economic growth and human welfare (Carlsson 2013)

Macroeconomic conditions such as the state of employment, GDP and inflation, and interest rates tend to matter in entrepreneurial start-ups. Empirical analysis by Highfield and Smiley (1987) of start-ups in the United States of America over the period 1948 to 1984 found five significant factors affecting rates of incorporation as an indicator. They include real GNP growth, expenditure on equipment, the unemployment rate, interest rates and inflation.

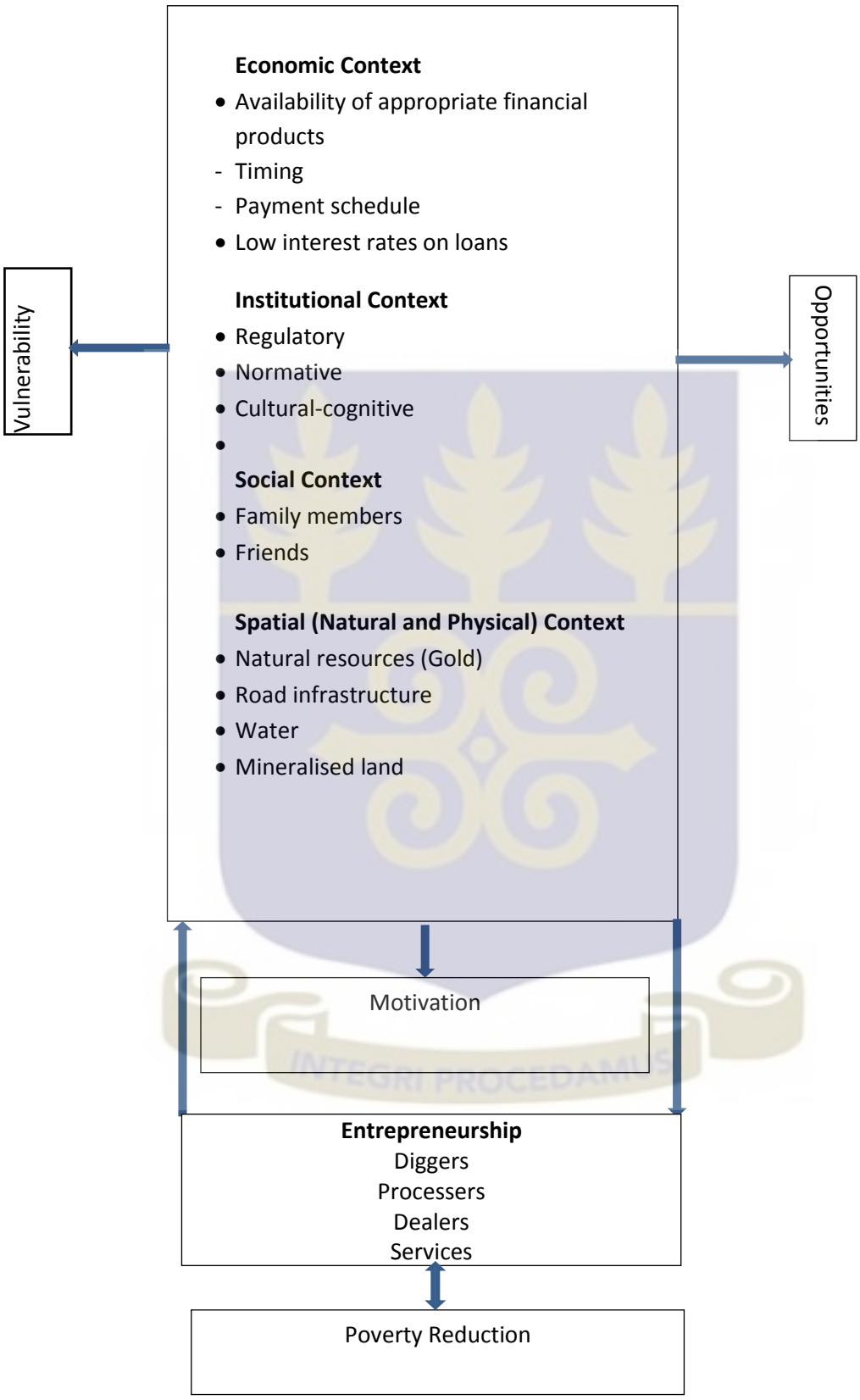
The social context in entrepreneurship research finds expression in social network approaches. Social network is a very important asset in opportunity identification and exploitation in the business context. Entrepreneurs, in order to exploit an opportunity, must be able to gain access to resources and information to facilitate the process. These resources are often obtained through a person's direct and indirect social ties (Aldrich, 1999). Also entrepreneurs with broader and more diverse social networks should have better access to financial resources, develop stronger ties to customers and suppliers, obtain more accurate information, and hire people with better skills than other

entrepreneurs (Brudel & Preisendorfer, 1998; Hansen & Allen, 1992) and consequently, their ventures will do better. Portes and Sensenbrenner (1993) are more specific in claiming that it is often by means of social capital that small-business entrepreneurs mobilise financial capital- through loans and investment tips from members of their ethnic subgroup, for example. Differential endowment/access of these assets will determine the capability of people to undertake particular entrepreneurial activities.

Another context that is very important in entrepreneurship research is the institutional context. The institutional context draws on the concept of formal and informal institutions (Welter 2011). Institutions are, according to Boettke and Coyne (2006), the formal and informal rules regulating behaviour and the enforcement of these rules. In spite of the critical role that institutions play in entrepreneurship, it was not until recently that economists begun to study its influence on entrepreneurial behaviour (Boettke & Coyne 2006; Amorós 2009). There has been a flourishing body of research on the institutional context of entrepreneurship (Reynolds et al. 1999; Amorós 2009). Scott (2001) identified three pillars of institutions upon which economic processes rest. They include regulatory, normative and cultural-cognitive institutions. Regulatory institutions are the legally enforced aspects of institutions such as policies, procedures, rules, and laws. They expand the opportunity field and simultaneously set boundaries for economic action (Scott 2001; Welter 2011; Langevang 2014). Normative institutions are more informal and denote 'normative rules that introduce prescriptive, evaluative, and obligatory dimension into social life' (Scott 2001, p54). The cultural-cognitive aspect of institutions, in contrast, is 'the shared conceptions that constitute the nature of social reality' (Scott 2001, p57). In entrepreneurship, it reflects the extent to which individuals believe that they have competencies to start/run businesses and the risk or fear they associate with entrepreneurship (Baughn et al. 2006; Amine & Staub 2009).

Thus, Reynold et al. (1999) suggests that entrepreneurial activity varies with the 'entrepreneurial framework conditions'. The framework conditions include specific policy and governmental programmes that enhance the entrepreneurship dynamics of a country. The institutions that are fashioned by government can influence the rate of entrepreneurship. Public policies can basically determine the entrepreneurial dynamics of a country or region by introducing specific entrepreneurship policies as well as by creating a general institutional structure conducive to entrepreneurship (Sobel et al. 2007). Also important in entrepreneurship is spatial context, which is largely ignored in entrepreneurship research. Variations in local policies create and set boundaries for entrepreneurship (Welter 2011). A changing (regional) structure of functions can have serious consequences, especially for people in positions that require few qualifications. Natural and physical capital, which are key assets in entrepreneurship, vary in space and, hence, present varying opportunities (see Figure 2.2). In the context of small-scale mining, natural capital is especially important, as the presence of mineral resources determine where the activity takes place.

Figure 2.2 Contextualising Entrepreneurship



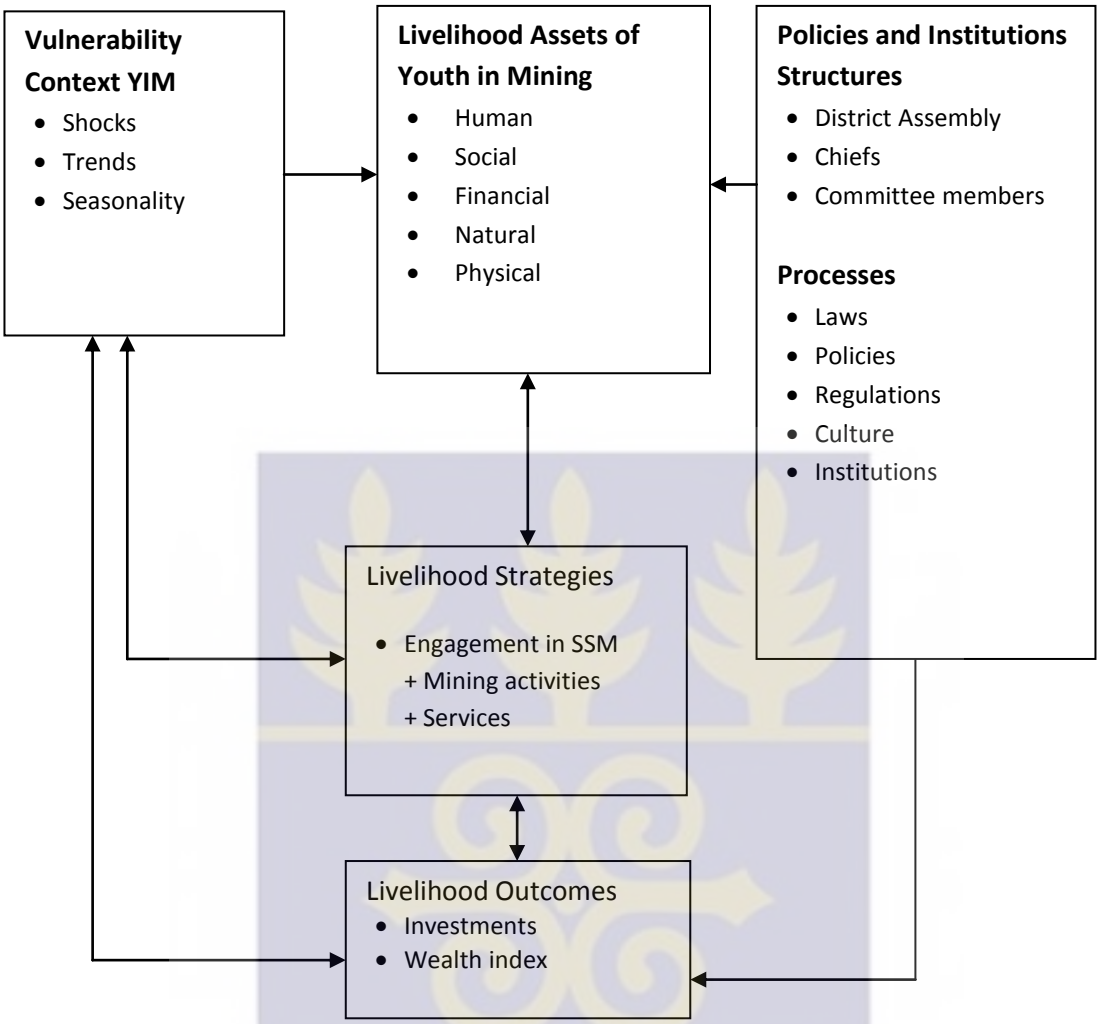
Source: Author's Construct based on review of the literature

Making a case for the Human Context

The entrepreneurial resources inherent in the various contexts above are not value-free. Economic agents value them differently based on their own training, experience and skills. Contextualising entrepreneurship is germane to an understanding of the different opportunities, financial, labour, and ideas that the youth draw on. These are resources because alert entrepreneurs make them resources and hence give effect to Zimmerman's (1951) statement that resources are not, they become. This calls for a probing into the entrepreneurs' own abilities, skills, training (formal and informal) and experience, which Welter (2011) and other authors making a case for contextualizing entrepreneurship either downplay or ignore. Context without personal traits in entrepreneurship will be incomplete. Educational achievement signals high human capital and is important as educated entrepreneurs find it easier to obtain credit, identify market niches and network better (Kim et al. 2006).

The livelihood framework is more inclusive as it considers human capital as important in the study of livelihoods and its outcomes (see Figure 2.3). Human capital represents the skills, knowledge and information, ability to labour and good health that together enable people to pursue different entrepreneurial opportunities. Education and health are very critical here as these have been found to influence the level of participation in mining. More important is mining related knowledge which sometimes comes with experience in the mining sector.

Figure 2.3 Livelihoods Framework



Source: Adapted from De Haan et al. 2002

The vulnerability context, livelihood assets and institutional context provide constraints and opportunities (Figure 2.4). Context is a double-edged sword as it provides individuals with entrepreneurial opportunities and also sets boundaries for their actions (Welter 2011). Context can thus be perceived as an asset or a liability to the entrepreneur. On the one hand, deficiencies in the institutional context, for instance, can create opportunities when entrepreneurs exploit inadequacies in regulations and rules (Welter 2011).

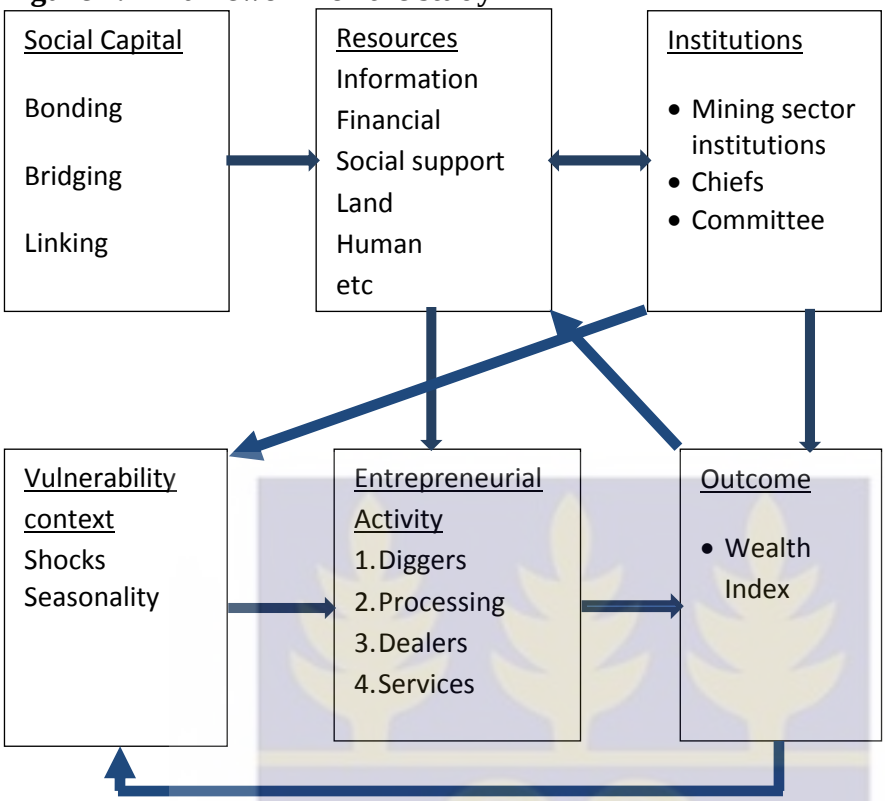
On the other hand, context, whether institutional, social, economic or spatial may be a constraint to segments of the population from engaging in certain entrepreneurial activities (Figure 2.4). In the economic context, Langevang and Gough (2012) reveal how

globalization and economic restructuring was affecting women hairdressers and seamstresses differently. Hairdressers benefitted from globalization due to the influx of products and exposure to styles whereas seamstresses suffered due to the importation of clothing (Langevang & Gough 2012).

Context, together with the human capital, influence entrepreneurs differently and may point to the type of entrepreneurial activities they can engage in (Figure 2.4). Entrepreneurial activities undertaken by youth in the mining communities are many. They include activities in mining (sponsors, pit owners, diggers, haulers, dealers, chanfan operators, etc) and services (catering, shop owners, mechanics, transport owners, etc). These have varying outcomes which the study will ascertain.

Thus, a complete discussion of the diversity of contexts of entrepreneurship is a step towards understanding the nature, richness and dynamics of entrepreneurship (Zahra 2007, Welter 2011) and serves to avoid sweeping generalisations (Hanson 2009, Langevang & Gough 2012).

Figure 2.4 Framework for the study



Source: Own compilation based on the concepts and theory

2.7 Summary

This chapter has reviewed academic literature pertaining to social capital, entrepreneurship and small-scale mining. Participants in the small-scale mining sector have generally been portrayed as survivalist entrepreneurs. Context is fundamental to youth entrepreneurship as it provides opportunities and simultaneously set boundaries. However, since context alone do not adequately explain entrepreneurship, other factors such as human capital or personality traits play a crucial role in any attempt at clarifying the dynamics of entrepreneurship in a sector such as small-scale mining. Consequently, a study on social capital, entrpreneurship, small-scale mining and poverty among young people becomes very important.

CHAPTER THREE

METHODOLOGICAL APPROACH

3.1 Introduction

In the light of the literature reviewed on small-scale mining, this chapter will describe the research approach used in the study. The thesis combined both quantitative and qualitative approaches. For the quantitative approach, the study used a survey technique to collect data from the youth in small-scale mining and related services. The qualitative techniques used included observations, focus group discussions, in-depth interviews, and life histories at various stages.

3.2 Philosophical Worldview

The philosophy underpinning this study is critical realism. It is the most appropriate for the study because of its emphasis on context, relations and causality. Critical realism is a philosophical position which emerged to address the shortcomings of empirical realism, which maintains that reality is only what we can observe (Dickens 1996). It takes the position that the 'the social world is reproduced and transformed in daily life (Bhasker 1989: 4). Social phenomena are therefore produced by mechanisms that are real, but not directly accessible to observation and are discernible only through their effects. Critical realism is also opposed to idealism which maintains that the world is only made known through, and is therefore constituted by, our ideas. Critical realism also offers an alternative to post-modernism because it transcends the ambiguity associated with postmodernism that stems from 'ontological exaggeration' of the role of language in determining reality (Bryman 2008). Critical realism occupies a middle position between positivism and postmodernism by claiming that an entity can exist independently of our knowledge of it, while also asserting that access to the social world is always mediated and thus subjective.

Unlike Bhasker (1975, 1989,), who made only epistemological and ontological contributions to critical realism, other contributors offered methodological insights. Sayer (1992) has made enormous methodological contributions to critical realism.

3.3 Methodological Approach

Methodologically, realists accept pluralism as a starting point. It refers to a pluralism of methods that enable the researcher to use different techniques to get access to different facets of the same social phenomenon. Hence, the study adopted a mixed methods approach, an approach to inquiry that combines or associates both qualitative and quantitative forms. The method has been criticised by a number of authors (Hughes 1990, Smith 1983, Smith & Heshusius 1986). Their central argument against mixed methods is that research methods are inextricably rooted in epistemological and ontological commitments. Smith and Heshusius (1986), for instance, criticise the integration of research strategies because it ignores the assumptions underlying research methods. The other argument against mixed methods conceives of quantitative and qualitative research as paradigms in which epistemological assumptions, values, and methods are inextricably intertwined and are incompatible between paradigms (Guba 1985, Morgan 1998). However, Bryman (2008) contends that the argument against mixed methods hinges on contentions about the interconnectedness of methods and epistemology in particular that cannot be demonstrated in the case of social research. Also Kuhn (1970) argued that it is not clear that quantitative and qualitative research are in fact paradigms and that there are areas of overlap and commonality between them.

The mixed methods approach is used for a number of reasons. First, it is clear from the conceptualisation of entrepreneurship that the concept is not as simple as utility maximizing and profit maximizing individual who is alert to profit opportunities, but a complex process that is embedded in and sensitive to cultural, political and social forces

(Steyaert 2007). Hence, Steyaert (2007) emphasizes the need to transcend methodological individualism that was imported into entrepreneurship studies from economics and psychology. This is necessary to shift the locus of analysis which focusses entirely on the entrepreneur to one which takes into consideration the contextual embeddedness of the entrepreneur.

3.4 Research Design

A cross-sectional design was adopted for this study. This is because it was the most suited considering the length of time available for the study. Even though cross-sectional research design is limited in inferring unambiguous causality, it gives results that associations can be inferred from. Since the context of the research sites was not familiar, the study conducted qualitative fieldwork in an explorative phase. This focused on understanding the context in which the object was situated. It informed the sampling method that was chosen and the kind and ways of structuring questions for the main fieldwork. The quantitative (or extensive) and qualitative (or intensive) data were then collected during the main fieldwork. The various stages are detailed below.

3.4.1 Explorative phase

Heemskerk (2005) outlines the difficulties with collecting data in small-scale mining communities. He argues that miners not only distrust outsiders because of their lack of confidence in the good intentions of the government and researchers but researchers may also face precarious conditions considering the fact that some miners use drugs, firearms, etc. Building a relationship of trust and endorsement by local community leaders is an imperative for researchers (Heemskerk 2005). The main fieldwork was therefore preceded by a reconnaissance of Kui and Kenyasi in 2010. The visit was to introduce the researcher to the local community leaders to explain the purpose of the research and to get their support. An in-depth interview was held with the secretary of the chief in Kui. He

provided a great deal of information, including the history of the settlement, the various methods involved in the small-scale mining process and the ethnic composition of the participants in the sector.

In the case of Kenyasi, the first visit also explored issues related to land ownership. The second visit in 2011 was to understand the miners' operations, which were a bit different from those of Kui. In-depth interviews were conducted with key informants and community leaders. Also, an in-depth interview was held with the on-site geologist at Newmont Ghana who provided insights into their operations and the geology of the concession. The interaction with the geologist included a tour to one of their pits.

The pre-fieldwork visits were relevant for a number of reasons. Firstly, it helped to foster relationships of trust. Secondly, using various qualitative approaches provided information on the structure and composition of the settlement and thereby helped with preparation for the main fieldwork. Thirdly, information from the qualitative fieldwork informed the sampling strategy. Fourthly, it helped close some of the questions in the survey instrument. Finally, community entry was made easier as community leaders already knew the researcher.

3.4.2 Quantitative data collection

The second phase relied on the use of quantitative approach in order to address all the research questions adequately. This phase started with a decision on the unit of analysis, followed by the sampling strategy adopted and how the sample size was determined. Finally, the instrument used to collect the data is discussed.

3.4.2.1 Unit of Analysis

Ellis (2000) argues that the household is the most suitable social unit to study when conducting research on people's livelihoods. As a result, most contemporary livelihood research uses the household as the unit of analysis (e.g. Ellis & Freeman, 2005; Fuwa, 2000; Knudsen, 2007; Shaffer, 1998). This is also the case for a number of studies on small-scale miners' livelihoods (e.g. Bryceson & Mwaipopo, 2009; Heemskerk, 2002, 2003; Kitula, 2006). However, whereas many smallholder farms are ran on the basis of the household, predominantly by family labour, this is only sometimes the case with regard to small-scale mining.

In mining settlements, groups of people eat and live under the same roof and may even be perceived to be households. However, such arrangements are markedly different from households understood as co-residential units, usually family-based, in which production, reproduction and consumption predominantly take place (e.g. De Vries, 1994; Ellis, 2000). Considering the thesis' focus on the miners, the individual has been selected as the unit of analysis. This is mainly because miners who have migrated from other areas to the mining settlements may not be able to provide information on other household members.

3.4.2.2 Sampling strategy and sample size

Following from Heemskerk (2003), the study defined a gold miner as anyone who works in the mining industry or its service economy. Thus, only self-employed young gold miners were targeted for interview. In Kenyasi, some of the miners stayed in Kenyasi No.1, Kenyasi No.2, Hwidiem, etc. A large number also stayed in the mining site itself. Residential-based sampling was therefore not possible. Hence, the selection criterion was activity-based. In Kenyasi, the youth in mining were contacted while at work. The entrepreneurs were identified by asking screening questions such as 'Are you working for yourself or you are being paid by somebody to work?' 'How old are you?' If respondent

was working for himself/herself or was paying people to work for him/her, the person was considered an entrepreneur. Additionally, the person should to be within the 15 to 35 age range. The entrepreneurs in direct mining were selected at their various pits locally known as "ghettos". The research team listed all the pits and all the youth who worked for themselves in those pits and miners to be interviewed were selected individually by ballot. The same screening questions were directed at the youth in other activities before lists of miners were drawn up.

Since Kui is a purely mining settlement, residential-based listing was employed to compile eligible entrepreneurs. Individuals were then selected by ballot irrespective of the entrepreneurial activity they were engaged in.

Following from Yamane (1967), the following formula was used to calculate the sample size.

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

where **n** is the sample size, **N** is the population size and **e** is the precision level. A 95% confidence level and, P = .5 (maximum variability) are assumed for the equation. Since the population of Kui was estimated to be 7000 (Hilson 2013) and Kenyasi to 10000 (Committee chairman, 2012), the study population was estimated to be 17000. Consequently, the $17000/1+17000\ (0.05)^2 = 400$

3.4.2.3 Survey Instrument

A structured questionnaire was used for the quantitative data collection. It contained both open-ended and close-ended questions. The open questions were to provide the respondents the opportunity to freely express themselves. The questionnaire had a number of sections based on the various themes of the research. The themes were: business activities including their sources of business capital, sources of business ideas,

competition; motivation of the youth; institutions governing the operations of the youth; and poverty issues. The last section was on the background characteristics of the youth (see Appendix 1). Each questionnaire took averagely thirty minutes to administer.

Four peer interviewers were recruited to collect the data. They were university graduates who were proficient in the major languages in the two regions. They were taken through the survey instrument for three days. Pretesting was done at Yamfo in the Brong Ahafo region which had similar characteristics with Kenyasi No.2 to enable interviewers to familiarise themselves with the instrument, to see where they fell short with regards to translation into the local languages, and to clearly specify how interviewers were to select and introduce the study to the respondents.

3.4.3 Qualitative data collection

The study also employed the use of qualitative data collection techniques after the quantitative phase. The first qualitative method used was focus group discussion. According to Goss and Leinbach (1996: 115), focus group discussions can be useful "in eliciting histories of community and collective experiences, or in gaining insight into the shared concerns of a community". A total of ten focus group discussions were conducted for the study. The main objective was to examine young people's work history and experiences leading to their decision to migrate to the mining settlement and learn more about their motivations, businesses and experiences. It was also to interrogate further the institutions governing their businesses and behaviour and understandings of the concept of poverty. Each focus group discussion lasted approximately one hour. Each focus group had 5 to 10 participants who were youth and involved, among others, in digging, processing and services. In Kenyasi No.2, two of the five focus group discussions were held with females who were in the service sector. Similarly, two of the five focus group discussions in Kui, were with females but the participants were into service provision and

headporterage. This was important because issues relating to their work could also be discussed.

In-depth interviews were held with the youth in various categories of entrepreneurial activities. Ten in-depth interviews were conducted in each settlement. Some of the respondents to the main questionnaire were selected for in-depth interview if they were prepared to go further with experience of doing business in small-scale mining. Each interview lasted about half an hour. In-depth interviews allowed the entrepreneur to describe what they do, how, why, when and where (Gilmore & Carson 2007). The interviews explored in-depth, the entrepreneurial motivation of the respondents and how these motivations had developed over time. The interviews explored people's work history and the experiences that led to their decision to migrate to the mining settlement. It was to also know more about their businesses and understandings of poverty which could not have been adequately captured using structured questionnaires.

Additionally, personal observation was employed at this stage. Personal observation focussed on their living conditions and how the youth practiced their various entrepreneurial activities. The researcher stayed in the field for the period and that enabled the researcher to observe a lot of things that would have eluded any researcher staying elsewhere. Also, the researcher staying in the field, along with previous visits made earlier, helped to establish a relationship of trust with the operators.

3.5 Data Analytical Techniques

The study employed both quantitative and qualitative analytical techniques to analyse the data that were collected quantitatively and qualitatively. The quantitative analytical techniques are discussed before the presentation of qualitative analytical techniques.

3.5.1 Quantitative Analytical Measures

Dependent variables

Work type was the first dependent variable. It was captured as an open-ended question. This allowed the respondents to indicate exactly what they were doing. Work type was categorised into a polytomous variable: '**diggers**', consisting of 'chiselers', 'haulers', 'blastmen', 'pit owners'; **processing**; **'dealers'**, consisting of 'buyers', 'sponsors'; and those into '**services**' consisting of catering, transportation, etc. This was informed partly by the organizational structure proposed by Bryceson and Jonnson (2010). In their organizational structure, claim owners form the apex of the organizational structure, pit holders follow before diggers. Processors form the base of their organizational structure. Since the conceptualisation of entrepreneurship included those who provided services to the miners, 'services' has been added as a category.

The second dependent variable was an asset index. Since poverty is central to this study, how it is measured is of paramount importance. In the literature, it has been measured in a number of ways, including money-metric and non-money-metric measures. The two money-metric indicators normally used by researchers are income and consumption expenditure. There are a variety of difficulties with measuring income in developing countries due to the seasonal variability of earnings and large shares of income from self-employment in agriculture and outside agriculture (Sahn & Stifel, 2003). Also households in developing countries tend to be reluctant to declare their incomes or tend to underestimate them (Deaton, 1997; Ghana Statistical Service 2005).

As a result of these difficulties, researchers have employed consumption-based indicators to measure poverty. Consumption expenditure tends to capture other inputs such as credit, savings, and other informal insurance, which enter the household utility function (Ravallion, 1997; Deaton 1997). That apart, households are more willing to proffer

information on their expenditure than on their income, even though attention should be paid to issues of understatement or overstatement (Deaton 1997; Ghana Statistical Service 2005). Expenditure-based measures have also been criticised as being expensive and time consuming to collect (Schreiner & Woller 2010). Another problem relates to how households or individuals who consume home-produced items should be valued. As markets are not well developed in much of the developing countries, a choice is often to be made between buying and selling prices.

Both income and consumption based indicators fail to measure consumption of public goods and services which contribute to household utility. Both indicators also are confronted with the problem of recall owing to the fact that most people do not track their incomes or consumption expenditures. In the case of small-scale mining, another problem will be variability in production and or income from mining.

An asset index was employed to measure poverty among the youth in small scale mining (see Appendix 2 for variables used for the index). An asset index is a composite measure of, typically, indicators of ownership of consumer durables, housing characteristics, and access to public services (Howe 2009). An asset index has been used as an indicator of living standards in many studies (Montgomery et al 2000; Morris et al 2000; Filmer & Pritchett 2001; Case et al 2004). The indicator uses data on selected assets, such as durable and semi-durable goods of everyday use, to describe welfare. The index involves the selection of weights for each asset. This requires collection of data on the quality and quantity and/or prices of all assets. To avoid this complication, Filmer and Pritchett (2001) employ principal component analysis (PCA) to construct an asset index. The weights for their indices are the standardised first principal component of the variance-covariance matrix of the observed assets. PCA was used as against factor analysis because

the variables used in the construction of the index were binary and PCA is well suited for binary variables.

The wealth index was constructed using the following process. An indicator matrix of ones and zero was constructed to show the asset ownership of each household. Since individuals were displayed as rows, each asset was represented by the inclusion of a column for each possible (mutually exclusive and exhaustive) ownership category of that asset. In other words, each categorical asset ownership variable was reduced to a set of binary indicators. In this way, every individual will indicate a ‘‘1’’ in exactly one of each asset’s set of columns or categories, and a ‘‘0’’ in all other columns. The PCA was applied to the indicator matrix, which provided a set of category-weights from the first dimension or factorial axis of the analysis results. An individual’s PCA composite indicator score was calculated by adding up the weighted responses. The calculation of the individual’s asset index score can be represented as follows:

$$PCA_i = G_{i1}K_1 + G_{i2}K_2 + G_{i3}K_3 + \ldots + G_{ij}K_j + \ldots + G_{ij}K_j$$

where PCA_i, is the ith individual’s composite wealth indicator score, G_{ij} is the response of individual *i* to category *j* , and K_j is the PCA weight for the first dimension applied to category *j*.

PCA estimates a weight for each initial indicator variable, and these estimated weights form the basis for computing the wealth index. The PCA weights are the category loadings in the first principal component arising from PCA (unrotated principal component analysis), and these category-weights are then applied to the normalized responses of the household. A household’s score is the sum of its weighted normalized responses. This score serves as a relative measure of wealth for that household, relative to all the households used in the calculation of the weights. The weights reflect the

possibility that a household that owns one specific asset also owns one of the other assets in the analysis. For example, an asset which is expensive to purchase is likely to have a high indicator weight, because if a household can afford that specific asset it is likely that it can also afford cheaper assets. The index was further categorized into quintiles. The wealth index was split into wealth quintiles and related with socio-economic and demographic variables of respondents. It was however used as a continuous variable in the linear regression as a dependent variable.

The advantages of an asset index over the income and consumption expenditure indicators are that assets in poor countries are fewer and easier to measure and the types of assets are less likely to be subject to reporting bias. In the context of small-scale mining, the asset-based measure is more attractive since the youth in small-scale mining are more likely to recall their assets rather than their incomes or consumption. In view of the generally high levels of illiteracy and poor record keeping in the mining areas, a measure that relied on incomes or consumption expenditure would have come with measurement errors. Furthermore, earnings of small-scale miners vary thereby compounding the situation. However, asset indices, compared to income and expenditure, are generally slow-moving and are likely to reflect increases in income than capture decreases in income (Booysen 2008)

Social Capital

Social capital has been captured in the literature at different levels. It has been captured at the individual, group, institutional and state levels. This study measured social capital at the individual level. At the individual level, Macinko and Starfield (2001) further categorise the measure into individual attitudes and individual behaviours. Measures of individual attitudes in the literature include: expectation of reciprocity, interpersonal trust,

sense of collective efficacy/optimism, trust in institutions, etc. Measures of individual behaviours include participation in social networks, use of neighbourhood facilities, and willingness to discuss problems with neighbours. Following from Veenstra (2005), participation/membership of social networks/voluntary associations was used as a measure of social capital. The reason for this measure is that it was easier to measure in a small-scale mining context.

Education

Education is measured using the highest degree achieved and or attempted by the individual. Even though the categories were many, an elaborate categorisation was superfluous for the purposes of regression analysis. Four categories were therefore used: '1' No education, '2' Primary, '3' Junior High School and '4' Senior High School and higher. These categories are based on attendance of the level, not completion. For example, a miner will be classified as attending "primary" if the miner dropped out at primary four.

Motivation

In view of the fact that some people have more than one reason or motivation for starting business, motivation was captured as a multiple response variable. This was necessary to capture the multiplicity of motivations for starting business. The motivations were later categorised into necessity and opportunity motives. All those who answered 'unemployment' or 'no opportunities for work' were categorised as necessity motives while 'need to be own boss', 'need for achievement', 'financial progress', 'dissatisfied with previous job', 'take advantage of a business opportunity', and 'have a job but seek better opportunity' were classified as opportunity-driven motivations

Multinomial probit regression

Multinomial probit regression was employed to examine the factors that influence the type of entrepreneurial activities that the youth in small-scale interviewed engaged in. The model was chosen over other models because the dependent variable was categorical and, unordered. Multinomial logit model could have also been used but the advantage of multinomial probit over the multinomial logit model is that it allows for different degrees of randomness of the utilities assigned to the choice alternatives. It also accounts for the interdependences among the choice alternatives (Daganzo 1979). Lastly, Multinomial probit model can accommodate reasonable assumptions about subjects' preference structures (Hausman & Wise 1978).

General Specification of the Probit Model.

The general specification of the probit model is as follows;

$\Pr[Y_i = h|x_{1,i},\ldots..,x_{k,i}] = p_{i,h,}$ for i = 1,....,n,

Latent variable model

$Y_i^{1*}=\beta_1 \cdot X_i+\varepsilon_{1,}$ $Y_i^{2*}=\beta_2 \cdot X_i+\varepsilon_{2,}$ $Y_i^{3*}=\beta_3 \cdot X_i+\varepsilon_{3,}$ $Y_i^{4*}=\beta_4 \cdot X_i+\varepsilon_4$

Where $\varepsilon \sim N(0,\Sigma)$

Then

$$Y_i = \begin{cases} 1 \text{ if } Y_i^{1*} > Y_i^{2*}, Y_i^{3*}, Y_i^{4*} \\ 2 \text{ if } Y_i^{2*} > Y_i^{1*}, Y_i^{3*}, Y_i^{4*} \\ 3 \text{ if } Y_i^{3*} > Y_i^{1*}, Y_i^{2*}, Y_i^{4*} \\ 4 \text{ if } Y_i^{4*} > Y_i^{1*}, Y_i^{2*}, Y_i^{3*} \end{cases}$$

That is,

$Y_i = arg_{h=1}^{4} \max Y_i^{h*}$

The explanatory variables for the model are presented in Tables 3.1.

Table 3.1 Selected explanatory variables for the multinomial probit model

Variable	*Symbol*	*Expected sign*	*Supporting literature*
Age	a_1	Positive	
Male	a_2	Positive	Heemsherk 2002, Hentschel et al. 2003,
Female	a_2	Negative	Heemsherk 2000, 2002, Hilson 2002, Werthmann 2009, Hentschel et al (2003)
No Education	a_3	Negative	
Primary	a_4	Positive	
JHS	a_5	Positive	
SHS +	a_6	Positive	
Necessity	a_7	Negative	
Encountered shock	a_8	Negative	
Migrant	a_9	Negative	
Mining experience	a_{10}	Positive	
Christian	a_{11}	Positive	
Islam	a_{12}	Positive	
Traditional religion	a_{13}	Positive	

Source: Authors compilation from the literature.

Linear Multiple Regression

Finally, at the empirical level, the outcome of activities at the actual level was analysed. A wealth index was constructed and used as a dependent variable. The explanatory variables used for the linear multiple regression and their expected signs and supporting literature are displayed in Table 3.2.

The multiple linear regression model is specified as

$$Y_i=B_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+\beta_8X_8+\beta_9X_9+\beta_{10}X_{10}+\beta_{11}X_{11}+\beta_{12}X_{12}+\beta_{13}X_{13}+\beta_{14}X_{14}+\beta_{15}X_{15}+\mathcal{E}$$

where Y is the dependent variable, and Xs are the independent variables in Table 3.2. β = measures a change in the dependent variable (Y_i) as a result of a unit change in the covariant (X) and $\mathcal{E}$ is the error term.

Table 3.2 Selected Explanatory Variables for the Linear Multiple Regression

Variables	Symbol	Expected sign	Supporting literature
Male (compared to females)	a_1	Negative	Hentschel et al (2003),
Membership of Associations			
Informal savings & credit scheme	a_2		
Asutifi North	a_3		
Work experience	a_4	Positive	Jønsson, J. B., & Bryceson, D. F. (2009).
Work type (Digging as reference)			
Processing	a_5		
Dealers	α_6		
Services	α_7		
Encountered shock	α_8		
Educational Status (No education as reference)		Positive	Kyereme & Thorbecke (1991), Yakovleva (2007)
Primary	α_9		Yakovleva (2007)
Junior High School	α_{10}	Positive	Gyimah-Brempong et al. (2006), Girma and Kedir (2005)
Secondary or higher	α_{11}	Positive	Gyimah-Brempong et al. (2006), Girma and Kedir (2005)
Youth who did not experience shock interacted with migrants	α_{12}		
You who experienced shock interacted with indigene	α_{13}		
Number of children	a_{14}		
Dagao	a_{15}		

Source: Authors compilation from the literature

3.5.2 Analysis of Qualitative Data

All recordings of in-depth interviews and focus group discussions were transcribed verbatim. Themes came from the transcribed data after reading it cold. The themes were derived mainly from repetitions or the more a concept occured in the text. The indigenous typologies in the literature and metaphors and analogies observed in the data also helped to generate themes for the analysis. Manual coding was conducted based on these themes. In totality, thematic content analysis was conducted for all qualitative data collected from the f ield.

3.6 Summary

This chapter sought to outline the philosophical worldview and methodological approach used in addressing the research problem. The study adopted a critical realist approach because of its emphasis on context, relations and causality which are foundational for the study of the youth entrepreneurship in small-scale mining. Quantitative and qualitative data were collected in order to answer all the research questions and for the purpose of complimentarity. Hence, the questionnaire survey was complemented with focus group discussions and indepth interviews. Multinomial probit regression was employed to analyse the various entrepreneurial activities in small-scale mining that the youth were engaged in. The process of constructing an asset index and its use in a linear multiple regression, was also discussed in the chapter. Finally, the variables used in the regressions were presented. The chapter that follows discusses the political, economic, historical and institutional context of mining.

CHAPTER FOUR

DEVELOPMENT OF THE SMALL-SCALE MINING SECTOR IN GHANA

4.1 Introduction

In order to understand the young entrepreneurs' experiences, motivations, decisions and actions necessarily entail an understanding of their larger social, political, economic, cultural etc context. This chapter seeks to contextualise the study by examining the political economy of Ghana as it relates to small scale mining and employment of the youth. It will proceed by reviewing the major sectors of the economy namely agricultural, industrial and service sectors. It will be followed by a discussion of the political economy of mining from the colonial era to independence, post independence to early eighties, and finally, early eighties till present. This is because developments in the mining sector have been closely linked to the development thinking and strategies pursued over the period. This will be followed by mining sector institutions that help to regulate the sector.

4.2 Political Economy of Ghana

Ghana at independence had an impressive economic outlook. Not only was it one of the most affluent and proficient countries with one of the highest per capita incomes, it also played an integral role in global trade of several crops and metals (Drafor et al., 2000). Ghana was the world's leading producer of cocoa. The CPP government which ruled from independence, embarked on a policy of import-substitution partly as a backlash to colonial policies and partly conforming to the economic development thinking at the time (Fosu & Aryeetey 2008 p49). This policy yielded dividends initially. However, starting from 1964, the GDP growth trended downwards and actually registered a negative growth at the time

of the coup d'état in 1966. Not only did Ghana register three years of zero or negative growth in per capita GDP between 1964 and 1966, inflation also witnessed an upward trend from 1 percent in 1957 to 23 percent in 1965 (Frimpong-Ansah, 1991).

As a result of the economic challenges and its concomitant fall in welfare, the Nkrumah's led CPP government was overthrown by the military in 1966. There was an ideological change from 'socialist' to pro-private capital policies (Fosu & Aryeetey 2008 p49). Efforts at stabilising the macroeconomy through disinflationary policies under the NLC culminated in an increase in GDP growth from -4.3 percent in 1965 to 6 percent by 1969 and averaged 7.0 percent during 1969-71 (Killick 1978). Inflation also reduced from 22.7 percent in 1965 to 6.5 percent by 1969, and 3.0 percent by 1970 (Frimpong-Ansah, 1991). This was not to be sustained leading to reduced growth and increasing fiscal and current account deficits in 1972 (Frimpong-Ansah, 1991). The Busia government was thus overthrown in January 1972.

The period between 1974 and 1983 recorded the most significant decline in GDP. The lowest growth of -12 percent occurred in 1975. It coincided with 'oil-supply shock, as well as a policy reversal from market-oriented stance to an inward-looking protectionist regime'. The policies included import substitution, restrictive foreign exchange regime, quantitative restrictions on imports and price controls (Fosu & Aryeetey, 2008 p38). Additionally, the major pillars of the economy-cocoa, mineral and timber production- was on the decline. Mineral exports declined from an index value of 100 in 1975 to 46 by 1983 (World Bank, 1987 cited in Aryeetey & Kanbur, 2008 p50). The other contributory factors to the unimpressive performance of the economy included severe droughts in 1975-77 and 1983, massive migration from the rural areas and outmigration of more than two million Ghanaians in search of greener pastures in Nigeria. The deteriorating economic conditions

was the pretext on which Flt Lt Jerry John Rawlings staged a coup d'état in December 1981.

According to Fosu and Aryeetey (2008 p51), faced with a 'combination of severe Sahelian drought, sporadic bushfires, the flight of capital from the country, and a continuing miserable performance of the economy' and mass repatriation of over one million Ghanaians from Nigeria, the regime turned to the World Bank for help. Since April 1983, the Government of Ghana has been implementing SAPs. The World Bank and IMF crafted and imposed the SAPs on developing countries as a precondition for debt relief, acquiring new loans, as well as attracting foreign investment (Watkins, 1995; Oxfam 1999). The Structural Adjustment Programmes were preceded by Economic Recovery Programmes (ERP) aimed at stabilising the economy. Under the ERPs, a series of reforms were initiated. Some of the major ones include (i) trade policy reforms to achieve openness, (ii) support to the industrial sector development and (iii) support to agricultural sector development.

In view of the balance-of-payment problems that prevailed in the late 1970s and early 1980s, one of the primary objectives of the ERP was that Ghana should attain a viable balance-of-payment position in the medium to long term. Emphasis was thus placed on increasing outputs and exports to stabilise the export sector (Fosu & Aryeetey 2008, Kraus 1991 p3). In 1986, the second phase of the ERP was supplemented with structural adjustment programmes (SAPs) with the aim of correcting a number of structural imbalances in order to engender sustained economic growth. The country as part of the structural adjustment programmes devalued the cedi, downsized the public service, privatised public enterprises and cut back on government expenditure on education, health, housing, welfare, agriculture among others. Various sectors were liberalised. Exchange rate policy, fiscal policy and trade policies all saw changes. A series of reforms

were implemented in the mining sector. The result of these reforms has been a marked improvement in performance of the economy compared to pre-1980s. GDP growth since 1983 has averaged 5 percent per annum. According to Booth et al. (2004), economic liberalisation in the 1980s and political liberalisation in the 1990s are the key factors behind the fairly decent growth performance.

4.3 Structure of the economy

Agricultural sector

The agricultural sector continues to play a pivotal role in sustainable development and poverty reduction in Ghana. The sector still employs the greater majority of the labour force. It employed 61.1 percent of the labour force at the start of the reforms in 1984. This percentage increased slightly to 62.2 in 1991/92 before reducing to over the years. The sector lost 7 percent of its employment share between 1991 and 2006 (Ackah et al 2012). Similarly, the sector's contribution to GDP has been on the decline from an average of 47.1 percent in 1985-89 to about 41 percent the late 1990s. The sector's contribution to GDP further shrunk to 36 percent in 2010.

Foreign exchange earnings from agriculture rose from US$ 1,549 million in 2007 to US$ 1,992 million in 2008 and further to US$ 2,197 million in 2009. The major contributors to agricultural foreign exchange earnings are cocoa (84.9%), timber (8.2%) and non-traditional agricultural exports (6.9%) in 2009. These are limited to the southern part of the country except for one of the non-traditional export (shea nuts) which is dominantly found in the northern parts of the country. The northern part where Kui is located is generally constraint in its production of export crops. Hence, its heavily dependent agricultural population produces on a subsistence level and to a lesser extent the domestic market.

There are inherent problems in the agriculture sector making it lose its attractiveness to, especially the youth. The sector continues to be heavily dependent on the vagaries of the weather and the much touted modernisation of the sector is yet to be realised. Structural adjustment programme has been affecting farmers in Ghana since its implementation. In the first place, as a result of the implementation of structural adjustment programmes, subsidies on inputs like fertilizer, free extension service, irrigation support scheme were dismantled.

The international trade agreements which facilitated liberalisation in the process of globalisation rendered a number of farmers economically paralyzed. It became cheaper to import rice, chicken and other agriculture products which Ghana exported previously for two main reasons: the removal of subsidies in the form of free extension services, irrigation support schemes and inputs, and the lack of support to rice farmers in raising credit; second, the removal of tariffs on imported rice which is already subsidized by their source countries (UNDP 2007).

Imported rice was also perceived to be of higher quality. Many rice farmers could not get market for their produce and hence halted production. According to the 2007 Human Development Report, about 500,000 rice farmers were out of production (UNDP 2007). Due to the implementation of the African Growth and Opportunity Act, about 50,000 cotton farmers and their families have similarly lost their source of livelihood. About 100,000 fishermen lost their livelihood due to the signing of UN conventions by the state and poaching by fleets from advanced countries.

In view of the high association of poverty with food crop farmers, it is unsurprising that the three northern regions, which have been predominantly in food crop production, have not registered significant reduction in poverty compared to the rest of the country.

Industry

The other major sector within the Ghanaian economy is the industrial sector. The industrial sector consists of mining and quarrying, manufacturing, electricity and water, and construction. Industry's contribution to employment has increased consistently since 1984. Industry's share of employment increased by 2.5 percentage points from 12.9 to 15.5 percent between 1984 and 2000 respectively. The sector's contribution to GDP increased marginally from 26.6 percent in the second half of the 1980s to 28.3 percent in 2010. Growth performance of the manufacturing subsector between 1983 and 1990 was impressive and was attributed to the foreign exchange reforms. This labour-absorbing sector faced myriad of challenges from 1990s with consistent supply of power, cost of credit, and competition from external sources culminating in its consistent reduction in contribution to GDP. According to the United Nations Economic Commission for Africa (1997), wholesale trade liberalisation results, among others, in the flooding of local markets with all sorts of foreign goods, killing many local manufacturing industries which found it more profitable and lucrative to import than to produce locally. The mining and construction subsectors have been the main drivers of industrial growth

Services

The service sector is constituted by transport, storage and communication; wholesale and retail trade, restaurants and hotels; finance, insurance, real estate and business, government services; community, social and personal services; and producers of private non-profit services. The percentage of the labour force deriving their livelihoods from the service sector increased from 25 percent in 1984 to 31.5 percent in 2000. From the second half of 1980s, the service sector has consistently increased its share of GDP from 26.3 percent to 36.1 percent in 2010. It actually overtook agriculture as the largest contributor

to GDP in 2010. Apart from government services, the subsector that contributes the next highest is wholesale and retail trade, restaurants and hotels.

The private sector which is touted as the engine of growth and one that employs a considerable percentage of Ghanaians is faced with problems. The 2005 Annual Progress Report of the National Development Planning Commission outlined some of the structural problems with the private sector as: lack of access to finance, especially for women; falling but still fairly high interest rates; commercial dispute resolution system; insecurity and vulnerability in the informal sector where the youth and women dominate; weak linkages between the informal sector and the formal sector; and weak institutional and regulatory framework for supporting the small business sector (NDPC, March 2006). Others are weak and unreliable infrastructural facilities confronting the growth of SMEs to absorb the excess youth labour in the country; and the limited skills and experience among the youth.

The policy of mopping up of excess liquidity within the economy with attendant high yield rate on treasury bills and bonds provides a risk free abode of investment for entrepreneurs who even prefer to close down their companies and invest their working capital in treasury bills and bonds. Between 1992 and 1996 over 112 companies closed down operations (Dordonu and Sackey 1997).

4.4 Historical development of the mining sector

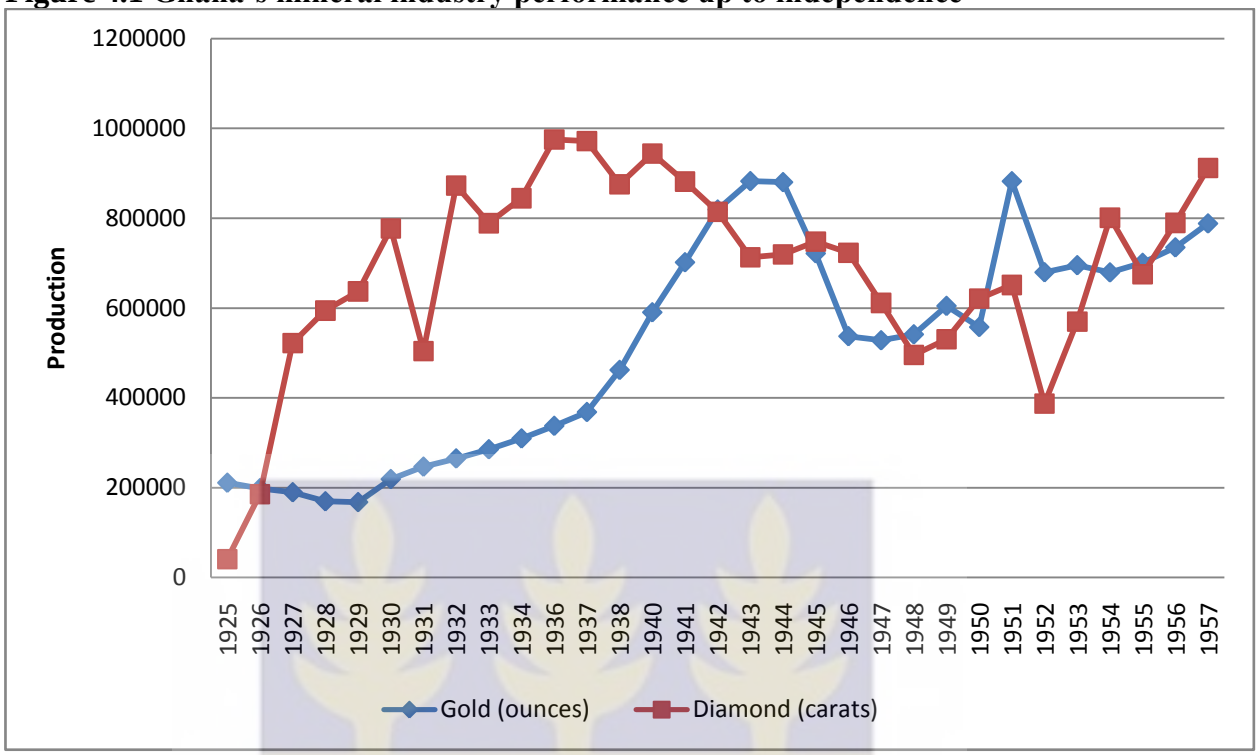
This section discusses the developments in the mining sector. It traces the policies and contribution of the sector in the colonial, post-independence to the period just before the reforms in 1986, and after the reforms till date.

4.4.1 Colonial era

In the colonial era, mining was intricately linked to British interest. This interest significantly influenced the formulation and implementation of mineral policy (Tsikata 1997). The thrust of policy in the sector was geared toward establishing a legal and administrative framework that would facilitate mining operations, and ensuring the self-sufficiency of the British Empire.

The total production up to 1934 was about 30 million fine ounces of gold representing 2.7 percent of worldwide production (Bird 1994). The sector also suffered depressed production in the two world wars. Labour scarcity attributed to the world wars, booming cocoa and construction industries, the emergence of manganese and diamond mines and Ghanaians' preference to work their small mines contributed to the depressed gold production in 1918-1929 (Akabzaa & Darimani 2001). In order to guarantee labour supply, the Colonial Office passed the Mercury Ordinance of 1932 making it illegal for Ghanaians to use mercury for mining. This move effectively edged out indigenous, small-scale gold mining before the reforms in 1989. The Mercury Ordinance yielded good results as labour was freed for the large-scale mining sector, hence increasing mine output between 1933 and 1942. Owing largely to the emergence of major new producing countries and the struggle for independence and the attendant political risk and investor disquiet, Ghana's share of world production dwindled from 1943 to 1954 as the figure 4 clearly reveals.

Figure 4.1 Ghana's mineral industry performance up to independence



Source: Akabzaa & Darimani (2001)

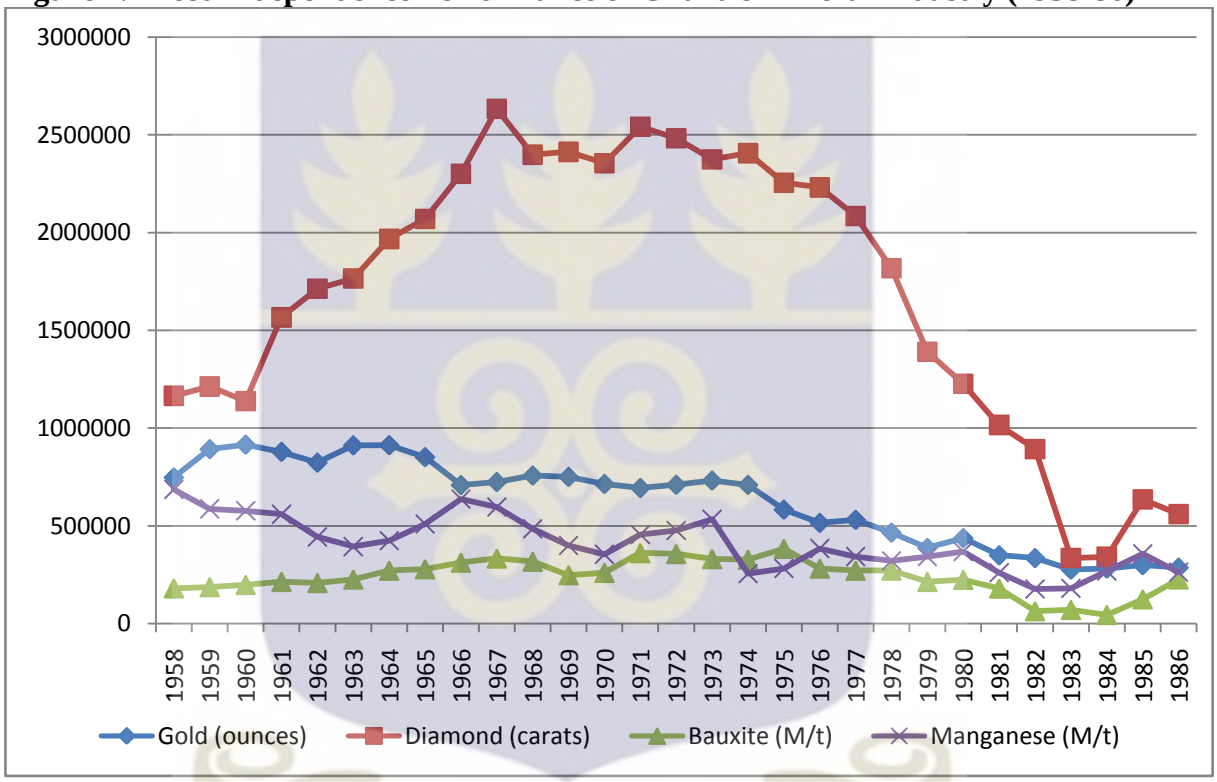
4.4.2 Post-independence to pre-SAPS

At independence, the state took a controlling interest in the mining industry as was the case with other sectors of the economy. During the 1960s, it had purchased all equity shares of mines threatening to close, and had subsequently established the Ghana State Mining Corporation and obtained shares in Ashanti Goldfields, the country's largest gold producer at the time. By 1961, all mines, with the exception of those based in Obuasi and Konongo, had been nationalized (Konongo was nationalized in 1966 and the state took a controlling interest in Obuasi in 1972). This was necessary in order to maximise government revenue and to protect employment and ensure employment generation (Akabzaa & Darimani, 2001)

The mining sector experienced decline owing largely to government's failure to provide the needed capital to expand into new gold reefs (Clark 1994). Gold production had

declined from 900,000oz in 1960 to 232,000oz in 1982; manganese output had dropped from 600,000t in 1960 to 160,000t in 1982; bauxite production declined from 407,000 in 1974 to 64,700t in 1982; and diamond output had declined from 2,340,000 carats in 1975 to 683,524 carats in 1982 (Hilson, 2001). Figure 4.2 depicts the trends in the performance of Ghana's mineral industry from 1958 to 1986.

Figure 4.2 Post-Independence Performance of Ghana's Mineral Industry (1958-86)



Source: Akabzaa & Darimani (2001)

4.4.3 SAPs and Policies measures taken

Under the ERP, the mining sector was targeted as a potential source of foreign exchange and employment. The government has therefore since 1984, successfully put in measures to rejuvenate the gold mining sector. It started with the establishment of the Minerals Commission in 1984. This continued with the passing of the Minerals and Mining Law in 1986 to offer incentives to the mining industry. Among its provisions were generous

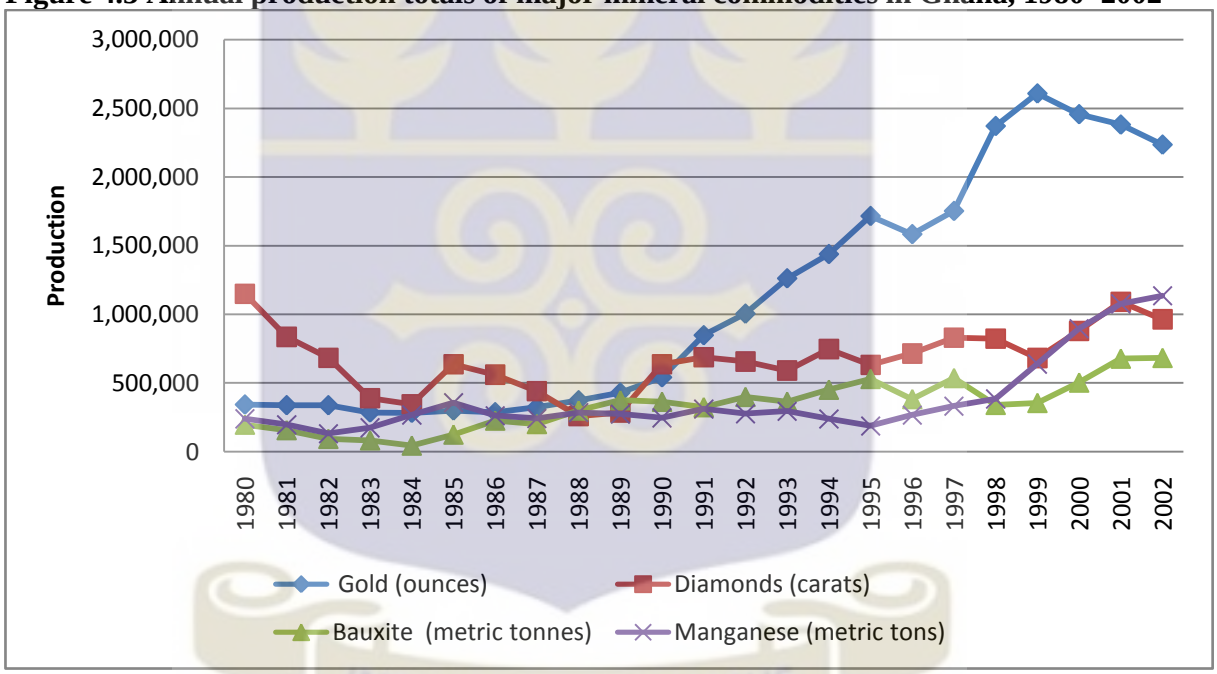
capital allowances and reduced income taxes. Corporate income tax on mineral production of private companies in Ghana was reduced from 50-55 percent in 1975 to 45 percent in 1986 and further to 35 percent in 1994 (Campbell, 2003; Akabzaa & Darimani, 2001; Amponsah-Tawiah & Dartey-Baah 2011), mining companies could write off 75 percent of capital investment against taxes in the first year and 50 percent of the remainder thereafter. The provisions permitted companies to use offshore bank accounts for service of loans, dividend payments, and expatriate staff remuneration (Clark 1994). Additionally, not only were companies exempted from payment of import duties on mining equipment and accessories, the companies were permitted to keep a minimum of 25% of foreign exchange in an external account for various purposes including acquiring physical capital requirements necessary for production, dividend payments and for expatriate labour.

Another significant move was the formalisation of small scale mining subsector through the promulgation of the small scale mining law in 1989. The Small-scale Mining Law (PNDCL 218) provides for the registration of activity; granting of gold licenses to individuals and groups; licensing buyers to purchase the product; and establishment of district assistance centres. Among other incentives, the law exempts small-scale mining operators from the payment of income tax and royalties for a period of three years, and also reserves the right to engage in small-scale mining to Ghanaians only. A second law that was passed is the Mercury Law (PNDCL 217) which legalised the purchasing of mercury from authorised dealers. A third law is the Precious Minerals Marketing Corporation Law, 1989 (PNDC Law 219), which set up the Precious Minerals Marketing Corporation (PMMC) to promote the development of small-scale gold and diamond mining in Ghana and to purchase the output of such mining, either directly or through licensed buyers

4.5 Contribution of the mining sector

The mining sector reforms meant to stimulate investment and increase output paid off. The mining sector has made huge contributions in foreign exchange earnings, employment generation, mineral royalties, employee income, taxes payments etc (Bloch & Owusu 2012, Hilson 2001; Amponsah-Tawiah & Dartey-Baah 2011). Annual production totals of the major mineral commodities since the late 1980s have been increasing as the Figure 4.3 shows.

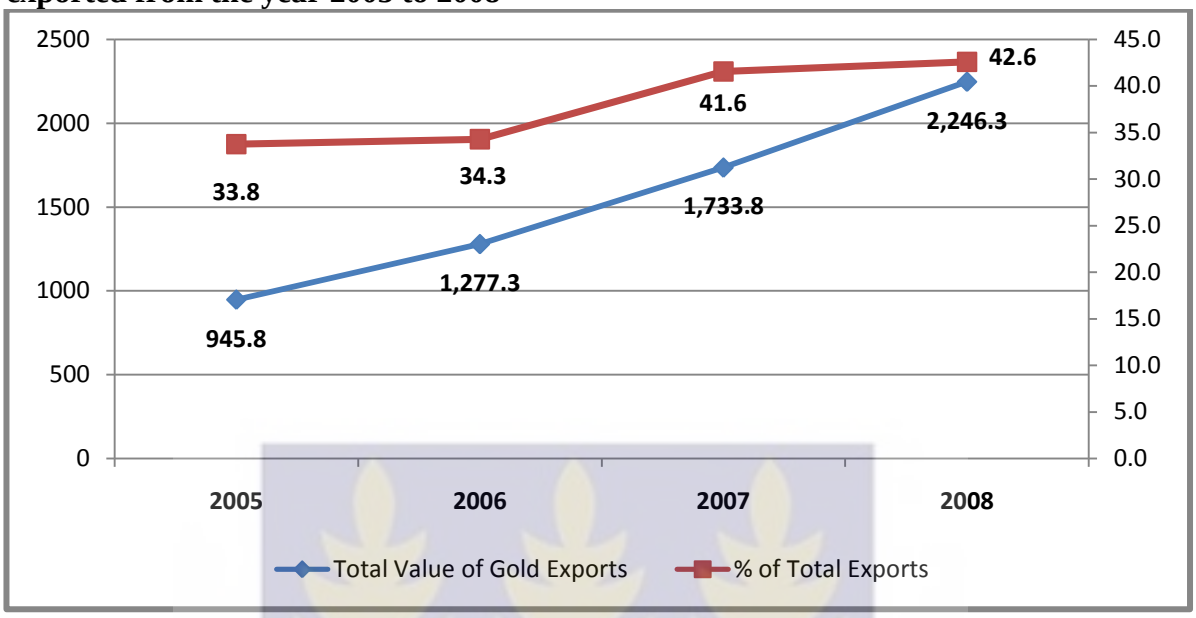
Figure 4.3 Annual production totals of major mineral commodities in Ghana, 1980–2002



Source: Hilson 2004.

Figure 4.4 shows the percentage contribution of gold to total exports and also the total value of gold exported from the year 2005 to 2008. The year 2008 witness gold alone contributing about 43 percent to total exports.

Figure 4.4 Percentage contribution of gold to total exports and total value of gold exported from the year 2005 to 2008

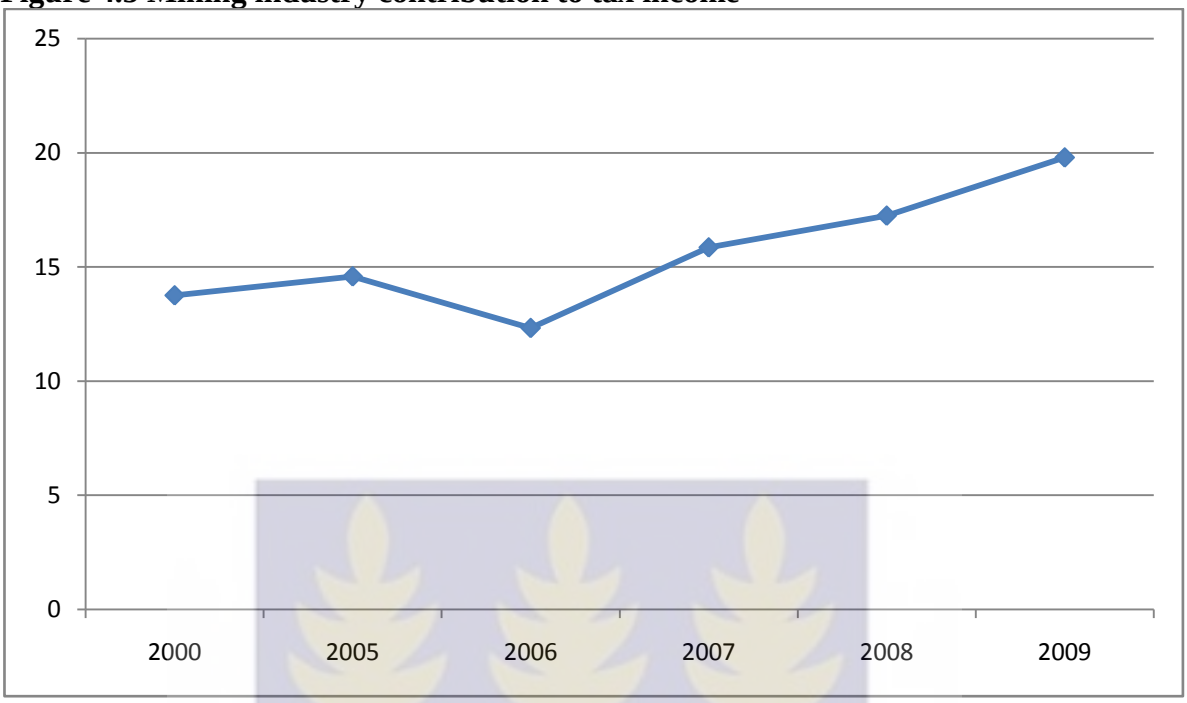


Source: Government of Ghana Budget 2009.

As a result of the dynamic evolution of mineral laws and policies, Ghana's mining economy was given impetus. In a span of 15 years (from 1983 to 1998), the mining industry alone brought approximately US$ 4 billion in foreign direct investment to Ghana, representing more than 60 percent of all such investment in the country (Ghana Minerals Commission, 2000). Mining sector contribution to GDP progressively trended upwardfrom a paltry 1.3 percent in 1991 to an average of about 5.2 percent between the years 2001-2004 (Ghana Minerals Commission, 2006). In terms of gross foreign exchange earnings, the sector's contribution increased progressively from 15.60 percent in 1986 to 46 percent in 1998. In absolute terms, the sector generated US$ 124.4 million in 1986, and US$793 million in 1998 (Amponsah-Tawiah & Dartey-Baah 2011).

The sector continues to be one of the highest contributors to the Internal Revenue Service through the payment of mineral royalties, employee income taxes, corporate taxes and ancillary levies (Bloch and Owusu 2012, Ghana Chamber of Mines 2012).

Figure 4.5 Mining industry contribution to tax income



Source: Bloch and Owusu 2012.

In spite of the numerous benefits a revitalised mining sector has brought to the economy in the wake of the reforms, it also has had its negative consequences. In view of the capital-intensive nature of the sector, especially with the resort of the mining companies to surface mining, its capacity to generate employment is limited. Despite this limited capacity to absorb labour, employment in the sector surged until 1995. Total labour force of the sector increased from 15,069 in 1987 to 22,500 in 1995 (Amponsah-Tawiah & Dartey-Baah 2011). Direct employment by producing members of the Ghana Chamber of Mines as at December 2004 stood at 10,624. Of this, expatriate staffs constituted only 1.4 percent and the rest were all Ghanaians. This number almost doubled to about 20,268 people of which 313 people were expatriates at 2012. The expatriates constituted about 1.5% of the total work force (Ghana Chamber of Mines 2004, 2012). These figures exclude employees in exploration, contractors, mining support service companies as well as suppliers to the large-scale mining companies, and those companies not registered with

the Chamber of Mines. Although the contribution of the mining sector to employment may pale in significance compared to other sectors, it constitutes an important source of secondary employment due to backward, and to an extent, forward linkages of the sector. Consequently, the sector has attracted a horde of sector support companies to the regions they operate and beyond. Such services include such as security services, transport companies, explosive manufacturers, and mineral assay laboratories among others in these regions (Amponsah-Tawiah & Dartey-Baah 2011).

4.6 Institutions of the Mining sector

Ministry of Lands and Natural Resources

The Ministry of Lands and Natural Resources exists to ensure the sustainable management and utilization of the nation's lands, forests, wildlife and efficient management of mineral resources for the country's socio-economic growth and development. This is achieved through:

- efficient formulation, implementation, coordination, monitoring and evaluation of policies and programmes of sector agencies;
- efficient and equitable land delivery;
- promotion of sustainable forest, wildlife and mineral resource management and utilization;
- promotion of effective inter-agency and cross-sectoral linkages;
- creation of an enabling environment for effective private sector participation; and
- promotion of effective community participation in multiple use of land, forest wildlife and mineral resources (Ofei-Aboagye et al. 2004)

The ministry has three sub-sectors to implement its programmes and projects: Land sub-sector; Forestry sub-sector; and Minerals sub-sector. The Minerals sub-sector institutions are Minerals Commission, Geological Survey Department, Inspectorate Division of Minerals Commission and Precious Minerals Marketing Company (PMMC) (Ofei-Aboagye et al. 2004).

Minerals Commission

The responsibility of the Minerals Commission is to regulate and manage the utilisation of the mineral resources of Ghana and co-ordinate policies in relation to the mineral resources. The responsibility entails the formulation of policies for the exploration and exploitation of mineral resources; monitoring implementation of policies on minerals and all bodies with responsibility for minerals; assess agreements relating to mineral; and collection of data on a comprehensive basis on mineral resources and technologies of exploration and exploitation (Republic of Ghana 2006).

Inspectorate Division of Minerals Commission

- Enforce compliance of Act 703 and regulations made under it through permitting procedures and inspection of sites of mining, prospecting, reconnaissance and related operations with the aim of reducing dangers, disturbing effects and nuisances of mining activities to acceptable levels;
- Enforce compliance of occupational health and safety regulations for the mining sector;
- Investigate the sources and causes of any mine accident and to recommend measures to prevent recurrence of such and similar accidents;
- Investigate the sources and causes of any incidents, nuisances and pollutions on land which is subject to a mineral right;

- Monitor the operations of mines, mills and other mineral treatment plants to ensure that wasteful mining and treatment practices are not used in these operations;
- Direct in what manner any commercial explosives shall be stored and used on any mine or in any related operations;
- Inspect and test mine equipment and machinery so as to ensure their safety and compliance to environmental requirements;
- Examine Mine officials for statutory Mine Certificates of Competency (for blasting, for handling of explosives, for winder engine drivers, Mine Rescue operations, mine supervisors etc) (Republic of Ghana 2006).

Geological Survey Department

The functions of Geological Survey Department as it relates to mining include; geological mapping and mineral exploration; geophysical surveys in search of mineral deposits, groundwater resources and environmental studies; drilling for exploration and evaluation of mineral and groundwater resources; examination and issuing of permits for non-commercial quantities of mineral, rock and soil samples for analysis; and provide improved geology data for small scale miners (Republic of Ghana 2006).

- Lands Commission – legal records of licenses and legal examination of new applications
- Chamber of Mines – association of representatives of mining companies
- Environmental Protection Agency – overall responsibility for environmental issues related to mining

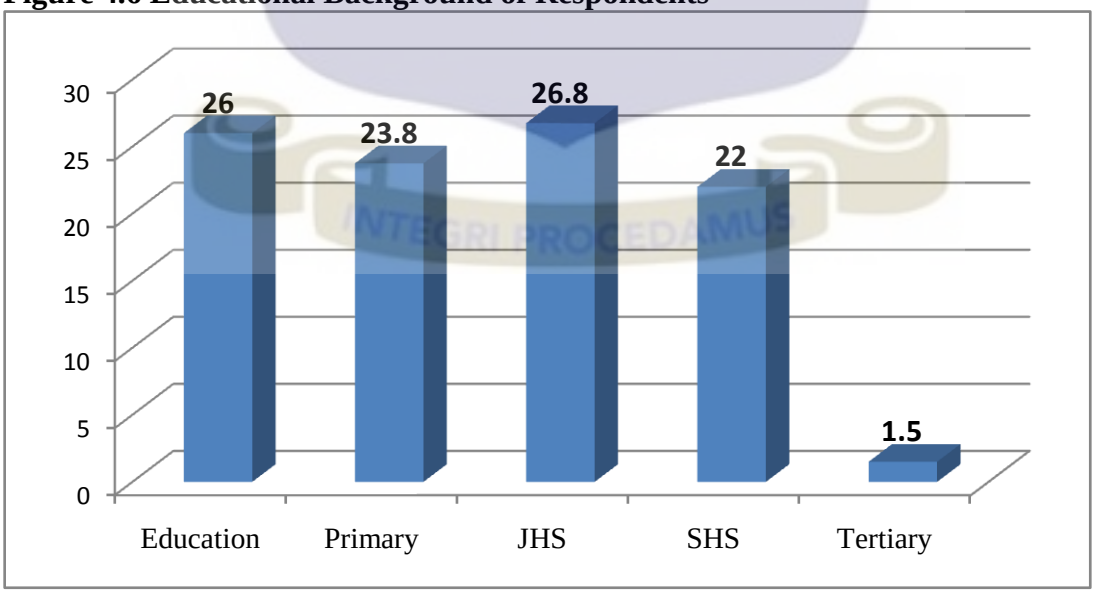
4.7 Profile of sampled Entrepreneurs

Education

The importance of education in small-scale mining cannot be overstated. Jonsson notes, among other things, a comparatively higher educational level will not only facilitate climbing up the career pyramid, it also facilitates career success (Bryceson and Jonsson 2010, Jonsson and Bryceson 2009). Also, those with slightly higher educational level are likely to use their knowledge of mining and social networks to facilitate making a living from non-mining activities within the mining settlements (Bryceson and Jonsson 2010).

The literature is agreed on the low educational level of operators, to the point of it being a feature of small-scale mining. Overall, about a quarter (25.8%) of the youth in small-scale mining had no formal education. About 24 percent either dropped out or only completed primary school. Those who attended or completed JHS constituted about 27 percent. Those who attended or completed SHS made up 22 percent of the youth entrepreneurs. Those with tertiary education made up 1.5 percent (See Figure 4.6).

Figure 4.6 Educational Background of Respondents



Source: Youth Entrepreneurship in SSM Survey 2013

It is expected that people with good educational backgrounds will engage in activities that are less risky and probably more financially rewarding. Table 4.1 shows the activities that the youth with varying educational levels undertook. Of the 25 percent that were digging ore, 35 percent had no education. About 26 and 23 percent had attended or completed primary and Junior High School, respectively. Only 13 and 3 percent of the youth entrepreneurs who were digging ore attended or completed Senior High School and tertiary levels, respectively. In the hierarchy of activities in small-scale mining, acquiring the ore is the riskiest and most strenuous and it was not surprising that a good percentage of those involved in it were not educated (35%) or at best had basic education (49%).

When it comes to ore processing, about 63 percent of the youth had either JHS (32.9%) or SHS (30%). Moving up the career ladder, gold buyers and or sponsors, combined here as dealers, had almost a half (48.3%) of the youth involved attending or completed SHS while about a third (31%) had attended JHS.

Almost half (50.1%) of the youth captured in the survey provided ancillary services for the miners themselves. Of that, about a quarter (25.8%) had no education while 23.8 percent attended or completed primary school. Only about 27 percent and 20 percent attended or completed JHS and SHS respectively.

Table 4.1 Work type by Education of Respondent

Work type	District	No Education	Primary	JHS	SHS	Tertiary	Total
Digging ore	Bole	27.5	35.0	20.0	12.5	5	100
	Asutifi North	40.0	20.0	25.0	13.3	1.7	100
	Total	35.0	26.0	23.0	13.0	3.0	100
Processing ore	Bole	14.7	32.3	29.4	23.5	0.0	100
	Asutifi North	16.6	11.1	36.1	36.1	0.0	100
	Total	15.7	21.4	23.8	30.0	0.0	100
Dealer	Bole	20.0	0.0	20.0	60	0.0	100
	Asutifi North	0.0	15.8	36.8	42.1	5.3	100
	Total	6.9	10.3	31.0	48.3	3.5	100
Provides services	Bole	25.2	27.8	22.6	22.6	1.7	100
	Asutifi North	30.6	22.3	30.6	16.5	0.0	100
	Total	27.5	25.5	26.0	20.0	1.0	100

Source: Youth Entrepreneurship in SSM Survey 2013 N=399 P=0.001

There was a positive and significant relationship between the youth's main entrepreneurial activity and educational background (P=0.001).

Table 4.2 Socio-Economic Characteristics of Entrepreneurs

Variable	Digging N=100	Processing N=70	Dealer N=29	Provides N=200	Total	F	Prob>F
Educational Background of Respondent							
No education	35.0	15.7	6.9	27.5	25.8	28.8	0.001
Primary	26.0	21.4	10.3	25.5	23.8		
JHS	23.0	32.9	31.0	26.0	26.8		
SHS+	16.0	30.0	51.7	21.0	23.6		
Gender of Respondent							
Female	14.0	4.3	3.5	44.0	26.6	65.0	0.00
Male	86.0	95.7	96.6	56.0	73.4		
Age of Respondent							
15-19	6.0	7.1	3.5	8.5	7.3	14.1	0.296
20-24	26.0	28.6	17.2	30.0	27.8		
25-29	34.0	41.4	37.9	33.0	35.1		
30-34	26.0	17.1	17.2	19.0	20.3		
35+	8.0	5.7	24.1	9.5	9.5		
Religion of Respondent							
Christian	49.0	60.0	55.2	47.2	50.5	10.6	0.101
Islam	44.0	37.1	41.4	51.3	46.2		
Traditional	7.0	2.9	3.5	1.5	3.3		
Ethnic background of respondent							
Gonja	10.1	12.9	14.8	15.3	13.5	35.6	0.002
Dagomba	8.1	1.4	0.0	3.1	3.8		
Dagao/wala/lobi	33.3	31.4	0.0	23.5	25.8		
Sisala	12.1	7.1	14.8	6.6	8.7		
Akan	14.1	27.1	51.9	29.1	26.5		
Other	22.2	20.0	18.5	22.5	21.7		

Source: Youth Entrepreneurship in SSM Survey 2013

Marital Status

More than 44 percent of the young miners were single. This is not surprising as they were still trying to find their feet. About thirty percent were either unemployed or just completed or dropped out of school. About 40 percent were in monogamous marriages while 5 percent were in monogamous marriages. Six percent had divorced or separated and hence were not constrained by family ties and negative tag associated with especially women who engage in small-scale mining (see Table 4.3).

Table 4.3 Percentage Distribution of Marital Status

	Percent
Single	44.0
Married (mono.)	40.0
Married (poly.)	5.0
Widowed	2.0
Separated/divorced	6.0
Cohabitating (informal/loose unions)	4.0
Total	100.0

Source: Youth Entrepreneurship in SSM Survey 2013 N=400

Number of Children

Almost half of the respondents (48%) did not have any children. About one in five people had a child. About 22 percent of the young miners either had two children or three children. Just about ten percent had more than three children (see Table 4.4).

Table 4.4 Percentage Distribution of Children of Miners

Number of children	Percent
0	48.0
1	21.0
2	12.3
3	10.0
4	5.3
5+	3.6
Total	100.0

Source: Youth Entrepreneurship in SSM Survey 2013 N=400

Gold mining is acknowledged to be a transnational phenomenon (Werthmann 2009). There has been concern about the involvement of foreigners in the small-scale mining sector in Ghana. Small-scale mining by law is reserved for Ghanaians. In spite of this legal provision, Chinese, Nigerians, and other nationals from Sub-Saharan Africa are undertaking different kinds of entrepreneurial activities in the sector. Six percent of the youth interviewed were non-Ghanaians. Some of them were selling chanfan and chanfan parts for the miners while others were involved in the purchase of gold.

Table 4.5 Region of Respondents

	Percent
Western	1.8
Central	1.6
Greater Accra	0.3
Volta	2.9
Eastern	3.4
Ashanti	6.8
Brong Ahafo	18.4
Northern	20.8
Upper East	9.4
Upper West	34.8
Total	100.0

Source: Youth Entrepreneurship in SSM Survey 2013 N=385

Historically, the north of Ghana has provided labour force for mines in the south. Akan mine workers refused to work underground for two main reasons. The first was that traditional belief associated subsurface work with evil spirits. The second reason was that more livelihood options were open for them in agriculture (Anarfi et al. 2003). Hence, there was the real fear of shortage of labour for the mines. Having experimented with thirty men from Navrongo and Wa in 1906, numbers grew to 444 by the end of the first decade of 20th century. It was therefore not surprising that more than a third of the respondents (34.8%) came from Upper West region. Coupled with the initial engagement with mining in the south, Upper West also has one of the least opportunities outside of agriculture. More than one-fifth of the respondents came from the Northern region where Kui is located. About 18 percent of the respondents were from Brong Ahafo region where Kenyasi No.2 is located (see Table 4.5).

Table 4.6 Percentage Distribution of Migrants and Indigenes

	Percent
Indigene	34.8
Immigrant	65.2
Total	100.0

Source: Youth Entrepreneurship in SSM Survey 2013 N=399

Small-scale mining has been associated with migration. As results from Table 4.6 show, about a third of all respondents considered themselves as indigenes. About 65 percent were migrants from all parts of Ghana and within Sub-Saharan Africa.

How did people engage in these activities?

Experience (career)

Generally, experience was required for some of the entrepreneurial activities. The data shows that the number of years spent in the settlement had an influence on the kind of business activity engaged in. About 34 percent of chisellers/drillers arrived in the settlement 4-5 years ago. About a third of the chisellers/drillers spent 3-4 years in the settlements. Blasting required experience and was usually engaged in by those with considerable number of years in mining due to the risk involved. The data show that about 44 percent of the youth engaged in blasting spent between 4 and 5 years in the settlement. About 33 percent spent just about a year in the settlements but had experience in other mining settlements. This contrasts with hauling which did not require experience and was one of the activities new entrants started with. About 82 percent of all the haulers in the settlement arrived just about a year preceding the data collection.

Experience comes with funding that the youth can use to engage in activities that require substantial investment of capital. For instance, Table 4.7 shows that about 73 percent of pit or ghetto owners arrived in the settlement four to five years ago. A majority of shop owners (52%) arrived in the settlement four to five years ago. About 32 percent were there two to three years ago. These contrast with petty trading and carrying of ore where over half of those involved spent just about a year in the settlement. These two activities require neither extensive experience nor heavy injection of capital.

Table 4.7 Entrepreneurial activity engaged in by number of years in mining settlement

	0-1	2-3	4-5	6+	Total
Chiseling/Drilling	27.3	29.5	34.1	9.1	44 (100)
Owns shop	12.0	32.0	52.0	4.0	25 (100)
Pit/Ghetto owner	0.0	27.3	72.7	0.0	11 (100)
Process ore	26.5	36.8	30.9	5.9	68 (100)
Blasting	33.3	11.1	44.4	11.1	9 (100)
Owns drinking spot	50.0	30.0	0.0	20.0	10 (100)
Hauler/Locoboy	82.1	14.3	0.0	3.6	28 (100)
Communication/Recharge card seller	50.0	0.0	50.0	0.0	4 (100)
Catering service/Food seller	34.3	28.6	25.7	11.4	35 (100)
Transportation/Okada business/owns wheelbarrow	40.0	20.0	40.0	0.0	10 (100)
Sells clothing	0.0	57.1	42.9	0.0	7 (100)
Sells drinks and water	40.0	6.7	46.7	6.7	15 (100)
Scavenges waste ore	28.6	42.9	28.6	0.0	7 (100)
Sells necklaces and earrings	100	0.0	0.0	0.0	1 (100)
Sponsor	0.0	33.3	66.7	0.0	3 (100)
Mobile phone seller	0.0	100.0	0.0	0.0	3 (100)
Own KVIP	100.0	0.0	0.0	0.0	2 (100)
Barber	75.0	0.0	25.0	0.0	4 (100)
Charges phone batteries	50.0	0.0	50.0	0.0	2 (100)
Petty trading(perfume, cigarette, herbal medicine)	55.6	22.2	16.7	5.6	36 (100)
Carry ore	53.8	23.1	15.4	7.7	13 (100)
Buy gold	15.4	34.6	30.8	19.2	26 (100)
Repairer (car/motor/generator)	35.3	29.4	35.3	0.0	17 (100)
Own public bath houses	0.0	100	0.0	0.0	1 (100)
Fuel dealer	0.0	0.0	100.0	0.0	2 (100)
Sells wood/Carpenter	25.0	50.0	0.0	25.0	4 (100)
Owns a drug store	33.3	0.0	66.7	0.0	3 (100)
Savings scheme	33.3	33.3	0.0	33.3	3 (100)
Teaching	0.0	0.0	0.0	100.0	1 (100)
Photographer	0.0	100.0	0.0	0.0	1 (100)
Total	137 (34.7)	111 (28.1)	118 (29.9)	29 (7.3)	395 (100)

Source: Youth Entrepreneurship in SSM Survey 2013

What were people doing before they got into mining

Small-scale mining has low entry barriers and hence attracts the poor and uneducated engaged in other activities. In all, about 37 percent of the youth in small scale mining

were either schooling or unemployed before they went to the mining sites. Of the 63 percent who were working, about 40 percent were into trading activities. Just about 18 percent were farming before coming to the mining sites. About 10 percent were galamsey operators in other mining sites like Prestea, Dakrupe, Cloth and others. The rest were into artisanal activities, driving etc.

For an overwhelming majority (83%) of the youth in mining, Kui and Kenyasi were their first galamsey sites. Only 17 percent of the youth interviewed were in other galamsey sites before. Of the 17 percent, 10 percent were directly engaged in mining. The other 7 percent were providing services in the sites they visited.

Other socio-economic variables

Gender and Small Scale Mining

The activities in small scale mining were gender-specific. Generally, the females played a dominating role in the services. Females dominated in both Kui and Kenyasi in retail/petty trading but more in Kui than in Kenyasi. Another activity females dominated in was the carrying of ore in both Kui and Kenyasi. In Kui, it was an all female affair. In Kenyasi, because the ore from the pit was rock and coud be heavy, males also carried ore. They mostly used wheelbarrows and motorbikes to carry the ore.

Table 4.8 Work type by District and Gender of Respondent

Work type	District	Sex of Respondent		Total
		Male	Female	
Digging ore	Bole	85.0	15.0	40 (100)
	Asutifi North	86.7	13.3	60 (100)
	Total	86.0	14.0	100 (100)
Processing ore	Bole	100.0	0.0	34 (100)
	Asutifi North	91.7	8.3	36 (100)
	Total	95.7	4.3	70 (100)
Dealer/Sponsor	Bole	100.0	0.0	10 (100)
	Asutifi North	94.7	5.3	19 (100)
	Total	96.5	3.5	29 (100)
Provide services	Bole	62.6	37.4	115 (100)
	Asutifi North	47.1	52.9	85 (100)
	Total	56.0	44.0	200(100)

Source: Source: Youth Entrepreneurship in SSM Survey 2013 P=0.000 N=399

Apart from these, catering also had a heavy involvement of females compared to their male counterparts. Females into catering services were 8 out of 11 in Kui and 20 out of 25 in Kenyasi. These activities were therefore merely an extension of their gender roles in the mining areas.

Entrepreneurial activities in mining itself seemed to be the preserve of the males. In Kenyasi, all the chiseling, drilling and blasting were undertaken by males. This was because of the depth they had to go down to (8 to 12 poles[1]) and the energy demanded to carry out these activities. In Kui, 21 out of the 23 youth in chiselling and drilling were males. Females also undertook digging in Kui because most of the mining was near surface or what they referred to as 'top face'. Processing of the ore by the use of chanfan machines was the preserve of the males in Kui (all 37 were males). In Kenyasi, 33 out of the 36 youth who were into processing of ore were males.

Similarly, gold buying was a male dominated activity. Out of a total of 26 youth buying gold, 25 were males. This was not surprising since generally men compared to women had

[1] A pole is 9 metres

the necessary capital to participate at the level of buying. This is the same for haulers (locoboys). Hauling up the load from the pits was an arduous and physically demanding task and was also the preserve of men. Not even younger males could be trusted with the job of hauling as the ore which was tied in sacks were passed from person to person positioned on various points of the pit from bottom to top. Failure to handle it well at the top could result in potential injuries or fatalities to people at the bottom.

Ethnicity and Entrepreneurship

It is quite revealing what activities the various ethnic groups are engaged in. Kui falls within a Gonja area while Kenyasi falls within the Akan area. As it is typical of galamsey sites, it is common to find people with different ethnic backgrounds. The Gonjas made up about 10 percent of the overall sample. About half of them (51.3%) were providing services to the miners, 10.3 percent were dealers, 20 percent were into processing and 17.9 percent were digging ore. All the Gonjas who were dealers, digging and processing ore were in Kui. Three percent of the sample were Dagombas. Of this, over half (53.3%) were digging ore and interestingly they were all in Kenyasi. About 40 percent who were of Dagomba extraction were providing services.

Dagaabas constituted about 19 percent of the youth. More than a third (35.3%) were digging ore and made up more than a quarter (26.3%) of all diggers. About 19 percent of the Dagaabas were into processing while 45.9 percent were providing services. A whopping 85.2 percent of the Dagaabas providing services were in Kui. Overall, the Sissalas constituted 8.7 percent of the sample. More than a third were into digging ore. An overwhelming majority of the diggers (83.3%) were in Kenyasi. About 38 percent of the Sissalas provided services to the small-scale miners, of whom about 77 percent were in

Kenyasi and 23 percent in Kui. Even though 11.8 percent of the Sissalas were dealers, they made up 14.8 percent of all dealers interviewed and all operated in Kenyasi.

Akans made up more than a quarter (26.3%) of the overall sample. Over half of them (54.4%) were into providing services for the miners and made up 28.6 percent of all service providers in the mining sites. Even though 13.6 percent of Akans were dealers, they made up over half (51.9%) of all dealers in the sample. A further disaggregation shows that an overwhelming majority of the Akans who are diggers (92.8%), provide services (80.3%) and are dealers (78.6%) operated in Kenyasi. The Mos, which is an ethnic group close to Kui, mainly provided services (81.8%) to the miners. Walas also provided services (40.9%), processed ore (31.8%) and dug ore (27.3%). The others constituted 30 percent of people digging ore, 13.8 percent processing ore, 6.2 percent dealers, and 50 percent into service provision to miners. The other category were tribes other than those mentioned here.

Business Competition

Competition was high in the mining settlements, especially for people who provided services. The youth therefore found innovative ways to do their business in order to stay afloat and, if possible, stay ahead of competitors. At the settlement level, processing of hard rock ore did not constitute a part of the activities carried in Kenyasi in 2010 when the researcher conducted a reconnaissance survey there. The ore was sold in sacks to buyers from Bibiani, Prestea, Tarkwa, etc. During the actual survey, it was found that there were a number of the youth in processing who located their mills close to the main road to make use of power from the national power grid. There were others located at Hwidiem. Their numbers had grown to the point that some of them adopted various ways to keep ahead of competitors. To attract more people, man S bought a Kia truck that carried ore

from the mining site to his processing site for free. That was important for two reasons. First, he could outcompete other entrepreneurs proving the same service. Secondly, the tailings (waste ore) could also be sold later for substantial amount of money.

Even though it was highly risky to sell goods on credit to operators as they were highly mobile, some of the youth entrepreneurs resorted to selling goods or rendering services on credit. Some of the activities in mining require a substantial investment of capital. This, coupled with the lack of formal loans, compelled people to get items on credit. About 16.2 percent of the respondents had given or rendered services on credit before. The percentage is higher in Kui (31.1%) than in Kenyasi (5.7) because it may be more difficult in Kui than in Kenyasi to abscond.

Those selling water and drinks tried to keep their drinks chilled to attract more customers. Because of the harshness of the weather and how hard the miners work, coupled with the lack of continuous supply of electricity, chilled water and drinks were hard to come by. Entrepreneurs who had the reputation of serving chilled drinks had more customers, especially in the evenings when people retired from work and wanted to unwind. Some drinking spot owners who could afford it used generators during the day in Kui when the main power plant was off. By evening, when the rest were now chilling their drinks with power from the power plant, those with generators would already have had chilled drinks.

Gold buyers were many in Kui and Kenyasi. They therefore also employed innovative ways to increase their share of the gold trade. Some of the gold buyers offered a slightly higher price for gold they bought. As one explained, because of the 50 pesewa difference, it was imprinted in the minds of the miners that you offered a good price and so customers would come to sell to you.

Table 4.9 Innovations by District of Respondent

Innovation	Bole	Asutifi	Total
Offer credit	31.1	5.7	16.2
Friendly to customers	32.4	35.2	34.1
Serve customers with chilled water	5.4	9.5	7.8
I dress well	1.4	6.7	4.5
I increase the price I buy gold slightly	1.4	1.9	1.7
Buy water to process ore	1.4	0.9	1.1
Buy new machines and service them	5.4	2.9	3.9
Use of digital scale	0.0	2.9	1.7
I have reduced the price I sell slightly	1.4	0.0	0.6
None	20.3	34.3	28.5
Total	N=74	N=105	N=179

Source: Source: Youth Entrepreneurship in SSM Survey 2013

In an in-depth interview with man P, he revealed that unlike others who pay their workers to process ore, he shared whatever they realised with his workers because the only difference between him and the workers was that he bought the chanfan machine. He said his workers put in their best as a result.

Man T is a 23 year old cameraman who finished SHS and came to Kui to look for money to continue his education. He raised his money by being an itinerant cameraman and also with the support of his father. He said there were fourteen miners when business was booming. Now, they were seven in number in Kui. He said he was the first to bring a digital camera to Kui. He claims that since they charged the same price for photographs, he differentiated himself by building a relationship with his customers so that they would always use his services.

4.8 Summary

This chapter contextualised small-scale mining within the political and economic history of Ghana. The policies that were formulated and implemented on mining were intricately connected to colonial, between post-independence and 1986, and finally, post 1986. In the

colonial era, mining policies were linked to British interest. After independence, the State of Ghana took controlling interest in the mining sector by nationalising all except mines based in Obuasi by 1966. This was meant to maximise government revenue and to protect employment and ensure employment growth. Under structural adjustment, mining sector institutions like the Mineral Commission, Precious Minerals Marketing Company came into being. Minerals and Mining Law and Small-scale Mining Law were promulgated.

CHAPTER FIVE

AN ANALYSIS OF THE INSTITUTIONAL CONTEXT OF SMALL-SCALE MINING

5.1 Introduction

This chapter looks at governance at the small-scale mining settlements. It will concentrate on the institutional component of the livelihoods framework. This is very important as operators will not invest in a very insecure environment. Many scholars have observed how small-scale mining activities are unorganised, disorganised or poorly organised (Ghose and Roy, 2007; Shoko, 2002; Versol, 2007). It is estimated that 80 percent of small-scale miners work outside a legal framework (Hinton, 2005; ILO, 1999). This informality does not translate into lack of organisation. In a mining community, new cultural, political and legal forms emerge, cross-cutting tribal and ethnic group boundaries (Godoy 1985). Even though the degree of organisation may not be as portrayed by Jaques et al (2006) in the case of Burkina Faso where activities are like 'small mines', there is evidence that the mining activities are organised with local governance institutions in place. Jacques et al (2006) conducted a survey of 60 mining sites in Burkina Faso and found well-defined structures and a high degree of organisation. This chapter will start by examining the structures and institutions of the mining sector at the national level and how the lack of interaction across the various structures has contributed to the informality of the small-scale mining sector. The second part will examine the local institutional structure governing the small-scale mining areas and advantages and disadvantages of same on entrepreneurial activities.

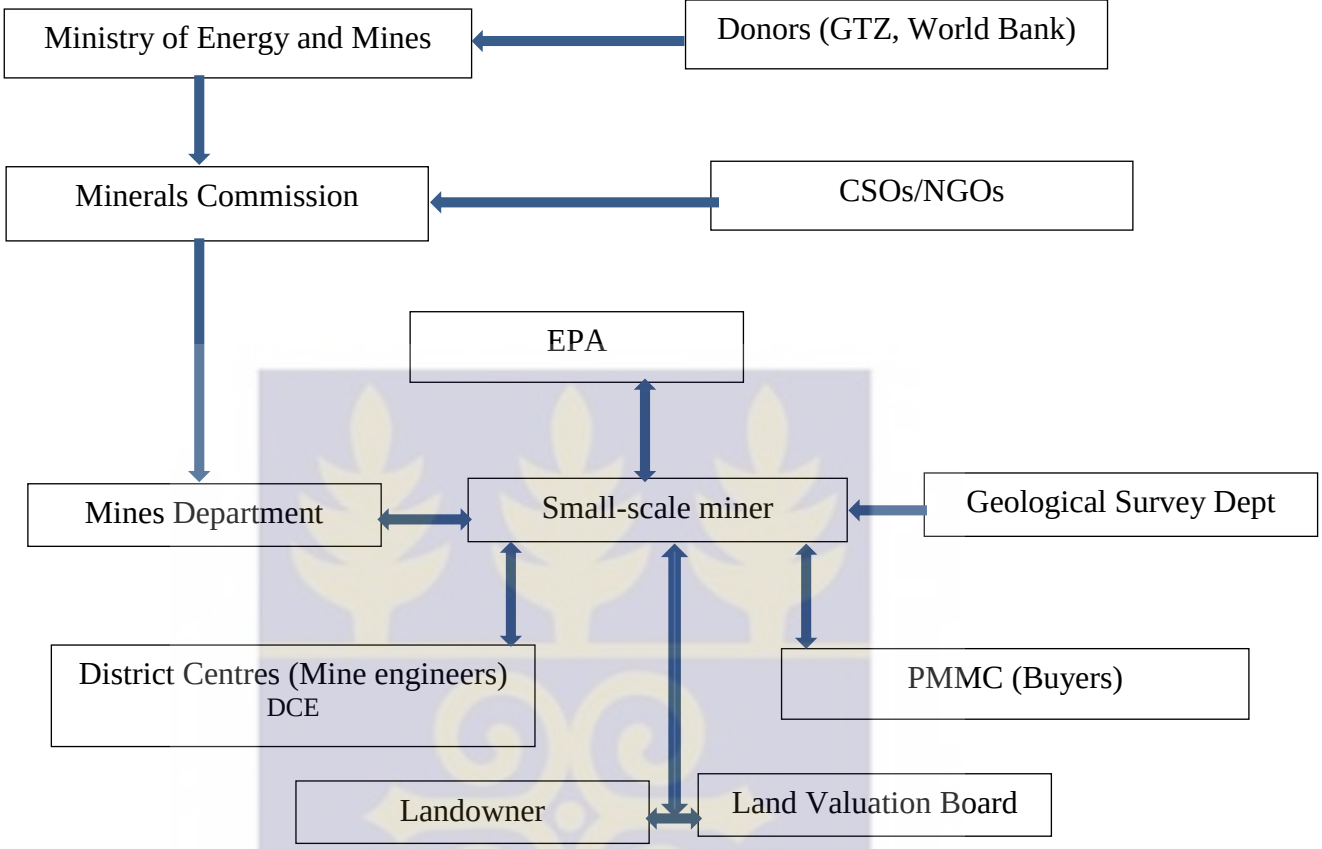
5.2 Institutions and the scale problem (Macro)

The institutional structure of small-scale mining is a multi-scale one involving state institutions, district/municipal/metropolitan structures and community structures. These must interact across-scale and across-levels for the efficient exploitation of the gold resource. Shortly after the legalization of small-scale mining in Ghana in 1989, the Small-Scale Mining Project was inaugurated with funding from the World Bank. The Project hinged on four institutional pillars: Minerals Commission, Precious Minerals and Marketing Corporation, Mines Department and Geological Survey Department. These institutions together with Environmental Protection Agency, Forestry Commission, and Water Resources Commission regulate small-scale mining at the national level.

Seven Small-scale Mining District Centres were established as a means of decentralising small-scale mining regulatory and licensing process, extension and support services and providing trainng. The Centres were located in Tarkwa, Assin Fosu, Akim Oda, Dunkwa, Asankraqwa, Bibiani, Bolgatanga and Wa (Opoku-Antwi 2012, Ofei-Aboagye et. al. 2004, Vlassenroot 2012).

Getting a license requires engagement with the different scales ranging from the local chiefs and land owners, to district structures and finally to national level structures (see Figure 5.1). Small-scale miners face a myriad of bureaucratic and procedural hurdles in their attempts to register (Tschakert & Singha 2007) culminating in long waiting times of between 6 and 12 months. Beside the procedural hurdles, the costs associated with, and time delays in, securing a plot of land through legal channels have deterred many *galamsey* from registering operations with the government. A site committee chairman, who doubles as a sponsor, indicated that they know it is illegal to mine without a license. However, he said the level of bureaucracy does not encourage them to acquire permits.

Figure 5.1 Regulatory Institutional Map of Mining in Ghana



Source: Author's Construct, 2013.

Apart from delays and high cost associated with the licensing system, there are inherent institutional capacity issues precluding some of them from carrying out their tasks effectively or abandoning them altogether. Ofei-Aboagye et al (2004) indicate that the Geological Survey Department which had the responsibility of geo-prospecting and demarcating plots suitable for small-scale mining abandoned these tasks on account of financial shortage. Similarly, the Minerals Commission, Mines Department, and Geological Survey Department are understaffed (Ofei-Aboagye et al. 2004).

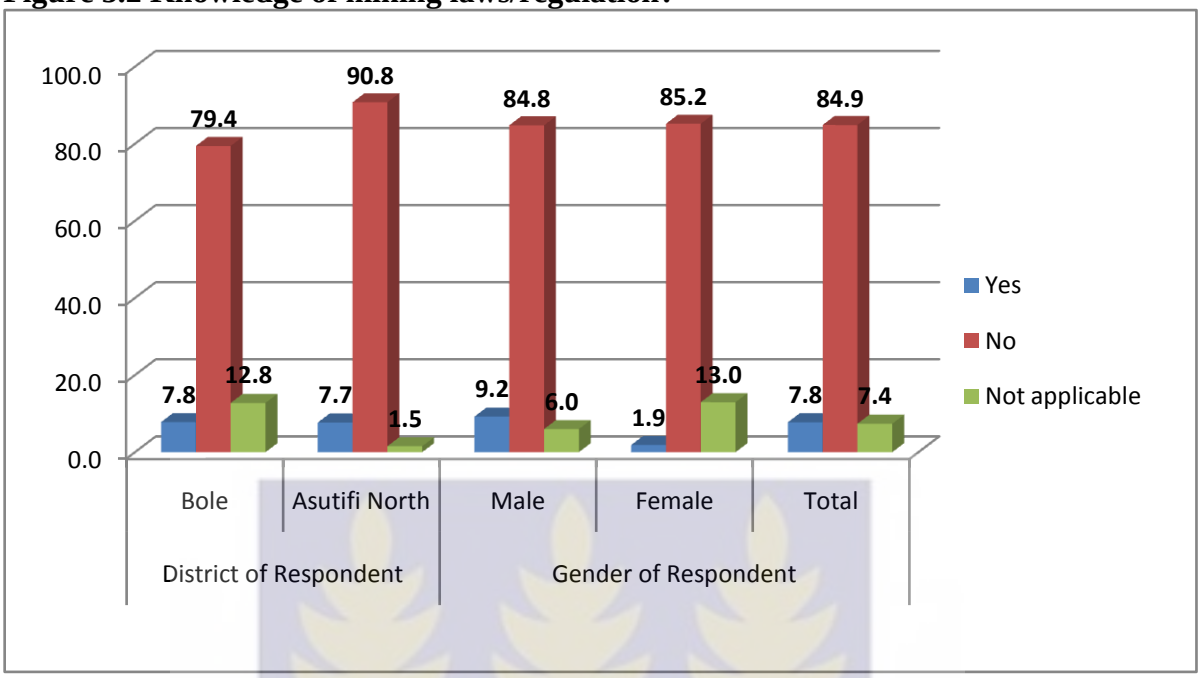
There is limited interaction between the mining settlements, the districts and the national level mining institutions. The District Centres appear very far from study settlements. The

only linkage of mining settlements studied with formal structures related to the enforcement of the law where cases in the mining settlements are beyond the jurisdiction of the local institutions. It was also rumoured that taxes are collected by the district assembly but this is yet to be confirmed. Another form of interaction of mining settlements with formal district level structures is in the utilisation of health facilities located in Tinga and sometimes visits by health care professionals to Kui.

Another example of mismatch is the challenge of matching the scale of what is known about the world and the scale at which decisions are made and action taken (Kates et al 2001). This can be seen in small-scale mining in relation to the effects of mercury use on the environment and human beings at the local level. Mercury, despite its deleterious effects, is handled by miners carelessly. Interviews with the miners revealed, they have scant knowledge of the effects of the chemical and do not know the dangers involved in its use. The miners believe that it is only when mercury is swallowed that it is poisonous or poses danger to human health. This is compounded by the fact that initiatives in the past to educate people about the effects of mercury have concentrated on operators in formal small-scale mining, to the neglect of those in the illegal small-scale mining where the majority of the miners operate. Additionally, the national Small-Scale Mining Association provides some technical, educational, and financial services to its members who are registered. Non-registered miners cannot be members (Tschakert 2009).

Another area of mismatch is in the area of the laws. Laws and regulations seem to be the preserve of the urban areas and elites. People in the rural areas and the uneducated do not know the laws in the first place, let alone obey them. As Figure 5.2 reveals, about 85 percent of the respondents did not know any mining laws or regulations. More men than women knew at least one mining law/regulation. There is minimal spatial variation in terms of knowledge of mining laws/regulations (7.8% for Bole and 7.7% for Kenyasi).

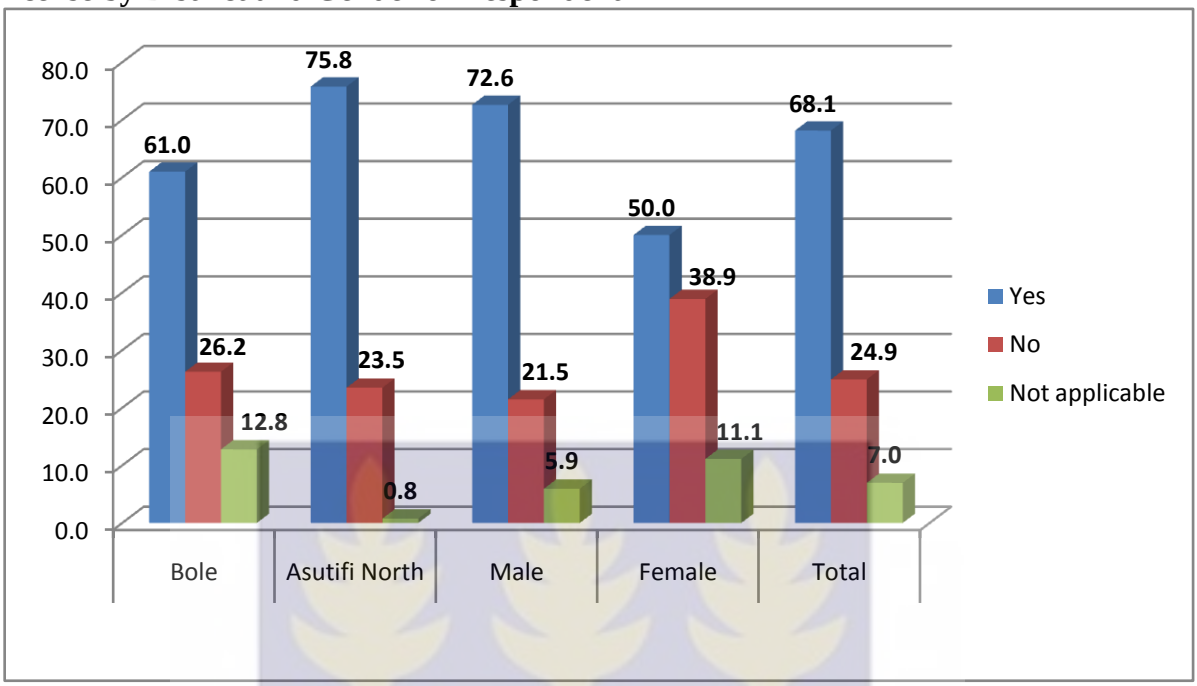
Figure 5.2 Knowledge of mining laws/regulation?



Source: Youth Entrepreneurship in SSM Survey 2013

However, when asked whether they knew that it was illegal to engage in small-scale mining without license, majority of the respondents (68.1%) answered in the affirmative (see Figure 5.3). This could be due to two reasons. One is the constant reportage of issues of galamsey in especially the electronic media. The second reason is the number of times they have been informed that the military were coming to end their activities there. In terms of gender, more men (72.6%) than women (50.0%) answered in the affirmative. Spatially, more respondents in Asutifi North (75.8%) were aware that mining without a license was illegal compared to respondents in Bole (61.0%). This could be due to the close proximity of Kenyasi No.2 to governmental structures compared to Kui which is in a remote location.

Figure 5.3 Awareness that it is illegal to engage in small-scale mining without mining license by District and Gender of Respondent



Source: Source: Youth Entrepreneurship in SSM Survey 2013

5.3 Local Institutions, Social capital and youth in small-scale mining

Linking social capital was not an apparent feature of individual entrepreneurs. The only linking social capital utilised in Kui is the occasional visits of the police, the military, and health personnel from Tinga to attend to their security and health needs. In Kenyasi, the police are called on to apprehend offending miners in the settlement. The difference between Kenyasi and Kui is Kenyasi's proximity to existing towns. Hence, the youth in small-scale mining in Kenyasi are able to utilise services from formal institutions in the pursuit of their entrepreneurial ventures.

Beyond such linking capital, bonding and bridging capital were prevalent in the settlements. Plate 1 is example of bonding capital among the Moslem faithfuls. Apart from praying together on a daily basis, the Moslems at Kenyasi made weekly contributions. Members could then rely on the programme when the need arose.

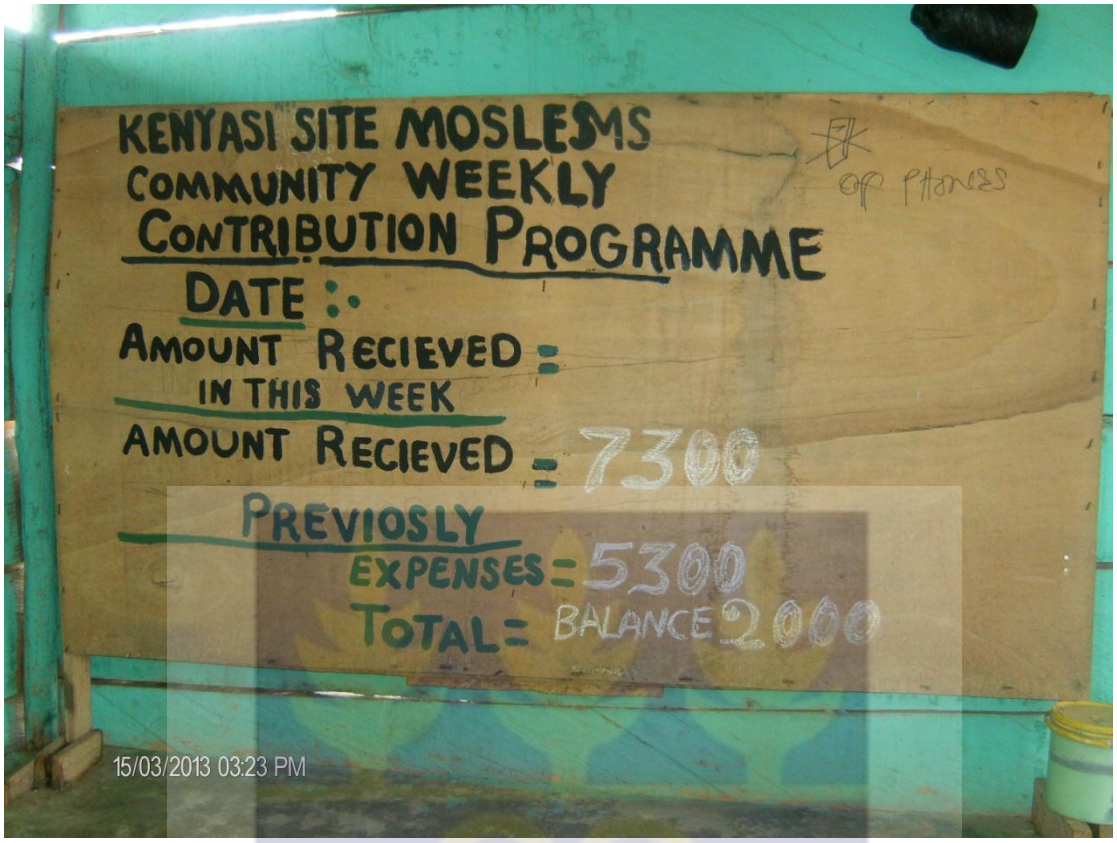


Plate 1 Depicts one of many social groupings from which members can draw support.

Similarly, the participants also bonded along ethnic lines. There was a Dagaaba group, Ashanti group, Sissala group in Kui. These groups each had their respective chiefs representing them. These groups were more for welfare purposes. People of one's ethnic group were responsible for any adversity against a member.

Local Institutions in Kenyasi No.2

The Committee was the apex body of governance of the small-scale mining sector in Kenyasi No.2. Committee members in Kenyasi had legislative and judiciary powers. They therefore set the rules and regulations which they implemented or enforced. They set rules and regulations which in their estimation would not only lead to better governance of the settlement, but would also enable businesses to thrive. They sat and resolved conflicts brought before them. Conflicts were rife in the mining areas as people with different

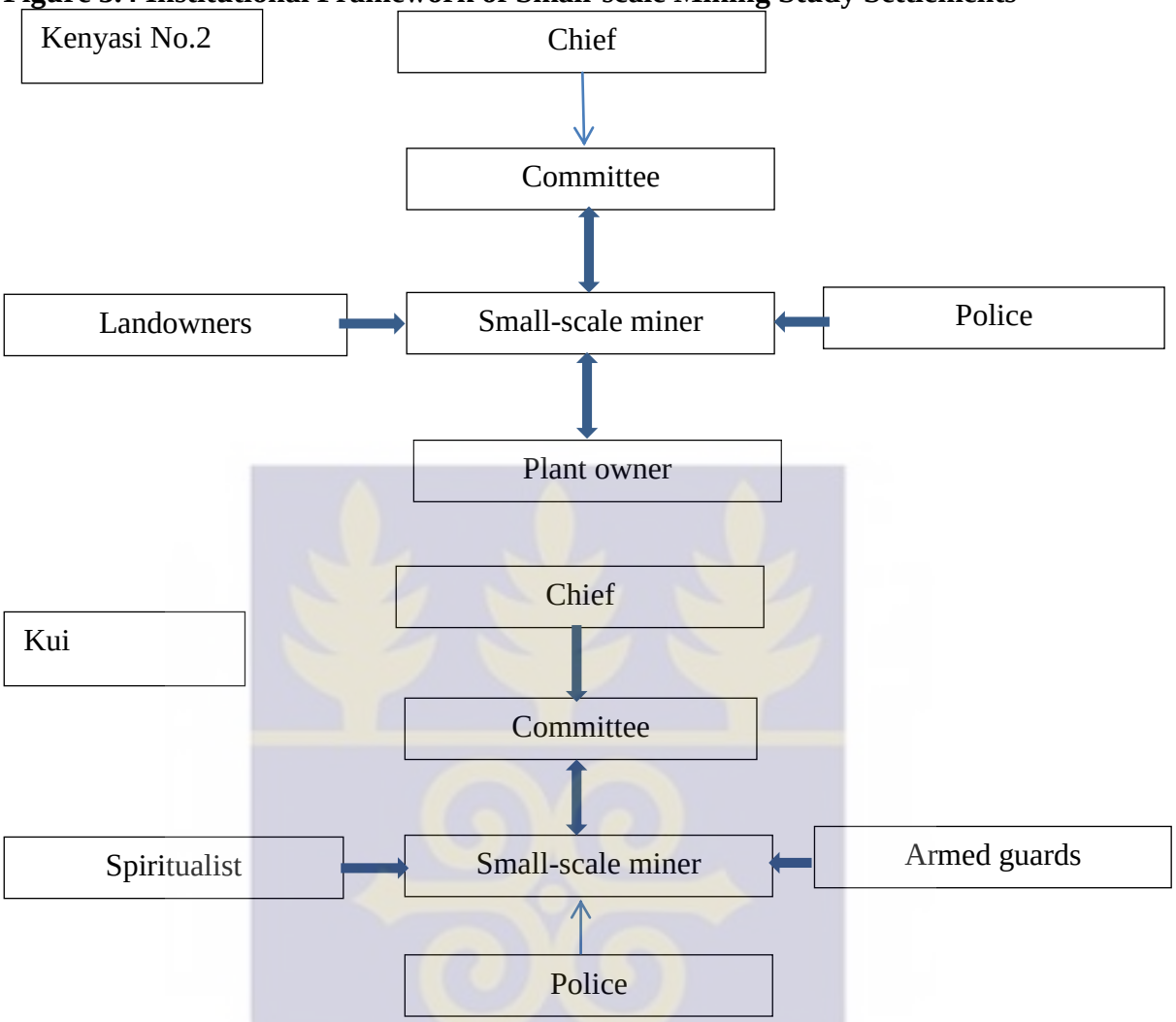
ambitions, backgrounds, attitudes, etc. assembled. Most often the conflicts were about misunderstandings among people. Some of the conflicts also had to do with their work, such as a group working into another group's or person's concession. When such situations evolved, the committee members tried to find an amicable solution. Some offenders were whipped openly when cases of assault were reported to the committee members. This was considered necessary to keep order so that businesses could flourish, considering that the operators were youthful and were sometimes under the influence of drugs and alcohol.

The committee invited police into the mining site if there was a conflict or situation that they could not handle internally. According to the focus group discussion, without the committee's permission, no police can go into the site to effect arrest.

It was the committee that also decided how much should be paid as tax by miners on the site. They also devised ways to mobilise revenue for the efficient operations of the site. This included ensuring that the power plant providing energy on the site was operational.

The chief of Kenyasi No.2 played a minimal role in the small-scale mining activities. The chief was remotely connected to the mining. Representatives of the chief went round the pits occasionally to collect 'Ohemaa' load (that is Queen mother's load). The queen mother did not play an active role. Unlike Northern Region where chiefs hold allodial rights to land under their jurisdiction, land in Brong Ahafo where Kenyasi No.2 is located is owned by families. The land owning family pitched camp at the site. They took active part in the day-to-day operations of activities in the site.

Figure 5.4 Institutional Framework of Small-scale Mining Study Settlements



Source Author's Construct, 2013

Local Institutions in Kui

The chief, according to Miller (1996), is traditionally the legislator, judiciary and executive. The chief is the custodian of the ancestral legacy, especially land, and also has a spiritual role. Kui was initially governed by the Chief of Tinga with a Secretary in the community. In 2011, a chief was enskinned for Kui. He is of the Gonja ethnic group as the settlement is on Gonja land and within the jurisdiction of the Bole Chief. Also in place

were sub-chiefs representing major ethnic groups in the mining settlement. These included a Dagaaba chief, a Sissala chief, and Ashanti chief.

Accordingly, intra ethnic conflicts (for example involving two Dagaabas) were arbitrated at the Dagaaba chief's palace. However, a case involving a Dagao and a person of any other tribe or ethnic group was arbitrated at the Kui chief's palace. This was to avoid bias on the part of the sub-chiefs. This system had changed by 2013 as every case was sent to the Kui chief's palace. This is unlike the finding of Werthmann (2009) in Burkina Faso where women who were victims of physical attacks resorted to Women's Association speakers to act as intermediaries between them and the aggressor.

The chief was supported by a committee. The committee members were mainly people from the area or people who had stayed in the community for a very long time. Typical cases handled on a daily basis included non-payment of workers by pit owners (sometimes not entirely the fault of the pit owners), misunderstandings between people, etc. The statement below from discussants in Kui illustrates typical cases and some sanctions that were exacted:

> They are brought before the chief, and if found guilty, they are caned, and banished from this area. For those who are well to do, they are fined and also banished. If two people fight, they are also brought before the chief for adjudication. Situations in which people are in dispute over payment for work done are also brought before the chief for settlemen'(FGD, Kui).

As Figure 5.3 depicts, armed guards were part of the local institutions in Kui. They were instittuted by the chief of Kui to forestall the high incidence of armed robbery attacks on the road from Kui to Tinga. Armed robbers used to operate on Mondays when a lot of people travelled to Tinga, Bole and Techiman. The operations of the armed guards

reduced the incidence of armed robbery. As chapter seven will reveal, about 13 percent of the youth interviewed in Kui have been victims of highway robbery.

5.4 Rules and regulations governing business activities and behaviour

In both settlements, there were rules and regulations that were in place to govern behavior and the way businesses were carried out. There were sanctions for people who went against the rules and regulations.

Methods of sharing ore

In both settlements, the miners had a formula for sharing the ore. The chief and his committee in Kui and, the committee members in the case of Kenyasi, decided the sharing formula. In Kenyasi the ore was divided into five equal parts: one went to the sponsor, the pit owner took one, the chiselers took one, the landlord took one and plant owners/committee members took the final part. In Kui, the ore was divided into three equal parts: the workers took one, the pit owner took one and the last went to the sponsor. As alluded to earlier, the chief of Kui is the allodial title holder to land. He took taxes from the operators.

Summoning somebody to the chief

In Kui, anybody who was summoned to the chief's palace paid 10 cedis to the summoner whether the person was guilty or not. If the person so summoned was guilty, depending on the nature of the offence, sanctions were exacted on the person. The sanctions ranged from expulsion to payment of a fine, and from seizure of some assets to public lashes. Some of the youth indicated that sometimes equipment they used for their mining activities were confiscated and that affected their businesses negatively.

Payment of Tax

Tax is one element that sustains the institutional setup in the settlements. It was from the tax that committee members in both Kui and Kenyasi No.2 were paid and certain development interventions executed. It was clear from the interviews that the tax component paid by various businesses was arbitrary and varied among businesses and within the year. In Kui the amount paid was at the discretion of the chief through his committee. Registration with the chief per year for a borehole was GH¢350 while registration for a chanfan machine was GH¢250. About 83 percent of the respondents indicated that the taxes imposed by the chief and his committee members were too high (see Table 5.1). A group of youth in Kui who went underground paid GH¢350 and offered the following rationale for the registration:

> The reason for which registration is necessary is to prevent stronger groups from taking over ghettos belonging to weaker groups. Another advantage of registration is that, if one of the workers gets hurt in the ghetto and you need financial support to get the person to hospital, assistance is more readily available.

There was also a Board fee and a Community Development fee. Further, the road to Tinga from Kui was tolled and passengers in a truck and those using their own motorbikes each paid one cedi. There were other ad hoc taxes paid depending on what services people rendered. Sachet water producers were called on anytime there was a gathering involving the chief to 'donate' water. Similarly, people dealing in fuel provided fuel for the patrol team and the chief. Concerns were raised in in-depth interviews conducted in Kenyasi no.2 about the percentage taken for the use of land. One fifth of ore extracted went to the landowner which some pit owners complained was too much considering that landowners did not make any monetary contribution.

Another downside to the institution of tax especially in Kui was the fact that shop owners who could not pay the tax risked having their shops closed. Some items amounting to the value of the tax (or sometimes even more than the value of the tax) were taken from the shop owners in case of default. Some miners complained that it was a disincentive to doing business during the off season when businesses were suffering due to low demand. As a result, some of the businesses stopped operating during the dry season in Kui

Table 5.1 Rules/regulations that affect business negatively

	Valid Percent
Sacred days	7.7
High taxes	82.7
Insecurity due to non-registration	3.8
Registration of pit	1.9
Close your operation if don't pay tax	3.8

Source: Youth Entrepreneurship in SSM Survey 2013 N=52

Sacred days

Mondays and Tuesdays were forbidden for people to engage in mining in Kui and Kenyasi, respectively. In Kui, after 6pm the previous day (Sunday), all digging and processing machines were supposed to be turned off. Offenders were given a fine of GHc50 if caught operating a machine after 6pm on Sunday. Several reasons were given to explain why some days were held to be sacred. A key informant in Kui intimated that the spirit goes round on Mondays to take stock of the gold resource. Others claimed that a day was needed for them to take a rest and wash their clothing. Discussants in Kui opined on the consequences of working on sacred days in Kui:

> You may think that nothing will happen to you, but if you are working on a machine, you can easily get wounded by the machine. For those who work underground, the pit can easily cave in on you. At first, if you defied the

> ban and went underground, you were sure to die underground; if you were working on a machine, it could explode.

On the sacred day, if one was caught working, the person was fined one white ram, some fowls, and some Schnapps, which were then used to purify the land.

Registration

Entrepreneurs in small-scale mining are supposed to register their activities and acquire concessions through the Minerals Commission. Registration through the formal structures in both mining settlements was virtually non-existent. Registration, except in very limited cases, was informal through the chief in Kui and had to be renewed every year. Registration and renewal fees varied according to the type of activity. Registration with the chiefs gave a semblance of legality, what De Soto (2000) refers to as extralegal, to their operations as the chiefs were the allodial title holders of the land.

Only about 13.5 percent of the youth in small-scale mining registered their business; the greater majority did not register. In Kenyasi, a handful registered their businesses with the District Assembly and these were those into processing of the ore who had planted their machines close to the main road. The motivation to register stemmed from the need to get electricity from the national grid. Others, like the treated water producers in Kui, needed to get a permit from the Ghana Standards Authority before operation so the business needed to be legal in order for them to deal with the Authority. There were other businesses which had their mother organisations elsewhere but with branches in the mining areas. The Savings and Loans scheme in Kui, for instance, started in Techiman and extended operations to Kui.

Some of the youth (13%) did not know that they needed to register their business. About 73 percent of the youth who did not register their businesses claimed that there was no need. This was corroborated by focus group discussants who were unanimous in saying that typical galamsey did not need registration. They claimed that no business at the site was registered with any governmental institution. About 15 percent, however, were of the opinion that they did not have access to the registration agencies.

About 4 percent of the respondents tried to register their business but faced challenges with finance and accessibility of registration agencies. The majority of them posited that their inability to register did not affect the operation of their businesses. However, some of them indicated that their inability to register affected the kind of support that could be extended to them by government and other organisations.

Table 5.2 Redress when miners' rights are violated

	Percent
Through the chief and his elders	86.5
We settle it amicably	6.2
Fight	1.9
Use the police	4.2
not applicable	1.2
Total	100

Source: Youth Entrepreneurship in SSM Survey 2013 N=259

Table 5.3 Rules/regulations that affect business positively

	Percent
Dispute resolution by chief and elders	70
Every operator must register and pay tax	30
Total	100

Source: Youth Entrepreneurship in SSM Survey 2013 N=20

5.5 Institutions and Business Operations

Land, which is key in the small-scale mining operation, was freely accessible to all irrespective of gender or region of origin. Unlike other economic activities, such as farming, where women used to be discriminated against, it did not appear to be the case in especially Kui where women were noted for siting areas rich in gold as they were the ones mostly into acquiring alluvial ore. An interview with a pit owner in Kui revealed that miners did not buy the land on which they operated, but rather registered it with the chief.

Unlike landowners in other mineral-rich areas who turned to small-scale mining partly because of the less attractive tenurial arrangements with migrant farmers and partly because of the more economically beneficial promise of income from small-scale mining (Nyame & Blocher, 2010), landowners in Kenyasi No.2 initially resisted small-scale mining. A landowner in an in-depth interview in 2011 indicated that the land was used for farming cocoa and other crops. She accordingly tried to prevent mining when it started but lost the fight. Hence, she decided to pitch camp at the site where she was taking rent in the form of one-fifth of ore extracted on her land.

However, some of the respondents revealed that their inability to register their businesses was affecting their business growth. Registration with the chief and the committee members gave them some confidence but not enough to invest in permanent structures and expand their businesses as a shop owner pointed out: 'I still operate in a temporary structure. I could have built a permanent and much bigger place had the business been registered'. This partly explains why some of the miners invested their money outside of the mining site.

Some of the miners were of the view that their inability to acquire a license for the operations was hindering their access to formal loans and government support.

Interventions to capitalize small-scale miners in the past concentrated on only registered small-scale miners.

5.6 Summary

Small-scale mining holds a potential to take scores of people out of poverty in an environmentally and socially sound way. This potential can be leveraged only if measures taken to formalise the estimated 90 percent of operators engaged in it informally are sensitive to the local context and actors. This chapter has shown clearly that there is a gap between small-scale mining legislations and practices of small-scale mining. One of the reasons is the inadequate, if not lack of, knowledge of existing mining laws/regulations on the part of operators. The other reasons involve more practical issues about inaccessibility, delays and costs associated with registration. The resultant effect has been informality of the subsector.

The informality of the small-scale mining sector has led to the emergence of local traditional institutions to govern behaviour and the conduct of business in the mining settlements. The settlements were well organised with committees in place and in the case of Kui the chief played legislative, judiciary and executive roles. This way, the rendition of small-scale mining settlements as unorganised or disorganised is less the case in the study areas.

CHAPTER SIX

SOCIAL CAPITAL, EMPLOYMENT AND ENTREPRENEURSHIP IN THE SMALL-SCALE MINING SECTOR

6.1 Introduction

Having delved into the institutional context of small-scale mining in the previous chapter, this chapter discusses the various motivations and range of entrepreneurial activities undertaken by the youth in small-scale mining. It will answer the questions why and who is engaged in what activity. It further delves into the innovative ways that the youth in mining engage in their entrepreneurial activities.

6.2 Vulnerability context

There are a host of push factors in the form of shocks experienced by some youth in mining which triggered the move to mining settlements. These are of both macro to micro in scale. Some people have mentioned the youths' inability to pay school fees as being the cause of schooling being kept in abeyance as money is pursued to allow the youth to continue. Some of the youth, however, stay on a more permanent basis. A large number of students flood the mining sites during vacation.

As chapter four argued, most of the youth in small scale mining either did not have formal education or had only basic education. As a result, getting a formal job was a problem. Even those with tertiary education had a problem finding jobs because, according to Aryeetey and Baah-Boateng (2013) the sectors that traditionally provided jobs (namely agriculture and manufacturing) are not doing well.

Agriculture is still rain-fed and is very risky business to engage in. It requires a significant amount of investment in fertilizer as the same land is used over many years. Tractor services are expensive to the farmers. In the absence of irrigation facilities, farming is not only limited to one farming season but also yields from the land are weather-dependent. One farming season for the greater part of northern Ghana means that in case of crop failure, farm dependent households are doomed for the rest of the year. Small-scale mining serves as an avenue to make money to be able to invest in agriculture and to survive in times of bad harvest.

Apart from the inherent problems and the unattractiveness of agriculture, there is a glut of people in the service sector. Retail trade which a lot of people diversify into is fraught with stiff competition and other challenges. Sales are therefore low and so are profits. The data show that a good percentage of the youth in small-scale mining were already into retail trade elsewhere.

Some of the youth also face adversities which leave them with no alternatives. Below, a pit owner narrates her experience leading to her decision to move to Kui:

Woman N worked with Nyoli Maternity Home for ten years after she had issues with her boyfriend. She got the job through Madam C. Her boss underpaid her and sometimes did not pay her at all. Also, her boss did not give her any training and went on treks alone. She managed to contain all that frustration until her boss started sending negative reports about her to Madam C. That apart, her boss showed her gross disrespect and disdain as she would use her left hand to give her salary[2]. She claims if she did not take the decision to quit the job, she would have died of heart attack as she was deteriorating on a daily basis.

[2] Culturally, it is an insult to give something to someone with the left hand

Man P is a Gonja from Kulmasa in the same district where Kui is located. The responsibility of taking care of his mother and siblings and other caregivers fell on him early in life.

> As young men, we prefer actions that bring quick results. When you start growing up, you start facing financial problems very early in life. Our father died when we were very young. We were consequently, distributed to other relatives who brought us up.

The story of man P is similar to that of several other youth in small-scale mining interviewed. Area, like many of the operators, thinks it his responsibility to cater for the needs of his parents and siblings in a situation where safety nets and social welfare are non-existent (see William 2008). It reveals that the young entrepreneurs were socially embedded and did not start business solely because of profit maximisation.

These are just a few of the constellation of adverse situations that may push people to go into mining. For such people the opportunity cost of going into small-scale mining is next to zero. As one of the interviewees asked 'when is a tortoise not on its knees?' This is to signify that they are already at a disadvantage and regardless of the risk involved in small-scale mining, they will engage in it.

6.3 Social Capital and Small-scale Mining

Business start up

Social capital plays a role in the start-ups of businesses in small-scale mining settlements. Their entrepreneurial activities are embedded in the socio-economic and institutional context**.** In the first place, to start a business in a small-scale mining settlement, the

entrepreneur needs information about the prospects of pursuing such an entrepreneurial venture. They often rely on their network of friends and family members for information to take a decision. An overwhelming 59.9 percent of the young entrepreneurs heard about small-scale mining in the settlements from their friends. About 32 percent heard about small-scale mining from their relatives. While 3 percent heard about the sites on radio, the others were either natives or settlers. Often, the entrepreneurs were incentivised by what people in their network had been able to achieve and were thus motivated to also start business in small-scale mining.

The friends and relatives not only gave information but also assisted with settling in and sometimes assisting with whatever entrepreneurial activity the youth wanted to go into. This included securing a good business location. For some of the entrepreneurs, their motivation to start business in the small-scale mining settlement was almost by default.

> When my husband married me, we needed some money to start life with. He decided to take the lead to Kui. After he settled fully, he brought me here. I started with 'top phase' until I got enough money to start a place for my shop. I started stocking it gradually and this is the result today (In-depth interview with woman D, 2013).

Woman D's case is very similar to most couples who operated in the sites. The men often take the risk of going to the small-scale mining sites and once they put the structures in place by way of accommodation and a business, they bring their wives. This way, the uncertainties related to starting a business in an unfamiliar context is reduced.

6.4 Social capital and Financing

Aside from business ideas, another resource available to the youth in small-scale mining through their social connections and social relations with others is financing for the start-up and subsequent operational funding.

6.4.1 Financing Start-ups

Since the youth in small-scale mining have different sources of start-up capital, they were asked to rank the most important sources for their entrepreneurial activities. An overwhelming majority (77%) of the youth interviewed ranked personal savings from their previous activities as the most important source of capital to start their entrepreneurial activities. About 12 percent ranked family savings as the most important source of start-up capital. A further 4 percent sourced funding from friends. Hence, the youth who relied on their networks for start-up capital constituted just about 16 percent. It is clear that the youth in small-scale mining did not rely on the banks for start-up capital as a lot of them would not qualify for bank loans. One way of overcoming the financial challenge was to engage in activities that did not require a heavy injection of capital. A lot of the miners engaged in services in the settlement were engaged in mining before. These people invested their proceeds from mining into their service businesses.

The relevance and reliance of social capital as a source of funding for business start-ups is manifest in the second rank. Of the youth who had a second source of start-up capital, about half (52.5%) ranked family savings as the second most important. About 19 percent of the youth with a second source ranked friends as important source. Thus, about three forth of the youth interviewed relied on their social networks for a second source of start-up capital. Similarly, the youth with a third source of start-up capital had it mainly from friends (47.6%) and family savings (25.4%). Thus, an overwhelming majority depended on their network of friends and family to supplement their start-up capital.

Table 6.1 Ranking of the most important sources of funding for starting business

Sources	First rank	Second rank	Third rank
Personal savings	77	16.9	7.9
Family savings	11.5	52.5	25.4
Friends	4	18.6	47.6
Money lenders	0.7	0.8	1.6
Credit Union/susu Group	2.2	3.4	4.8
Universal Bank	0.7	1.7	3.2
Rural/Community Bank	0	0.8	3.2
Cooperative/Association	0	0	4.8
Micro-finance Institution	1.1	2.5	1.6
Other	2.9	2.5	0
Total	100	100	100
Number of responses	278	118	63

Source: Youth Entrepreneurship in SSM Survey 2013

6.4.2 Operational financing

Overcoming the challenges of accessing funds from the formal channels was itself a sign of innovativeness. Most of the youth in mining could not go to the formal banks to access loans for their investment because their operations were illegal owing to their inability to register. Only about 2.1 percent of the miners went in for a bank loan. Most of them resorted to bootstrapping as a way of managing their finances. Taking interest-free loans from relations, friends, sponsors, etc. and falling back on their savings are all ways of dealing with the lack of access to credit.

A majority (62.4%) of the youth in small-scale mining interviewed used their own money or savings when business financing problems confronted them. They made daily contributions to savings schemes which they fell on to help them through their financing problems. In response to this question, one respondent quoted the proverb: ‘a tortoise always carries its own house in case of a rainy day’. This saying means that since the tortoise has nobody to turn to on a rainy day, it always carried its own house. This statement underscores the self-reliance as far as operational funding is concerned. About

9.7 percent turned to their friends for support. For those in mining itself, they relied a great deal on sponsors and or buyers (6%) to solve their financing problems. For a number of them including some of those who made daily contributions to Savings Schemes, they invested in assets that they could fall on when the need arose. About 5.2 percent of the youth sold off personal assets to address their financing problems. Others (3.3%) obtained supplier or trade credit.

There were savings schemes on hand to provide financial services to them. These schemes took daily contributions from the miners in both Kenyasi and Kui. There were three saving schemes operating in Kenyasi and one operating in Kui. They both mobilised savings but in Kui, they did not give loans because of the risk of losing money to the miners who could leave at any time. In Kenyasi, Lord Winners (one of the three saving schemes) offered credit only to its members. The loan amount was only twice the person's savings. Additionally, the borrower had to bring a guarantor who would repay the loan in case of default. Thus, the savings schemes were relevant in providing an avenue for the miners to save their money.

Table 6.2 Sources of funding to address financing problems

	Percent
Use personal funds/savings	62.4
Borrow from friends	9.7
Cash advances from customers/buyer/sponsor	6.1
Obtain suppliers/trade credit	3.3
Bank (loan/overdraft)	2.1
Sell of personal assets	5.2
Source from a credit scheme	0.6
Other (Specify)	9.7
Borrow from relation	0.9
Total	100

Source: Youth Entrepreneurship in SSM Survey 2013 N=330

6.5 Motivations of the youth entrepreneurs

There were myriad of motivations for the involvement of the youth in entrepreneurship in small-scale mining as can be seen from Table 6.3.

Table 6.3 Motivation of the Youth in Small-scale Mining

Motivation	Percent
Need to be own boss	11.8
Need for achievement	11.1
Financial progress	30.5
Unemployment	16.4
Dissatisfied with previous job	3.2
Take advantage of a business opportunity	13.8
No better choices for work	10.5
Other	2.6

Source: Youth Entrepreneurship in SSM Survey 2013 N=760 responses

Unlike many studies which observed that people are pushed into small-scale mining because they have few other options (Hilson 2001), this study found that only about 16 percent of the youth had unemployment as the motivation for mining. They included dropouts from the Basic, Senior High Schools and to a lesser extent tertiary institutions.

In an in-depth interview, a participant (man A) was deported from the United Kingdom where he worked with TESCO supermarket. Upon arrival back to Ghana, he was told by friends about mining in Kenyasi. In 2010, after unsuccessful search for a job, he invested his 5000 pounds into a shop where he was selling mining equipment, drinks etc.

Discussants at Kui indicated the following as motivating people to engage in small-scale mining in Kui. They had some education but was not enough to get them formal employment and hence their resort to small-scale mining.

> We are looking for money. Furthermore, our level of education is not high; otherwise we certainly would not be here. Some of us attended school to

> certain levels, but did not have people to sponsor our education. It is not useful to just idle at home. It is better to venture here.

When asked why they did not try agriculture which the majority of people engaged in, their response was:

> As my brother has said, after the little education, it is really difficult to go and start a life of farming. We believe we can make money faster here to take care of ourselves. We want to make money fast, so that we can better our chances of continuing our education.

In Kenyasi, discussants were of the view that there were no alternative jobs for them (See Box 1). Whereas some discussants held the view that there were no alternatives, others were employed but also abandoned their jobs to engage in small-scale mining. The opportunity cost of leaving a Newmont job, for instance, would be the loss of a regular, albeit paltry, monthly salary. The youth were not only strategic, but also sought to realise complex, contingent and often changing goals. They look for the avenues that accomplish these goals faster and small-scale mining, unlike farming and other paid jobs, seemed the most probable conduit. It is therefore unsurprising that 30.5 percent of the youth had financial progress as the chief motivating factor for starting business in small-scale mining. Most of the youth who were farming cited unprofitable agricultural activity due to unreliable rainfall, infertile soil and low prices of agricultural produce as the reason for moving into small-scale mining. A good percentage of the youth who were already in self-employment prior to starting their businesses in the mining settlements were motivated by the prospect of making financial progress.

Box 1 Motivation of the youth in small-scale mining

We are engaged in galamsey because we have no other alternative jobs available for us to do. Even menial jobs such as cleaning the homes of mining executives of Newmont and other government officials are hard to get. We believe that the gold deposits in Ahafo is a divine gift. God put the gold in the soil for us and we shall mine it to better ourselves.

We think that doing galamsey is better than engaging in criminal activities like stealing and other banditry acts. We do this due to unavailability of jobs

We will do galamsey to the best of our ability. It is through this job that we are able to transform our financial position. We get money through galamsey. Through this job we are able to build houses, and take care of our siblings, parents and children. Some of us were able to marry due to galamsey.

Galamsey has taken us away from poverty. For some of us, the poverty level has reduced by 100%. Some people have, through galamsey, raised their riches to a 1000%. We think that if a person borrows money (eg 50,000) to invest into mining he/she will be able to repay the loan within a short time. And such an act, we believe, is a way of reducing a person's poverty. Such a borrower is not poor but he/she is seeking to change his/her status by borrowing to invest in (business venture) mining. Investing in galamesy is a simple method of making profit.

Galamsey, for some of us, has transformed lives positively. I will use myself as an example. I was a security guard with Newmont, but I left due to job dissatisfaction. My monthly income with Newmont was inadequate, but my weekly income with galamsey is almost twice what I earned as a security guard with Newmont.

Source: Quotes from focus group discussions with mining youth in Kenyasi No.2

Another motivation for the youth who started business in the settlements was the 'need for achievement'. This group of entrepreneurs were driven by the need to succeed or attain excellence. Achievement-motivated entrepreneurs set goals which they can influence with their effort and ability. According to Cassidy and Lynn (1989), successful business people and entrepreneurs have this results-driven approach present in them. About 11 percent of the youth mentioned the need for achievement as the motivating factor for starting their businesses in small-scale mining. As one of the discussants in a focus group discussion said, 'now if I go home, no one can push me'. This statement epitomises recognition, which most of the youth hanker for. He will be recognized and respected because of what

he has achieved. For them the more status symbols such as houses, cars, businesses, etc., the more respect you command because of the achievement.

Another motivation of the youth in founding businesses in the sites was to take advantage of business opportunities. Small-scale mining settlements often have a high concentration of people and hence provide a seedbed for a wide range of businesses. Almost 14 percent of the youth mentioned starting their businesses to take advantage of the opportunities mining offered. The motive for this category of young entrepreneurs seems to fit a recent stream of thought which regards participants in the off-the-books (informal) economy as opportunity- rather than necessity-driven (Gerxhani 2004; Maloney 2004; Snyder 2004). Gerxhani (2004 p274), for instance, asserts that those starting-up businesses in this way 'choose to participate in the off-the-books economy because they find more autonomy, flexibility and freedom in this sector than in the formal one'. For the entrepreneurs in small-scale mining, they were partly driven by the need to escape the need to acquire a license, which is time consuming and bureaucratic. They also divest themselves of any need to reclaim the worked lands, which is a requirement for miners operating formally. They did not also have to pay tax to the government even though the informal taxes paid to operate a business or as a miner could be more than the formal tax.

Another motivation the youth mentioned for starting their businesses was the need to be their own bosses. For them, they were driven by the desire to run their own business independently without the control of anybody. About a tenth of the youth indicated this as the motivating factor.

Motivations were not static. There were some youth who's motivation for starting their first business could be regarded as necessity-driven but subsequent business start-ups were more opportunity-driven than necessity-driven. Moreover, some of the miners who

dropped out from school and wanted money to go back to school indicated that although they had enough money to go back, they were still doing their business. The explanation given was that they had to make more money. But when is money ever enough?

Moreover, motivations were not mutually exclusive. One hundred and thirty-three (33%) of the youth had up to three motivations for starting-up their businesses while 232 (58%) had a second motivation. About 9 percent and 14 percent of the youth who mentioned unemployment as the motivation for starting-up business had two other and one other motivation(s) respectively. Global Entrepreneurship Monitor studies have always categorised unemployed as necessity-driven and the other motivations such as the need to be own boss, the need to take advantage of a business opportunity, etc. as opportunity-driven. The implication is that some of the youth even though unemployed, still had other motives that could be classified as opportunity-driven. For instance, it was found that even though people may be unemployed or schooling and hence may appear to be necessity-driven entrepreneurs, they also see opportunities in small-scale mining owing to the laxity in the implementation or enforcement of the laws relating to the sector and also the potential to achieve success in a short time.

Hence, a simplistic dualistic typology of motivations into necessity- and opportunity-driven obfuscates the multiple and complex reasons for choosing the path of entrepreneurship in small-scale mining as argued by other authors (see among others Devins 2009; Shane 2009; Smallbone & Welter 2004; Williams & Round 2007; Williams 2008, Williams & Williams. 2011).

6.6 Entrepreneurial activities in Small-scale Mining

As intimated by a respondent, 'if God gives you the gift of life and you come here, there are several things that you can do'. This statement underscores the motley of entrepreneurial activities in the mining settlements. The youth in small-scale mining can broadly be categorised as those directly engaged in mining and those who provide services for the miners. Those engaged in mining directly include, but are not limited to, chisellers, drillers, pit owners, blast men, haulers, those who process the gold, buyers and or sponsors. The other category provides various ancillary services to the miners, ranging from catering services, transportation, sale of provisions, health, entertainment, religious activities etc. The latter has typically been overlooked in the literature.

6.6.1 Entrepreneurial activities in mining

The mining process consists of a number of different activities. It starts with the acquisition of the ore involving, grinding the ore and extracting the gold and finally buying the gold. First, the study focuses on the chisellers, drillers, blast men, haulers (locoboys), head porters, etc. In this survey, about 13 percent of the respondents were either chiselling, drilling or blast men, and about 7 percent were haulers (see Table 6.4). In Kenyasi, all the chiselling, drilling and blasting were undertaken by males. This was because of the depth (80 to 120 metres) they had to go down. In Kui, 21 out of the 23 youth in chiselling and drilling were males (see Plate 2). Females also undertook digging in Kui because most of the mining was near surface mining or what they referred to as 'top face'. This quote below indicates that even though women may be involved in digging, it was only an exception.

> There are certain jobs that can only be done by men because of the energy required for the job. Ghetto (underground) work is usually done by men. I remember only one woman who could easily challenge any man in the

ghetto. This was, however, a special case. Machine work can be done by both men and women. In fact, there is no hard and fast rule about who works where (FGD, Kui).

Table 6.4 Entrepreneurial Activities in the Mining Settlements

Entrepreneurial activity	Percent
Activities in Mining	
Chiseling/Drilling/blasting	13.1
Hauler/Locoboy	6.9
Pit/Ghetto owner	3.0
Scavenges waste ore	1.7
Process ore	17.5
Dealers	7.4
Services	
Transportation services/head porterage	5.9
Catering service/drinks	15.0
Owns shop/trading	20.7
Other services	8.9
Total	100

Source: Youth Entrepreneurship in SSM Survey 2013 N=406

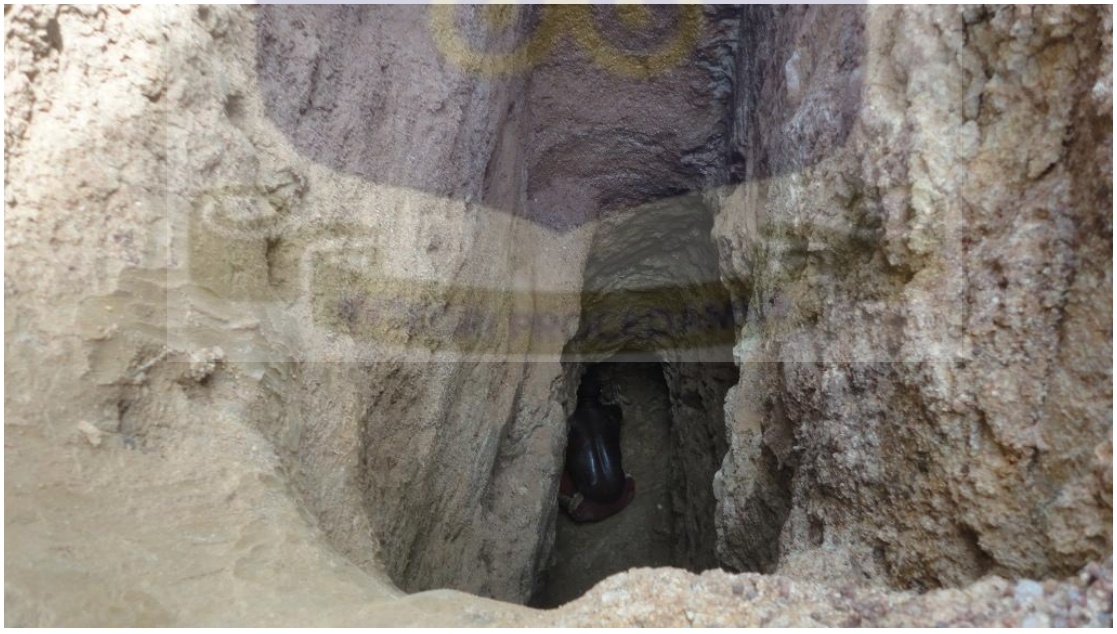


Plate 2: This plate depicts a young miner in a pit chiselling ore. Owing to the physically demanding task underground, chiselling in the pit is largely the domain of the males.

These activities have differences in terms of experience required. To be a blast man, one would have had several years of experience. However, the haulers do not need to have that experience and therefore serves as the entry point for those in actual mining itself. What is required is strength and care to avert accidents. Drilling and chiselling in Kenyasi require considerable experience and training. The training was given on the job, usually by more experienced miners who often were the miners' own tribes' mates as portrayed in the quote from an in-depth interview below.

> This is the second time I have come. I came six months ago. I have been a 'locoboy' (hauler) since my arrival. I was now trying to learn chiselling and got wounded. It takes quite some experience to do chiselling (man B, Kenyasi).

One common feature of the activities above is the low capital requirements compared to other activities in mining. The youth in these types of activities tend to be engaged in them out of necessity. As the empirical analysis in section 6.7 shows, the youth involved in digging were 16.3 percent more likely to be engaged in it out of necessity. It is therefore unsurprising that there was an association between necessity-driven young entrepreneurs and digging.

Young miners already in business often rely on their sponsors and or pit owners when the need arises for business and non-business related funding. They also depend on buyers sometimes for operational funding in return for the sale of gold to them (buyers) at below market prices.

Education plays an important role in determining what kind of entrepreneurial activities the youth engage in. Generally, the more educated youth engage in activities that are less risky. A bit of education reduces the likelihood of engaging in activities associated with

digging. The youth with primary, JHS and SHS education onwards are less likely than those with no education to be engaged in digging.

The aspiration of the youth in these activities is to make enough money to transition into activities that are less tasking and risky but more financially rewarding. A lot of them invest in processing machines in Kui mostly and to an extent in Kenyasi. Others also use their earnings from these activities to start other businesses in the mining settlements, the next big settlement or their home towns. It is understandable why the youth would transition into other activities. Most of the deaths through cave-ins, suffocation, and flooding, in small-scale mining are associated with these activities. Within three days, three personnel lost their lives while we were collecting data: two from suffocation and the other was an accident. These activities, especially in Kui, are heavily dependent on the availability of water for processing and hence are seasonal. In Kenyasi, the activities are dependent on the efficient operation of a power plant which provides energy for the compressors and processing machines.

Turning to the pit owners who are far fewer in number, and are those who invest in the pit until the pit hits the gold-bearing rock. It can be one person or a group of people depending on how much capital the person wields. The pit owners were men in both settlements. In Kui, it came to light that women are the ones who discover places suitable for deep pit mining. This is because the ore they access is near surface. Once they process the ore and it is very rich in gold, they inform people within their network who are pit owners. One needs considerable experience and finance to be a pit owner hence women were not able to extend their activities to include owning pits.

In Kenyasi, man M (aged 34) explained how huge the investment could be and how he rose through the ranks to be a pit owner. The quote also hints at the level of risk involved

in investing large amount of money without full knowledge of the mineral deposit. He said he spent GHc30,000 to 40,000 for the past two years to get to the gold bearing rock. 'Just imagine that the ore is not rich enough, what that would mean for my business, he asked. I moved from Accra to Tarkwa before moving to Kenyasi. In Tarkwa, I worked with BGL. I worked on contract as a welder for three years and left. When I came here in 2007, I used to go down to chisel and drill but now I have many workers and supervise them. I was told about this place by a friend when I was in Tarkwa. I changed from chiselling and drilling when I made money and hired more hands. I used the money I made from Tarkwa as well as support from friends. I did not take a loan. Dealers may advance us cash and take it out from our sales. Normally they buy unrefined gold from us. We also get support from our work colleagues (Man M, Kenyasi).

The challenge with pit owners such as Justice is lack of geological and other technical information. Hence deciding on where to sink a pit is a risk that the pit owner will have to take. In Kui, a lot of people complained of processing a Kia truck load of ore and not making enough to pay for the services of the truck. Some of the youth rely on spiritualists (Mallams) in order to try to reduce the risk.

Although few in number, some of the youth scavenged waste ore from deep shaft mining to also process for gold. They were mostly uneducated women of northern extraction. Men were not interested or thought they could get more money in other activities. However, the women do manage to develop a livelihood from it.

Ore processing is another essential part of mining. It consists of a range of activities including crushing, grinding, addition of water to form slurry, washing using jute materials or carpets, and amalgamation using mercury. The crushing and grinding of the ore into powder is typically done using a 'smooth' machine in Kenyasi because the ore is

hard rock. With the alluvial mining in some parts of Kenyasi and most part of Kui, the ore is in the form of gravel and a chanfan machine is used to process it. The range of activities in processing was coded as processing ore in this work. In all, about 17.5 percent of the respondents were into processing of the ore.

Of those engaged in processing, an overwhelming 95.7 percent were males. Processing of the ore by the use of chanfan machines was the preserve of the males in Kui (all 37 were males). In Kenyasi, 33 out of the 36 youth who were into processing of ore were males. The role of women in processing has diminished with the introduction of a processing machine. Women used to pound the ore into powder, a task that is done easily now with the machine.

This activity does not require considerable experience and training. What is rather needed is finance to purchase the processing machine. Finance for start-ups usually come from the miners' own savings from other businesses or from digging. They see processing as a business opportunity. Examples were given of people who returned from Europe to engage in processing. The empirical analyses show that the youth in processing activities were 4.2 percent less likely to be involved in it out of necessity.

There were a number of problems associated with processing as the quotation below captures succinctly.

> Chanfan and smooth machine workers also have their own hazards. Chanfan workers often suffer hearing defects because they fail to use ear protection equipment. Chanfan fan belts have on many occasions caused injuries to workers. This happens when the person fails to concentrate or gets too tired, because they work round the clock. Many of these accidents often lead to severing fingers and lacerations on the hands. Also smooth machine

> generates so much dust and this affects breathing. Many of them fail to use Personal Protection Equipment (FGD with chanfan operators, Kenyasi)

Apart from the above, mercury which is used in the amalgamation process is handled haphazardly. Most of the respondents thought that it was dangerous only when swallowed by a human being. This is particularly problematic as prolonged exposure to mercury is associated with many health problems.

Overseeing the digging and the processing are the sponsors and/or buyers. The involvement of sponsors come at different stages of the mining process in Kenyasi and Kui. In Kenyasi, they come in when a pit hits the gold-bearing rock while in Kui, the sponsors are brought in when an area is assayed and is judged to have rich deposit. The sponsors constitute a very important part of the mining process as they are principally the financiers. They are heavily relied upon by operators when the need arises for money, be it work-related or for personal reasons.

Man KA is a 32 year old entrepreneur who is a sponsor in Kenyasi. He was a carpenter in Kumasi but his business premise was demolished in a decongestion exercise to widen the road in Kumasi in 2009. He got the idea to start the business in Kenyasi from friends. Apart from his personal savings, friends also helped him with start-up capital. Friends also supported him to settle in Kenyasi.

The story of man KA shows how social capital helps in business start-ups in the small-scale mining settlement. They have the financial wherewithal and may not be living in the mining settlements. The researcher interviewed one of the sponsors in Kenyasi who lived in Kumasi. Those sampled for interview were all male in both settlements.

Gold buyers made up 6.4 percent of the sample. They are located in the mining sites and usually buy in bits from the miners for onward sale to other buyers located in bigger towns like Tinga, Techiman and Bole in case of Kui and Kumasi or Sunyani in the case of Kenyasi. There are instances when buyers also double as processers. For example, man S has a number of smooth machines in Kenyasi that process ore for miners at a fee and also buys the gold that is realised from the process. In Kui, the sponsors also double as buyers. It is required of a miner to sell gold to his sponsor at below market price. The buyers and sponsors are of considerable financial standing. Those who start the business of buying gold or sponsoring got their start-up capital from their previous businesses or employment. It is the norm however for the sponsors and buyers to transition from digging, processing and other direct mining activities to dealership. Should they require operational funding, they usually rely on their networks to access it. The networks in Kui include an association of gold buyers of the Gonja ethnic group. They contribute on a monthly basis into a revolving fund. One member takes Ghc 5000 when it is the person's turn. Another way of raising operational funds is through the buyers they sell to. This activity is male dominated. There was only one woman in the sample who was a gold buyer.

Sponsors and buyers (together referred to as dealers) were generally more educated. The majority of them had Senior High School or tertiary education (51.7%) and Junior High School education (31%). This is consistent with the literature as Jonsson (2009) found in his research in Tanzania that climbing up the career pyramid in small-scale mining is facilitated by, among other things, one's comparatively higher education level.

6.6.2 Entrepreneurial activities that support mining

Entrepreneurial activities providing ancillary services to the miners are diverse covering all aspects of life. One of the key services is transport. There are different ways of getting the ore to the processing sites: by head loads, by the use of wheelbarrow, by use of motorbikes, and by Kia trucks. A miner will consider the use of head porterage, if the load is not too far from the processing site, if the ore is inaccessible to cars, or if it is cheaper. About 3 percent of the sample carried load by the head. Mostly women (84.6%) used containers called bashers to carry ore in both Kenyasi and Kui. The women negotiate an agreeable price and engage other women to carry for a fee.

One of such was Madam B. Madam B was 33 year old woman who was married to a man in a village near Wa called Charia. She derived her livelihood from brewing local beer called pito[3]. She also used to farm bambara beans. She stopped brewing and farming the previous year because she delivered a baby boy that was strapped behind her. She moved into Kui with the help of her friend who took care of her transportation fare. She carried ore to the processing site. Madam B's case is typical of women's complex roles as primary caregivers for children and sometimes sole breadwinners (Amine and Staub 2009). It reflects how women's entrepreneurial pursuits can be attenuated by childbirth and dearth of support systems to facilitate start-ups. Finally, her case is suggestive of the embeddedness of entrepreneurial activities to the socio-economic and institutional context.

The other direct service to mining is transportation services. Even though the use of motorbikes for commercial purposes, locally known as okada, is outlawed, it was a popular means of transportation for miners and ore in Kenyasi from the main road into the mining site. In Kui, the use of okada services from the mining settlement to Tinga reduced

[3] Locally brewed beer from guinea corn

drastically owing to a directive from the chief forbidding their use. According to an okada rider, their number reduced to about ten from over fifty in the whole of Kui. The use of Kia trucks was also pivotal in the mining settlements. In Kenyasi, their use was limited to carting ore from the site to locations in Kenyasi and Hwidiem where processing sites were found. In Kui, however, they were the main means of transportation to and from Tinga. In the rainy season, it was the only means of transportation to Kui as the nature of the road made it impossible for smaller vehicles. They were also used to carry ore from mining sites to processing sites. In all, 2.7 percent of the sample provided transportation service. Transportation service was entirely the preserve of men. In Kenyasi, the number of youth providing transportation was great and some had come out with innovative ways due to the competition. Red, for instance, fitted his motorbike with music. Asked whether he thought the music brought him more clients he replied that he made as much as Ghc70 a day but he could not attribute it to the music alone. His ambition was to buy a car to be used as a taxi in the near future through this activity.

Another service that is crucial to mining was catering services. The results showed that over one quarter (26.2%) of the miners bought food to eat as opposed to eating home cooked meals. About 8.6 percent of the respondents were providing catering services. About 77.8 percent of all those providing catering services were females. Some young male entrepreneurs, however, seized the opportunity to venture into catering. A man K, aged 23, made fast food in Kui. He believed his business was thriving because he is a man who had ventured into a traditionally female domain. Since entertainment was an integral part of life in these settlements, about 2.5 percent of the respondents operated a drinking spot while a further 3.9 percent sold drinks and water. Sixty percent of drinking spots were owned by females. There was a big company in Kui that had drilled a borehole and

produced sachet water for the settlement. There were others who had also drilled boreholes and supplied miners for household use. There was also a company that has drilled a borehole and established a public bathhouse fitted with showers in Kui.

Shop owners made up about 6.4 percent of the sample. They sold literally everything including provisions, and chanfan parts. In Kui, the shop owners went to Techiman to buy Kia truckloads of items to stock their shops. Shop owners were mostly men (79.3%). This could be due to the inaccessible nature of the road to Kui especially. Some of them supplied to retailers who sold on table tops, kiosks, or as itinerant sellers. Such petty traders constituted about 8.6 percent of the sample (61.1 percent were females). Other trading activities covered in the sample included trading in fuel and, dealing in second hand clothing.

There were others on hand to repair broken down machines used for carting ore, processing the ore and generators that provide energy for the machines. They made up 4.4 percent of the sample. This was the preserve of men. Most of them were already repairers before they started their activities in Kui while some also learned on the job.

Unlike some activities in mining which did not require much start-up capital, most of the activities in the service sector required considerable amount of start-up capital to purchase their inputs and set up business premises. Start-up capital was mainly from their personal savings from previous jobs (50.9%), family savings (25.6%), friends (14%), and others (9.5%). Of the 50.9 percent who relied on personal savings, more men (55.9) than females (44.1%) relied on it. Similarly, more men (58.9%) than females (41.1%) relied on family savings while as much 60 percent of men compared to 40 percent of females relied on

friends. This could be due to men having stronger and/or wider networks than females in the mining settlements.

One challenge with the service sector was fluctuation in business activity. Since the activities were seasonal in Kui, businesses that provided services for miners experienced low sales or patronage during down periods. Hakeem who was one of the leading fuel dealers in Kui, reported sales to the tune of GHc30,000 a day during the rainy season when mining activities peaked but only GHc500 during the dry season. This notwithstanding, the youth in support service had a range of targets they wanted to meet through mining. A considerable number of them (44.1%) wanted to start another business outside of the mining settlement, build a house (31.5%), take care of their families (12.6%), go back to school (6.3%) and travel abroad (1.8%).

One challenge that was crosscutting is the lack of official recognition and, hence, the criminalisation of their activities. They were prepared to pay taxes if that would legitimise their activities. They were already being taxed heavily by the local chief and his committee. Some of them indicated that their investment in the settlement was curtailed because of the high sense of insecurity. This was heightened when they heard in the news that government officials were clamping down on people in galamsey. The manager of a savings scheme operating in Kui indicated that almost everyone who had saved their money with him withdrew their savings as a result on hearing such news.

Another challenge in Kui was armed robbery. Not even the hiring of armed guards by the chief of Kui to patrol the road had been enough to deter the robbers. On the eve of our departure from Kui, a vehicle bound for Techiman was attacked but guards hired by the chief of Kui were able to repel the criminals.

6.6.3 Multiple entrepreneurial activities

Some of the entrepreneurs did not just concern themselves with one activity nor did they necessarily remain in same business. Associated with astute entrepreneurs, some of the small-scale miners engaged in multiple businesses. This was important to spread their risk. An example was man K:

Man K owned a provisions shop, diesel station and sold chanfan parts in Kui. He was a fluid businessman who put money where business was booming. He was operating a filling station and a shop before coming to Kui. Seeing that chanfan parts were in high demand, he then started dealing in chanfan parts.

Some of the activities were also in sync or go together. This is portrayed in man G's story. Man G was originally a buyer of gold in Kenyasi but had to purchase smooth machines for processing of the ore for two reasons: Firstly to ease the drudgery of pounding with pestle and mortar; and secondly, because the supply of gold to him and other buyers was diminishing. Man G owned seven smooth machines in Kenyasi and employed a number of people to work for him. He bought gold from people who came to him to process their ore and others who were happy to sell to him. To attract more clients, he bought a Kia truck that went into the mining site to transport the ore for free. This was because the tailings (waste ore) could also be sold later for a substantial amount of money.

Similarly, there was the case of man E:

Man E, a member of the chief's committee, was combining the buying of gold and farming. He arrived in Kui in 2009 from another mining site called Dakrupe. He has been buying gold since he arrived from the money he made from farming and mining in Dakrupe. Since the supply of gold kept depleting, he decided to add farming again to his business in Kui and had a yam farm of several acres.

Some youth interviewed switched jobs as and when necessary:

Man H a 21 year old who dropped out from Senior High School because he could not pay his fees was an example. His brother, who was processing ore in Kui, prompted him about galamsey in Kui. He therefore decided to venture to Kui to engage in this business. During the rainy season, he used a chanfan machine but in the dry season when there was no water to do processing, he taught in the school in Kui. This way, he was able to work all year round. His aspiration was to go back to school if he made enough money.

The story of man H reveals that mining and support services were not mutually exclusive, and people combined and switched activities as and when necessary.

6.7 Econometric Analysis

The youth were not homogenous in their engagement of small scale mining. Some socio-economic characteristics of the youth influenced the likelihood of engaging in particular activities. These include age, gender, education, motivation for going into mining, mining experience, etc. These characteristics constituted independent variables which were regressed with work type (the dependent variable). The results of the multinomial probit regression are presented in Table 6.5.

Table 6.5 Multinomial probit results

Variables	Description	Services	Dealer	Processing	Digging
Age category (25-29=reference.)	15-19	0.040***	-0.135**	0.090***	0.005
	20-24	0.021	-0.154	0.087***	0.045
	30-34	-0.006	-0.117	0.099***	0.023
	35+	-0.010	-0.124	0.046	0.088
Gender (Female=reference)		-0.425***	0.091***	0.212*	0.122
Education (No education=Reference)					
	Prim	0.042	0.004	0.023	-0.068***
	JHS	0.023***	0.069*	0.052**	-0.145***
	SHS+	0.067	0.114***	0.030	-0.211***
Motivation (Necessity)		0.179***	0.026	-0.042*	-0.163***
Encountered shock		-0.036	-0.009	0.024	0.021
Migrant		0.085***	-0.040**	-0.051***	0.006**
Has mining experience		0.373***	-0.052***	-0.098***	-0.223***
Religion (Christian=reference)					
	Islam	0.082	0.017	-0.053***	-0.046
	Trad./other	-0.187***	0.029	-0.029	0.186
	^ Note: dy/dx for factor levels is the discrete change from the base level				
	√Significance: *** 1% ; **5% & * 10%				

Source: Computations based on STATA and Youth Entrepreneurship in SSM Survey 2013

The 15-19 age group were 4 percent more likely to be involved in services compared to the reference age group (25-29). The same age group were 9 percent more likely to be involved in processing. The age groups 20-25 and 30-34 were also 8.7 and 9.9 percent more likely than the reference age group to be in processing respectively. However, the 15-19 age group, were 13.5 percent less likely to be dealers compared to the reference group. This is not surprising as this age group would have been too young and economically disadvantaged to be dealers.

Men were 9.1 percent more likely than women to be dealers because of their relatively higher income generally and higher earnings in small-scale mining specifically (Awumbila and Tsikata 2007). Again, men were about 21 percent more likely than women to be involved in processing. Men were 12.2 percent more likely to be engaged in digging of ore. However, men were 42.5 percent less likely than women to be engaged in the service sector.

Education played an important role in what kind of entrepreneurial activities the youth engaged in. Generally, the more educated youth engaged in activities that were less risky. A bit of education reduced the likelihood of engaging in activities associated with digging. The youth with primary, JHS and SHS education or better were 6.8 percent, 14.5 percent and 21.1 percent respectively less likely than those with no education to be engaged in digging. The youth with JHS were, however, more likely to be involved in processing of the ore. The youth who had JHS and SHS education onwards were 6.9 and 11.4 percent more likely than those with no education to be dealers. Youth with JHS were 2.3 percent more likely to be in services. People with education increase their competencies and capabilities to engage in activities that were less risky and more profitable.

Differences exist in the activities the youth in small-scale mining choose to undertake vis-à-vis their motivation. The youth who moved into the mining settlement to take advantage of opportunities were 17.9 percent more likely to be in services. They were, however, 16.3 percent less likely to go into digging and 4.2 less likely to go into processing. This confirms one of the key hypotheses of this study that the youth who go into small-scale mining to take advantage of a business opportunity pursue their entrepreneurial activities in the service sector and dealership. See Appendix 4 for details.

Table 6.6 Entrepreneurial activity and motivation of the youth

Activity	Take advantage of a business opportunity	All other motivations	Total
Youth in service and dealership	91.4	54.0	57.2
Youth in other activities	8.6	46.0	42.8
Total	100.0	100.0	100.0

Source: Youth Entrepreneurship in SSM Survey 2013
Number=400 X^2=0.000

The youth who moved to the mining settlement because they had encountered a shock were 1 percent less likely to be dealers or engaged in services (3.6%) but more likely to be engaged in digging (2.1%) or processing of ore (2.4%). This is understandable as the financial requirements to start business in these activities can be daunting. Migrants were less likely to be engaged in activities related to processing than indigenes by 5.1 percent. Migrants were also 6 percent less likely to be dealers and 6 percent and 8.5 percent more likely however to be in digging of ore and services respectively.

6.8 Summary

This chapter examined the motivations and entrepreneurial activities in direct mining and its service economy. It has shown how heterogenous the youth in small-scale mining are in terms of their motivations and the support that they relied on. Whereas the literature is replete with unemployment as motivating the youth to go into small-scale mining, this was only the case for about a quarter of the respondents. The dominant motivation of the interviewed youth for starting entrepreneurial activities in small-scale mining was the need to make financial progress. Others were to take advantage of the opportunities provided by the sector and also the need to be their own bosses.

The youth, in the process of starting and running their entrepreneurial activities, accessed various resources embedded in their network of relations. In terms of financing for start-ups, there was limited resort to social capital. A majority of the youth depended on their personal savings. They used monies made in their previous businesses to start their businesses in the mining settlements. Others engaged in activities that did not require money or sold their labour and over time started their own businesses. In terms of operational funding, however, the young miners depended more on friends and relatives in times of need. Apart from funding, some of the young miners depended on their networks for ideas and training on the job.

Similarly, the youth were not homogenous with regards to entrepreneurial activities they undertook. Engagement in the various activities was influenced by several factors including the age, gender and education of the entrepreneur. In terms of age, for instance, the youth aged 15-19 were less likely to be dealers because they would have been too young to accumulate the necessary capital to be dealers. The same age group (15-19) compared to the reference age group (25-29) were more likely to be providing services and processing ore. In terms of gender, males compared to females were less likely to be in services. Males were more likely, however, to be in dealership and processing. Similarly, the youth with some education compared to those without education were less likely to be digging ore. The youth with JHS education were more likely to be in services, processing and dealership. The youth with SHS were more likely to be dealers. Migrants were 4 percent less likely to be dealers compared to indigenes. Similarly, they were less likely to be in processing. However, they were more likely to be involved in entrepreneurial activities in services and digging.

The youth were beset with a range of challenges. These challenges constituted personal safety and health risk and threat to the very viability and survival of their businesses.

Minor and fatal accidents and the spate of armed robbery threatened personal safety and health in the mining settlements. Other challenges such as lack of electricity from the national grid, lack of a continuous supply of water and a tax system posed a threat to the businesses of the young miners.

CHAPTER SEVEN

SMALL-SCALE MINING, VULNERABILITY AND POVERTY REDUCTION

7.1 Introduction

The literature is replete with assertions that small-scale mining is poverty driven and that operators are pushed into the sector out of necessity. This chapter analyses whether the youth in small-scale mining are reducing their poverty. It does this by first assessing the vulnerability of the youth before moving into the mining settlements and during their stay there. Wealth quintiles are generated and used to relate with socio-economic and location variables to see who is asset poor and who is not. It is argued that an overwhelming majority of the youth in small-scale mining are not poor.

7.2 Shocks

Generally, the youth move into galamsey as a survival strategy and when survival is achieved, they try to consolidate the future through a strategy of accumulation.

It would seem that most of the youth are triggered to move into mining settlements by some form of shocks they may have experienced. Some people have mentioned inability to pay school fees as being one such shock; in this case the pursuit of money to continue causes schooling to be kept in abeyance. Some people stay on as miners on a more permanent basis. A large number of students flood the mining sites during vacation.

As chapter six revealed, most of the youth in small-scale mining either did not have formal education or had only basic education. As a result, getting formal jobs was a problem. Even those with tertiary education had a problem finding jobs partly because,

according to Aryeetey and Baah-Boateng (2013), the sectors that traditionally provided jobs, namely agriculture and manufacturing, are not doing well.

Similarly, Man J who hails from Jirapa-Duori dropped out of class three because his father, who struggled to pay his school fees, had his hand amputated. He was then withdrawn from school to tend the cattle. After tending the cattle for some time, he abandoned the task and escaped to Prestea where he started in the galamsey business. He left in 2001 when the military drove galamsey operators away. He then went to Obuasi where he spent two years doing galamsey before going home. At home, he was farming but abandoned it because it was risky business. He again branched out into galamsey at Kui when operations started there. He was paid to operate a chanfan machine initially. He was able to build a house for his relatives at Bamahu where the University for Development Studies is located. He also used to contribute to a 'Susu' group, but when his mother fell ill he collected the money and sent it home for her treatment and upkeep and then withdrew from the group.

It must be noted that health insurance took root in Ghana after 2007 and hence episodes of illness necessitated costly out-of-pocket payments. Man J, like many other children, was relied upon to provide much-needed support in difficult times. In discussing poverty, cognisance must be taken, not only of the money stashed in the bank accounts, but also the shocks experienced by the operators.

As the story of Man J reveals, there were a range of shocks experienced in the mining settlements which sometimes end up perpetuating the miners' stay. About 33 percent of the youth in small-scale mining interviewed had experienced at least one shock in their line of business. Table 7.1 shows the various shocks experienced by the youth in mining. The most frequently reported shock was making losses (33.0%). This arises owing to the

lack of geological data about the mineral potential of mined land. The only way miners tried to reduce their risk was by the use of spiritualist, and assaying the ore. In the estimation of man J, it was the failure of the authorities to purify the mining settlement after a whole year of extraction that accounted for the reduction in production.

Another shock was indebtedness (22.3%). Some of the miners put in more money than the returns they received. The rest of the shocks experienced by miners were loss of breadwinner (13.4%), highway robbery (12.5%) and injury (9.8%). These shocks varied by the type of entrepreneurial activity engaged in. When decomposed by work type, about 30 percent of all dealers who experienced shock were in the nature of making losses. Dealers again were the main target of highway robbery as about 40 percent of the dealers who experienced shock were victims of robbery.

Table 7.1 Shocks Experienced by work Type

	Digging	processing	Dealer	Provide services	Total
highway robbery	12.5	5	40	10.3	12.5
Provisions shop ransacked	0	0	0	3.5	1.8
Sustained injury	12.5	10	10	8.6	9.8
Indebtedness	37.5	15	10	20.7	22.3
Making losses	20.8	50	30	32.8	33.0
Shop guttered by fire	0	0	0	8.6	4.5
Death of breadwinner	12.5	20	10	12.1	13.4
Was fined	0	0	0	1.7	0.9
Ore was confiscated	4.2	0	0	0	0.9
Tax is slowing down t	0	0	0	1.7	0.9

Source: Youth Entrepreneurship in SSM Survey 2013 N=112

Evidence from Table 7.2 indicates that more entrepreneurs in Kenyasi (50%) made losses than in Kui. This is understandable as it was more costly and took longer to reach the ore in Kenyasi than in Kui. Also, almost three times more youth mentioned death of breadwinner in Kui (18.2%) than in Kenyasi (6.5%).

Table 7.2 Shocks Experienced by Survey Settlement

	Kui	Kenyasi	Total
highway robbery	12.1	13.0	12.5
Provisions shop ransacked	3.03	0	1.8
Sustained injury	13.6	4.4	9.8
Indebtedness	21.2	23.9	22.3
Making losses	21.2	50.0	33.0
Shop guttered by fire	6.1	2.2	4.5
Death of breadwinner	18.2	6.5	13.4
Was fined	1.5	0	0.9
Ore was confiscated	1.5	0	0.9
Tax is slowing down the business	1.5	0	0.9
Number	66	46	112

Source: Youth Entrepreneurship in SSM Survey 2013 N=112

Despite the shocks that were experienced, be it health, variable incomes from mining, armed robbery, etc., which may have had deleterious consequences on wellbeing, the lack of alternative jobs made small-scale mining still very attractive to the youth. These notwithstanding, the data shows that some of the youth in mining were already self-employed or employees of other people prior to their engagement in mining in the surveyed settlements.

7.3 Investment

The kind of investment the youth in small-scale mining make will determine whether they will escape poverty permanently or fall back into poverty within a short time. If, as evident in the focus group discussions with the youth, they make money and 'boil' it (denoting splurging of money or extravagance), certainly that cannot deliver them from poverty and may condemn them to galamsey for the rest of their lives.

The majority of the youth in mining aspired to acquire their own houses (Table 7.3). This was evident from what they said they wanted to achieve from mining before their arrival in the mining settlements. Investing in houses has historically been a palpable sign of

achievement. The situation was a bit different now as some of the youth put up rental accommodation in Wa and other big towns. Wa especially is choice for rental accommodation for the youth from Upper West as there has been an increase in demand for accommodation arising from the establishment of University for Development Studies and Wa Polytechnic. A majority still put up houses just for recognition and respect. As one of them puts it, 'he cannot be pushed around when he goes home' because respect is accorded based on one's success or achievement.

Even though almost one in ten of the youth cited the quest for money to go back to school as reason for engaging in small-scale mining, it was realised that after making the money, their ambitions changed. It changed from merely saving money for school to building a house or starting a business. They were usually entrapped by the prospects of making it in life as opposed to going to school. Some would rather see their children and siblings through school than be tempted away from the prospects of making money in small-scale mining. Others were able to transition from small-scale mining to start their own business as the story of Madam Abi portray.

Madam Abi completed a three year apprenticeship programme and wanted money to start her own business. Her father, who was her major provider, died in 2003. Prompted by the prospect of obtaining business start-up capital by her friend who was herself into small-scale mining, she moved to Kenyasi. She scavenged waste rock and made GH¢ 40 per four mini bags of ore. Her ambition was to raise money to build a kiosk where she could conduct her business. Exactly a year after interviewing Madam Abi, a follow up telephone interview revealed that she had transitioned into setting up her own business at Tepa.

Some of the youth also channelled revenues from small-scale mining into agriculture. Acquiring animals was a preferable way of investing in agriculture for the youth as the

rainy season, which provided water for processing of ore, also coincided with the farming season in the northern and other parts of Ghana. Hence, miners sent remittances to help with farming and very limited numbers were able to combine mining with direct farming. Apart from buying animals that they could rely on in times of insolvency, miners also bought grains during harvesting when prices were extremely low and sold them when the prices went up.

The biggest investment of miners was the scores of dependents that they fed and saw through school. Even though miners regarded it as their responsibility, a lot of the dependents would not have had the benefit of education without money from small-scale mining.

Man K, who was a digger in Kenyasi, made averagely GH¢ 75 but regarded himself as poor. He was married with two children and had four others that he was taking care of. According to him, giving them education was a sure way of giving them a good future so that they did not suffer like him.

Table 7.3 Distribution of accomplishments the youth wanted to achieve with their earnings.

	Percent
House	38.6
Car	5.8
Start a business	35.5
Go back to school	9.6
Take care of family	8.5
Travel abroad	1.7
Expand my business	0.3
Total	100.0
Source: Youth Entrepreneurship in SSM Survey 2013	N=293

7.4 Poverty and Small-scale Mining

The perception of young entrepreneurs in small-scale mining regarding their poverty status is of paramount importance. As a result, the respondents were asked to compare their present entrepreneurial activity with their previous activities. Interestingly, an overwhelming majority (70.9%) indicated they were better off in their present activities compared to their previous ones (Table 7.4). This is revealing because any attempt to reduce or stop the activities of illegal small-scale mining must be accompanied with opportunities that are more rewarding than their present entrepreneurial activities. About 12 percent were of the opinion that their situation was the same while 15.5 percent thought they were worse off compared to their previous jobs or activities.

Table 7.4 Comparison of current entrepreneurial activity with previous work

	Percent
Better off	70.9
Same	12.0
Worse off	15.5
Don't know	1.6
Total	100.0

Source: Youth Entrepreneurship in SSM Survey 2013 N=251

There was variation in responses depending on location, gender and other parameters. Quite surprisingly, more of the youth in Kui (78%) than Kenyasi No.2 (64%) indicated that they were better off with their entrepreneurial activities in small-scale mining compared to their previous work. About 17 percent of the youth in Kenyasi No.2 compared to about 7 percent in Kui actually thought that their present activities were worse off than their previous work/activities. This could be due to the generally better opportunities in the Brong Ahafo region compared to Northern region.

In terms of gender, 74 of all males compared to 64 percent of all females revealed that they were better off as far as work was concerned. This is to be expected considering that, most of the activities in small-scale mining tend to favour the males. Almost twice as more females (18%) than males (10%) posited that they were the same in the present entrepreneurial activities compared to their previous work (Table 7.5).

Table 7.5 Comparism of current entrepreneurial activity with previous work by Location and Gender of Respondents

	Location		Gender		
	Kui	Kenyasi No.2	Male	Female	Total
Better off	77.7	63.6	73.5	63.6	70.9
Same	6.9	17.4	9.7	18.2	12.0
Worse off	13.9	17.4	15.7	15.2	15.5
Don't know	1.5	1.7	1.1	3.0	1.6
Total	100.0	100.0	100.0	100.0	100.0

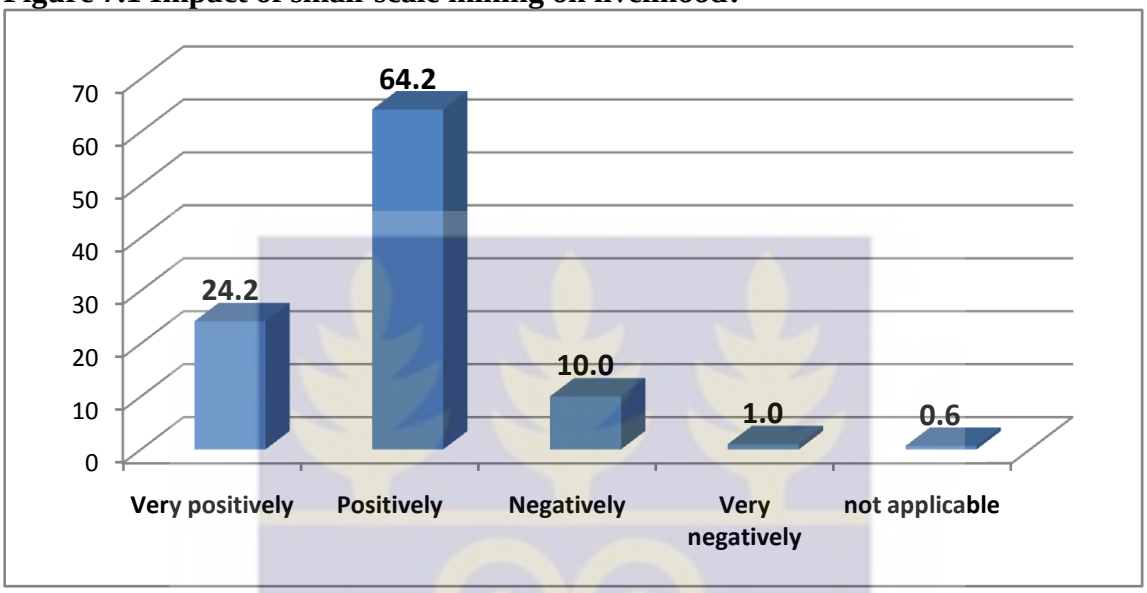
Source: Youth Entrepreneurship in SSM Survey 2013 N=251

About 88 percent of the youth within the 15-19 age bracket indicated that they were better off while 66 percent who were 35 years of age indicated same. The youth in the 15-19 age group were likely to be engaging in small-scale mining for the first time and or were more likely to earn more money than their previous work.

Similarly, respondents were asked to rate how mining affected their livelihoods? Their responses are depicted in Figure 7.1. A majority (64.2%) were of the view that mining affected their livelihood positively. About a quarter (24.2%) of the youth indicated that mining overall has had a very positive impact on their livelihood. Those who opined that mining had affected them negatively (11%) indicated that mining has not helped them to achieve their objectives. For example, those who claimed they wanted money to go back

to school ended up in mining on a permanent basis and has thereby cut short their education.

Figure 7.1 Impact of small-scale mining on livelihood?



Source: Youth Entrepreneurship in SSM Survey 2013

Table 7.6 shows a differentiation by gender and locality of how livelihoods were affected by mining. It reveals that in terms of gender, more males (26%) than females (18%) were affected very positively by mining. However, more females (76%) than males (61%) were affected positively by mining. Disproportionately more males (12%) than females (3%) indicated that their livelihoods were affected negatively.

With regards to locality, there was only slight difference. More youth in Kenyasi No.2 (27%) reported being affected very positively by mining compared to Kui (22%). Slightly more youth in Kui (12%) indicated being affected negatively compared to Kenyasi No.2 (7%).

Table 7.6 Impact of small-scale mining on livelihood by Gender and Locality

	Gender		Locality		
	Male	Female	Kui	Kenyasi No.2	Total
Very positively	26	18	22	27	24
Positively	61	76	65	63	64
Negatively	12	3	12	7	10
Very negatively	1	0	1	1	1
Not applicable	0	3	1	1	1
Total	100	100	100	100	100

Source: Youth Entrepreneurship in SSM Survey 2013 N=310

The main advantage of engaging in an entrepreneurial activity in the small-scale mining sites over their previous work related the earnings. About 75 percent indicated that they got more money in the sites compared to their previous work. The monetary benefit alone could encourage these youth to stay on. About 9 percent asserted that the environment was peaceful and may be indicative of the hostilities visited on them in other galamsey sites. Some of the youth narrated how they were constantly harassed on their previous sites. It is therefore understandable that some of the youth would find their present sites peaceful. Another 9 percent mentioned operating a business in the sites was less stressful.

Even more importantly, the earnings from small-scale mining probably were the tonic that kept operators in the subsector. There was statistically significant differences in average monthly earnings between the different work categories (T test=0.000). The lowest earners in the sector were those into digging ore. They earned about GH¢ 729 a month. The next highest earners were service providers who made a little over GH¢ 1137. The youth, who were into processing and dealing in gold, made about GH¢1422 and GH¢2013 respectively (Table 7.7). The earnings were high enough even though cost of living in the mining settlements was also high.

Table 7.7 Monthly earnings from Entrepreneurial Activity

	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Digging ore	89	728.78	692.885	73.446	50	3000
Processing ore	68	1421.71	1779.947	215.850	40	10000
Dealer	26	2012.88	2348.975	460.672	15	10000
Provides services	193	1137.29	1327.949	95.588	40	7500
Total	376	1152.58	1434.100	73.958	15	10000

Source: Youth Entrepreneurship in SSM Survey 2013 N=376

Table 7.8 Monthly earnings from Entrepreneurial Activity by Gender and Location

	Locality		Gender	
Work type	Bole	Kenyasi No.2	Female	Male
Digging ore	537.7	852.6	420.5	772.2
Processing ore	1536.4	1313.6	1033.3	1439.6
Dealer	798.1	2157.8	790.0	1777.4
Provides services	1212.6	1049.0	929.9	1307.5
Overall	1125.2	1146.4	876.6	1229.4
Number	186	191	102	275

Source: Youth Entrepreneurship in SSM Survey 2013

Averagely, earnings of the youth in both localities were not statistically different (T test=0.69).The youth in Kui earned on average Gh¢1125 while those in Kenyasi No.2 earned 1146. Earnings varied greatly by the type of entrepreneurial activity in the two places. For example, diggers in Kenyasi No.2 earned on average about Gh¢ 853 while in Kui, they earned about Gh¢ 538. Dealers in Kenyasi No.2 earned almost three times (about Gh¢2158) than that of Kui (about Gh¢ 798). It was only in processing and service sectors that the youth in Kui earned slightly more (see Table 7.8).

The study hypothesized that males were more likely to reduce their poverty compared to females. There were gender differences in monthly earnings from entrepreneurial activities in small-scale mining. The males earned averagely GH¢1229.4 in a month while the females received about GH¢876.6. The gender differences in monthly earnings was statistically significant (T test=0.027). Again, the hypothesis has been confirmed. In all

four categories of activities, males earned averagely more than females. This is not surprising as research findings reveal that the mean value of men's business assets is much higher than that of women even though women are more likely than men to own business assets (Doss 2006).

In terms of education, the youth who did not have formal education earned averagely the lowest (Gh¢879.2). The youth with primary education earned slightly more (Gh¢1085.3) than those without formal education but less than the youth with Junior High School education. Even though the youth with Senior High Secondary education earned above average (Gh¢1227.1 compared to Gh¢1135.9), their earnings fell below that of the youth with Junior High School education (see Table 7.9).

Table 7.9 Monthly earnings from Entrepreneurial Activity by Education

Education	Mean	Std. Dev.	Frequency
No education	879.2	1106.8	99
Primary	1085.3	1313.4	92
JHS	1355.8	1582.3	102
SHS+	1227.1	1489.6	84
Overall	1135.97	1389.99	377

Source: Youth Entrepreneurship in SSM Survey 2013 N=377

However, for a true reflection of individual wellbeing, there will be the need to disaggregate the averages. From Table 7.7, the minimum earned by diggers was GH¢ 50 a month while those in processing and services was GH¢ 40. A dealer earned as low as GH¢ 15 a month. The maximum earned was GH¢ 10,000 by a dealer and a processor. This shows the great variability in earnings.

Exit strategies

Small-scale mining, such as practiced by the respondents, is not a dead-end activity, neither is poverty a static one. This calls for an assessment of the exit strategies and the concrete steps being taken for the realisation of the strategies of the miners. The youth were therefore asked what they would do if they were to quit their present business and or settlement. The responses are depicted in Table 7.10. About 45.5 percent of the respondents indicated trading as their exit strategy. Those wanting to go into farming constituted 13.3 percent. Curiously, almost one in ten (9.6%) of the youth will want to go back to school as an exit strategy. Others will go back to their professions like driving (8.1%) and repair work (7.8%). It is interesting that some (3.9%) indicated that they will go to another mining site should they leave their present settlement. About 5 percent of the youth interviewed did not have exit strategy. The rest wanted to go into artisanal activities such as plumbing and carpentry.

Table 7.10 Exit strategies of the youth in small-scale mining

	Percent
Farming	13.3
Driving	8.1
School	9.6
Set up a provisions shop/Trading	45.5
Hairdressing	3.6
Repairer	7.8
Go to another galamsey site	3.9
Others	3.0
Nothing	5.1
Total	100.0

Source: Youth Entrepreneurship in SSM Survey 2013 N=332

Descriptives

The wealth index was divided into quintiles. Table 7.11 depicts the wealth quintiles. About 20 percent of the youth in the sample fell in the lowest quintile. The second quintile had 19.5 percent of the youth falling under it.

Table 7.11 Percentage Distribution of Wealth Quintiles

Wealth Quintile	Percent
Lowest	20.0
Second	19.5
Middle	20.5
Fourth	19.8
Highest	20.2
Total	100.0

Source: Computations based on STATA and Youth Entrepreneurship in SSM Survey 2013

Location

There was a statistically significant difference (P=0.022) in wealth quintiles for the two sites. Kenyasi was generally better off than Kui. As Table 7.12 reveals, the proportions of respondents in the lowest and lower quintiles were higher in Kui (21 and 25.5 percent respectively) than in Kenyasi (19 and 13.5 percent respectively). The reverse is the case in higher quintiles. More respondents in Kenyasi fell in the highest and higher quintiles (23 and 23 percent respectively) than in Kui (17.5 and 16.5 percent respectively). This can be explained by the close proximity of Kenyasi to established towns, and hence better living conditions compared to Kui which was purely a mining settlement.

Gender

There was a difference in gender in terms of wealth quintiles. Males tend to dominate in the second (19.7% for males against 18.9% for females) and middle quintiles (23.5% of

males compared to 12.3% for females). Females, dominated in the lowest quintile and the fourth and highest quintiles as Table 7.12 shows. This is interesting as the mean monthly earnings were smaller for females (Ghc876.6) than males (Ghc1232.2). The explanation could be due to the tendency in small-scale mining settlements for females to invest in household durable assets compared to males. The difference between males and females in terms of wealth quintiles was not statistically significant and hence due to chance alone.

Work type/Entrepreneurial activity

One clear pattern with regards to entrepreneurial activity is the disproportionately higher percentage of the miners in digging that were present in the lowest quintile (25%). On the other hand, a disproportionately higher percentage of the dealers were in the higher and highest quintiles (34.4 and 27.5 percent respectively). The differences in type of entrepreneurial activity engaged in by the youth and wealth was significant (P =0.020).

Migrants verses indigenes

There was a statistically significant difference (P=0.00) between the young entrepreneurs' status as a migrant or indigene and wealth. It appears that the indigenes were relatively better off than the migrants. A much higher proportion of the indigenes fell in the higher and highest wealth quintiles (32.4 and 22.3 percent respectively) compared to the migrants (13.1 and 19.2 percent respectively). The reason is not far-fetched, at least for Kui, as the indigenes do not pay taxes which constitute a considerable component of operational cost.

Shocks

Shocks can affect people's poverty status in a direct way. A higher proportion of miners who experienced shocks in mining fell in the lowest quintile (26.7%) than those who did not (16.8%). However, miners who did not experience shocks had higher percentage in the fourth and fifth quintiles (21.9 and 20.8 percent respectively) than miners who experienced shocks (14.9 and 18.9 percent respectively). The differences were however, not statistically significant.

Table 7.12 Various Indicators by Wealth Quintiles

Variable	Lowest	Second	Middle	Fourth	Highest	No.
Study site						
Kui	21	25.5	19.5	16.5	17.5	200
Kenyasi	19	13.5	21.5	23.0	23.0	200
Shocks triggering migration to mining settlements						
No	22.4	5.2	32.7	20.7	18.9	58
Yes	19.6	21.9	18.4	19.6	20.5	342
Shocks in mining						
No	16.9	19.4	20.8	21.9	20.8	273
Yes	26.8	19.7	19.7	14.9	18.9	127
Worktype						
Digging	25.0	15.0	23.0	20.0	17.0	100
Processing	14.3	15.7	32.8	15.7	21.4	70
sponsor/dealer	6.9	10.3	20.7	34.5	27.6	29
provide services	21.4	24.4	14.9	18.9	20.4	201
Gender						
Female	21.7	18.8	12.3	21.7	25.5	106
Male	19.4	19.7	23.5	19.1	18.4	294
Work Experience						
Schooling	23.1	16.9	21.5	18.5	20.0	65
Employed	26.1	26.1	21.7	10.8	15.2	46
Self-employed	16.6	23.2	18.8	22.1	19.3	181
Unemployed	19.7	15.2	21.2	19.7	24.2	66
Other	18.5	11.1	29.6	14.8	25.9	27
Education						
No education	22.1	18.3	20.2	10.6	28.8	104
Primary	14.7	23.2	17.9	22.1	22.1	95
JHS	20.6	12.2	25.2	24.3	17.7	107

Table 7.12 Various Indicators by Wealth Quintiles Contd'

Variable	Lowest	Second	Middle	Fourth	Highest	No.
SHS+	22.3	25.5	18.1	22.3	11.7	94
Ethnicity						
Gonja	20.7	15.1	9.4	16.9	37.7	53
Dagomba	0	13.3	26.7	20.0	40.0	15
Dagao/wala	13.7	22.5	30.4	17.6	15.7	102
Sisala	23.5	23.5	23.5	14.7	14.7	34
Akan	20.2	13.5	19.2	29.8	17.3	104
Other	29.4	23.5	16.5	14.1	16.5	85
Migrant status						
Indigene	17.9	7.2	20.1	32.4	22.3	140
Immigrant	21.2	26.2	20.4	13.1	19.2	260
Marital status						
Single	20.9	17.5	20.9	19.7	20.9	177
married (Mono)	20	25.0	21.3	16.8	16.8	160
married (Poly)	22.2	16.7	22.2	16.6	22.2	18
Widowed	25	0	12.5	37.5	25.0	8
Separated/divorced	17.4	17.4	8.7	21.7	34.8	23
Cohabitating	7.1	0	28.6	42.8	21.4	14
Total	20	19.5	20.5	19.7	20.2	400

Source: Youth Entrepreneurship in SSM Survey 2013

Econometric Analyses of Poverty

The asset index used as the dependent variable for the econometric analysis was constructed using thirty indicators. The assets included household durable assets, house characteristics, mining-related assets and access to safe sanitation (See Appendix 2 for indicators). It was used as a continuous variable. The mean index was higher for Kenyasi (66.4) compared to Bole (59.2)

Table 7.13 Wealth index by district of respondent

District	mean	N	sd	min	Max
Bole	59.2	200	35.775	-1.091	112.589
Asutifi North	66.4	200	41.159	-27.556	117.004
Total	62.8	400	38.684	-27.556	117.004

Source: Youth Entrepreneurship in SSM Survey 2013

Regression

Table 7.14 Results of Linear Multiple Regression Wealth Index

Variable	Coefficient	t-statistics
Male	-0.04688	-0.92
Informal savings and credit scheme	0.125542	2.34**
Asutifi	0.047135	1.06
Work experience	0.01721	0.93
Worktype (Digging as reference)		
Processing ore	0.117371	1.94*
Dealer	0.267544	3.04***
Provides services	0.036624	0.71
Shock	-0.179	-2.96***
Education (No education as reference)		
Primary	0.021708	0.38
Junior High School	-0.04384	-0.79
Secondary School or higher	-0.07988	-1.29
Shock#migrant		
0 1	-0.13353	-2.51**
1 0	0.140507	1.84*
Number of children	-0.02246	-1.62
Dagao	0.09215	1.81*
Diagnostic Statistics		
Constant	0.643286	5.94***
Number of observations	378	
R-squared	0.1036	
Adjusted R-squared	0.066	
Probability > F	0.0004	

Source: Computations based on STATA and Youth Entrepreneurship in SSM Survey 2013

Significance Level: 1 % (***), 5 % (**), 10 % (*)

The results of the linear regression indicate a significant effect of membership of informal savings and credit scheme and poverty reduction. The positive sign imply that when all other factors are held constant, being a member of an informal savings and credit scheme would contribute to reduction of poverty.

The entrepreneurial activity engaged in by the youth appears to have an effect on poverty reduction. The results show that being a dealer compared to a digger reduces the probability of being poor by about 27 percentage points. Similarly, the probability of the

youth in processing falling into poverty reduces by 11.7 percentage points compared to those in digging.

The youth who encountered shock had a significantly negative effect on poverty reduction. This is unsurprising as such unexpected events occasion unpredictable fluctuations in earnings. As Heemskerk (2005) posits: not only will shocks pull such participants in small-scale mining into destitution, income variability resulting from shocks hampers their ability to access formal credit. In spite of the risk to health, about 60 percent of the youth did not have a valid health insurance. About half of the young women and 38 percent of the young men had valid insurance.

An interaction of youth who experienced shock in the mining settlements and migrant status yielded some interesting results. It revealed that even when a migrant has not experienced shock, that youth still appear to be significantly negatively associated with poverty. Conversely, an indigene that experienced shock was still positively significantly associated with poverty reduction. This is not far-fetched as the interviews revealed that most indigenes operating in Kui were not subjected to the levies that migrants had to pay.

Despite education being a critical factor to poverty reduction (Girma & Kedir 2005; Gyimah-Brempong et al., 2006) it did not contribute significantly to poverty reduction in the sample.

Being a dagao (an ethnic group in Upper West) significantly exerted a positive influence on poverty reduction. This is not far-fetched as the dagaaba ethnic group has been historically associated with mining since the colonial period.

Model adequacy

Model specification

Model specification test was performed using linktest in order to detect specification errors if any. Errors arise if revelant variables are omitted or if one or two variables are included in the model. The linktest performs a model specification link test for single-equation models. It creates two new variables: the variable of prediction denoted by _hat, and the variable of squared prediction denoted by _hatsq. The model is refitted using _hat and _hatsq as predictors. If correctly specified, _hat should be significant while _hatsq should not be significant. Following from this, the linktest table in Appendix 5 has failed to reject the assumption that the model is specified correctly.

Multicollinearity

Ordinary least squares regression was employed to analyse the impact of various explanatory variables on the dependent variable. As this statistical technique makes various assumptions the study performed diagnostic test to ensure there was no multicollinearity. Multicollinearity arises when explanatory variables in the linear model are correlated. When present, ordinary least squares estimators are imprecisely estimated thereby clouding an understanding of how the various explanatory variables impact the dependent variable. One of the ways of detecting multicollinearity is through an examination of the matrix of predictor variables. Large coefficients in the matrix indicate of multicollinearity.

Selected variables for multicollinearity test

Male	A
Informal savings and credit scheme	B
Asutifi North	C
Work experience	D
Processing ore	E
Dealer	F
Provides services	G
Shock	H
Primary	I
Junior High School	J
Secondary School or higher	K
Migrants who did not experienced shock	L
Indigenes who experienced shock	M
Number of children	O
Dagao	P

Source: Author's design

To ascertain the presence of multicollinaerity, the study employed Pearson correlation coefficient on the above independent variables. The result of the correlation coefficient matrix is on Appendix 5. It shows that there were no issues with multicollinearity. Normality test using graphical and non-graphical methods and test for heteroscedasticity were also conducted (see Appendix 5).

7.5 Subjective Assessment of Poverty

This work also sought to make a subjective assessment of poverty. Respondents were therefore asked whether they considered themselves poor and then to give explanations why they were poor or not. The answers elicited by the question were intriguing. The results are presented in Table 7.15. A majority (56%) indicated that they were poor while just about 44 percent responded in the negative. The reasons given were even more interesting. Unlike the objective assessment which relied on the possession of certain durable and nondurable assets, some of the respondents were not at all concerned about

that. The reasons adduced could be broadly divided into two factors: internal and external factors. Internal factors were those reasons that originated from or related to the person. External factors were reasons that originated outside of the person.

Table 7.15 Distribtution of Youth Who considered themselves poor

	Percent
Yes	55.9
No	44.1
Source: Youth Entrepreneurship in SSM Survey 2013	N=388

One internal reason given for being poor was that they had still not met their set objectives. As has already been stated, the youth in small-scale mining were very clear in their minds what they wanted to achieve. The objectives or targets did change from time to time. Once that target was achieved, then they did not consider themselves as being poor. As far as it remained to be met, then they considered themselves poor.

One respondent said he was not poor because he was able to feed himself and his family. Another said he was poor because he did not have a car. So the second person's conception of poverty was not having a car regardless of the person's ability to feed himself/herself.

The ability to solve one's problems also featured as a determinant of being poor or not. It is considered a sign of maturity among some cultures if one is able to solve one's problems without resorting to external help. To the extent that one is able to find solutions to especially monetary problems independently, that person is not poor.

Some of the reasons that can be considered external had to do with comparison of oneself with others. For example, some of the respondents in the in-depth interviews opined that some people were better off than them and so they were poor. There were some who had

houses, cars, and other assets who still considered themselves poor because others were better off than them.

Table 7.16 Explanation for Poverty Status

	Explain your answer	Percent
Yes	My family lives in poverty	19.57
	Am unable to do things I wanted	33.42
No	I make enough money to feed my family	20.38
	Some people wish to be in my shoes	2.72
	Ability to solve my own problems	23.37
	I work	0.54
	Total	100

Source: Youth Entrepreneurship in SSM Survey 2013 N=368

The conception of poverty was not dependent on the amount of money respondents raked in. It would appear that the respondents considered paramount their ability to meet their needs and those of their families. The reasons adduced by those claiming to be poor were that their families lived in poverty (19.57%) and that they were unable to do the things they wanted to do (33.42%).

The reasons given by those claiming not to be poor also reflected their ability to accomplish certain objectives. For instance, a good percentage of the respondents (20.4%) indicated that they made enough money to feed their families. Almost a quarter (23.4%) of the respondents intimated that they could solve their own problems and hence were not poor. Some of the respondents (2.7%) indicated that they were better off than other people. Once others were striving to be like them, then they were not poor.

Objective verses subjective assessment of poverty

Table 7.17 compares objective against subjective assessment of poverty. It shows that some of the youth classified as asset poor in the objective assessment did not consider themselves poor in the subjective assessment. Conversely, some of the youth who were classified as asset rich, considered themselves poor. Ravallion and Lokshin (2001, 2002) found similar weak matching even though the subjective and objective assessment was significantly correlated. The results indicate that there was no statistically significant relationship between wealth quintile and subjective poverty (chi square with 4 degrees of freedom =4.0227, P=0.403)

Table 7.17 Objective assessment against subjective assessment

Wealth quintile	Do you consider yourself poor?		
	Yes	No	Total
Lowest	18.9	21.6	20.1
Second	22.6	15.2	19.3
Middle	19.8	22.8	21.1
Fourth	18.0	21.1	19.3
Highest	20.7	19.3	20.1
Total	217	171	388

Pearson chi2(4)=4.0227 P=0.403

7.6 Happiness with Life

The reasons respondents gave for this question were intriguing. A lot more people claimed they were happy with their lives because they had life. They believed that once there was life, there was hope.

Others were happy because they had good health. For many, it did not matter how much they had at the time of the data collection but the good health and hope of making it in the very near future. One of the participants in Kui puts it more succinctly thus: “Life is wealth”.

Table 7.18 Wealth quintile by happiness with life

Wealth quintile	Happiness with life		
	Yes	No	Total
Lowest	21.0	16.9	20.2
Second	19.0	20.8	19.4
Middle	22.6	11.7	20.4
Fourth	21.0	16.9	20.2
Highest	16.5	33.8	19.9
Total	310	77	387

Pearson chi2(4)=13.9968 P=0.007

7.7 Summary

Just as the youth's engagement in small-scale mining activities were influenced by their personal circumstances, they also differed regarding their poverty status. As the chapters revealed, some of them were pushed into mining by shocks and the preoccupation of such youth was to meet immediate monetary needs and accumulate capital in the long run. Others encountered shocks in their entrepreneurial pursuits. The ability of youth to recover from such shocks or state of vulnerability is to an extent dependent on the kind of investment they make. The young entrepreneurs covered in the study made both tangible and intangible investments. Some of the tangible investments were acquisition of assets which acted as buffer against shocks. Some of them invested in houses for owner occupancy and rentals, agriculture, trade, etc. Others' investments were intangible in nature. Not only were some of the youth investing in their relatives' or dependents' education, they also took care of relatives and thereby underscoring the social embeddedness of the youth.

The study revealed that belonging to an informal savings and credit scheme had significant effect on poverty reduction. The youth who encountered shock in their entrepreneurial pursuit, expectedly, had a significant and negative effect on poverty

reduction. Being a migrant who has not experienced any shock was still negatively associated with poverty. Being a dealer, compared to digging, was associated with poverty reduction.

CHAPTER EIGHT

CONCLUSION

8.1 Introduction

This research sought to provide an answer to the motivation for the youth to engage in entrepreneurial activities in small-scale mining and whether the activities lead to poverty reduction. The approach to answering the aims of the study used literature of the small-scale mining as it relates to youth entrepreneurship (chapter two); used a mixed method to gather and analyse the data (chapter three); analysed the historical and contextual development of small-scale mining in Ghana (chapter four); analysed the institutional context within which small-scale mining entrepreneurs operate (chapter five); analysed the motivations and entrepreneurial activities of the youth (chapter six); and finally analysed whether the entrepreneurial activities take the youth out of poverty (chapter seven). The next section provides a summary of the key findings of the research, followed by policy implications and recommendations.

8.2 Summary of the Major Findings

What are the motivations for the youth entering small-scale mining?

The motivations of the youth for starting entrepreneurial activities in small-scale mining were varied. The dearth of employment partly explains the motivations. The need to make financial progress was the motivating factor for about 30 percent of the youth. The financial gain in small-scale mining is perceived to be higher than the farming, trading and other activities that the youth were previously engaged in. The youth were strategic and sought to realise complex, contingent and often changing goals. The need for achievement motivated about 1 in 10 young entrepreneurs to start their businesses. This group of young entrepreneurs transcended Maslow's biological and physiological need to

a point where achievement, respect from others and recognition was paramount. Some of the youth started entrepreneurial activities in small-scale mining to take advantage of a business opportunity. Even though the literature is replete with unemployment as the motivation for increasing number of youth entering small-scale mining, only about a quarter of the youth interviewed indicated unemployment or no better choices for work.

Motivations were not also mutually exclusive. Some of the youth had multiple motivations which straddled the necessity and opportunity divide. Motivations were not also static but evinced dynamism. Even though the motivation for starting the first business may be said to be necessity-driven, subsequent business start-ups were more opportunity-driven. The bifurcation of motivations also tends to ignore the entrepreneurs' social embeddedness.

Which small-scale mining activities do the youth engage in and how is this influenced by their characteristics?

The youth in small-scale mining used social capital differently for different stages of the entrepreneurial activities. Regarding their source of information about entrepreneurial activities in the small-scale mining sites, an overwhelming majority of the youth relied on friends and relatives. However, when it comes to start-up capital, social capital did not feature much as important. A majority of the youth depended on their own sources of capital to start their businesses. Close to half of the youth who supplemented their start-up capital with a second source depended on their relational networks.

Entrepreneurship in small-scale mining was broadly divided into direct mining and services. Entrepreneurial activities in direct mining included digging ore, processing buying and sponsoring gold extraction (dealership). The services that support mining included transportation, catering, shop ownership, trading, etc. Engagement in the various

activities was influenced by several factors including the age, gender and education of the entrepreneur. The hypothesis that the youth who go into small-scale mining to take advantage of a business opportunity tend to go into dealership and services was confirmed.

The youth aged 15-19 were less likely to be dealers because they would have been too young to accumulate the necessary capital to be dealers. The same age group (15-19) compared to the reference age group (25-29) were more likely to be providing services and processing ore. In terms of gender, males compared to females were less likely to be in services. Males were more likely, however, to be in dealership and processing. Similarly, the youth with some education compared to those without education were less likely to be digging ore. The youth with JHS education were more likely to be in services, processing and dealership. The youth with SHS were more likely to be dealers. Migrants were 4 percent less likely to dealers compared to indigenes. Similarly, they were less likely to be in processing. However, they were more likely to be involved in entrepreneurial activities in services and digging.

What are the challenges confronting oung small-scale miners

The study activity-related as well as general challenges hampering entrepreneurial activities and health of the entrepreneurs. The youth in direct mining indicated accidents and suffocation sometimes leading to death. Pit owners and sponsors were also affected by the confluence of high cost involved in reaching the ore body and the lack of geological and technical information about the richness of the ore. Not only did the young entrepreneurs haphazardly handle mercury in the amalgamation process, the chanfan machines generated a lot of dust. These vitiated the quality of the air, soil and the health of the entrepreneurs.

The youth in the service sector of small-scale mining were constrained by seasonal fluctuation in demand. In Kui, demand reduces in the dry season because of the reduced mining activities. In Kenyasi No.2, however, demand reduces occasionally for two reasons: firstly, when heavy rains flood the pits making it inaccessible and unsafe for mining and secondly, when the power plant which provides energy for the mining activities breaks down.

A general problem which affected all the miners in the settlements was the lack of official recognition and criminalisation of the entrepreneurial activities due to their inability to register their businesses. This affected the kind of investments the youth wanted to undertake. Also, armed robbery was a daunting challenge to the entrepreneurs in, especially Kui, necessitating the chief to hire armed guards to patrol the road from Kui to Tinga. Another challenge was the institution of high taxes by the informal institutional structures in the settlements. It greatly affected profit margins and forced businesses to temporarily fold up especially during the off season in order to avoid the payment of further taxes.

In which ways can institutions create an enabling environment for youth in small-scale mining?

The study has shown that there is a gap between small-scale mining legislations and practices of small-scale mining. One of the reasons is the inadequate, if not lack of, knowledge of existing mining laws/regulations on the part of operators. The other reasons involve more practical issues about inaccessibility, delays and costs associated with registration. The resultant effect has been informality of the subsector.

The informality of the small-scale mining sector has led to the emergence of local traditional institutions to govern behaviour and the conduct of business in the mining settlements. The settlements were well organised with committees in place and in the case

of Kui the chief played legislative, judiciary and executive roles. This way, the rendition of small-scale mining settlements as unorganised or disorganised is less the case in the study areas. The local institutions have been shown to affect business positively and negatively.

How does youth involvement in small-scale mining contribute to poverty reduction?

Similarly, just as the youth's engagement in small-scale mining activities was influenced by their personal circumstances, they also differed regarding their poverty status. As chapters revealed, some of them were pushed into mining by shocks and the preoccupation of such youth was to meet immediate monetary needs and accumulate capital in the long run. Others encountered shocks in their entrepreneurial pursuits. The ability of youth to recover from such shocks or state of vulnerability is to an extent dependent on the kind of investment they make. The young entrepreneurs covered in the study made both tangible and intangible investments. Some of the tangible investments were acquisition of assets which acted as buffer against shocks. Some of them invested in houses for owner occupancy and rentals, agriculture, trade, etc. Others' investments were intangible in nature. Not only were some of the youth investing in their relatives' or dependents' education, they also took care of relatives and thereby underscoring the social embeddedness of the youth.

The study revealed that belonging to an informal savings and credit scheme had significant effect on poverty reduction. This could be due to the more or less compulsory manner money was put away. This way, the youth were not likely to splurge their earnings and indeed constituted start-up capital for some of the entrepreneurs who founded a second activity. The youth who encountered shock in their entrepreneurial pursuit, expectedly, had a significant and negative effect on poverty reduction. Being a

migrant who has not experienced any shock was still negatively associated with poverty. Being a dealer, compared to digging, was associated with poverty reduction.

The hypothesis that males were likely to reduce their poverty compared to women was not conclusive. Even though differences in monthly income between males and females were statistically significant, a gender disaggregation of their asset index was not significant. Hence, a panel study may help to clarify the gender differentials in earnings.

8.3 Policy Implications of the Findings

These findings have several implications for policy. On the policy front, a Youth in Mining (YIM) project under the GYEEDA was launched in 2010. It was designed to address unemployment among graduates and skilled miners with mining skills such as geologist, surveyors, soil scientists, environmental managers etc. This was to help mitigate and eventually eradicate the deleterious consequences of mining (remwof.comoj.com/Mining). The Retired Mine Workers Foundation (remwof) consultancy and management are the sole managers of the project. The results of the study revealed that only an insignificant percentage of the small-scale miners were graduates. Unless the module is very well packaged, it is doubtful if the graduates will find it an attractive source of employment. Moreover, the several unskilled and uneducated youth who currently engaged in entrepreneurial activities are likely to be marginalised.

Futher, it was clear from the analysis that some of the youth were motivated to start entrepreneurial activities in small-scale mining with the ultimate aim of securing start-up capital. Madam Abi, who completed her apprenticeship in sewing and went to Kenyasi No.2 in search of start-up capital, exemplifies this group of entrepreneurs. This has policy implications for government and NGOs training programmes. Government's formal

training institutes like the National Vocaional Training Institutes (NVTI) and non-formal training programmes such as the Integrated Community Centres for Employable skills (ICCES) and the Skills Training and Employment Placement Programme (STEP) equip people with skills with the ultimate aim of starting their own businesses. Similarly, some of the youth in small-scale mining were pushed into it because of shocks. This could be an indication of the limited or lack of social safety nets that the youth can draw on. This is made worst because of the increasingly diminished role played by extended family members (ISSER 2014).

It was revealed that some education among the youth in small-scale mining significantly impacted on poverty reduction. The free compulsory universal basic education should therefore be given effect by expanding access and devising measures that will keep the pupils in school.The current policy to expand access to secondary education through the provison of Community Day Secondary schools is a step in the right direction and emphasis should be placed on the high standards. This is because good education is likely to lead to safer mining methods that will not compromise the environment and health of participants. It will also equip them with the requisite ability to manage the resources that they realise from small-scale mining.

The study further found that one of the reasons for not registering entrepreneurial activities was the cost associated with the process. Recently, the passage of fees and charges (Amendment) Instrument, 2014 (L.I. 2216) by Parliament, Environmental Protection Agency increased its fees and charges from 750 cedis to $2400. The amount comprises $300 for processing and $2100 for environmental permit. Much as this amount will generate money for EPA, it will serve as a disincentive for small-scale miners who want to formalize their operations.

Another implication of the findings is that informal regulation is in place and seem to work. Policy makers could therefore team up with or engage with such informal structures if policies about the sector are to be effective. This is because they are part of the sector and understand better the context within which they operate. The participants are likely to obey measures put in place by the chiefs and their committee members who they (miners) perceive to be the rightful owners of the land and water resources they are using.

The study has shown the wide ranging activities that the small-scale mining sector has and hence its capacity to absorb the teeming unemployed youth. It therefore, has implications for the youths being churned out of school and school dropouts. The public sector is choked already and the public wage bill is huge (60 to 70% of GDP). Primary agricultural sector is yet to be modernised to make it attractive to the youth. It is still largely weather-dependent, making agriculture a risky business in Ghana.

Also, the capacity of small-scale mining to deliver the youth from poverty has also been demonstrated by this study. For example, about 88 percent of the youth indicated that mining had a positive impact on their lives. The current militarist measures on small-scale miners should therefore be halted and more education and incentives implemented to attract the youth to register.

Private sector is the engine of growth mantra can be given effect if only labour intensive sectors like small-scale mining is revamped and given impetus by government. The Minerals Commission is by law mandated to establish District Centres in areas that mineralized land can be found. The Mineral Commission is slow to execute this mandate, hence, forcing small-scale miners to operate informally.

8.4 Recommendations

What is clear is the current unemployment in Ghana. The Government has taken a lot of initiatives to address the youth unemployment challenge. Since small-scale mining is labour intensive, the government could clear some of the barriers in the subsector that make operators stay as illegal miners in view of the huge potential it offers for the youth to be employed. Some of the policy initiatives that can be taken in this direction are:

- easing the bottlenecks and bureaucracies in registration and the acquisition of concessions. Some interventions in the subsector have excluded those operating illegally when the most damage to the environment and personal health and safety is occasioned by those operating illegally.
- once registration process is relaxed, the District Centres of the Minerals Commission should be the institution in charge of selling mercury to small-scale miners. This will reduce the number of agents who sell to miners indiscriminately.

Social and political legitimisation of policy and its implementation is key in modern pluralistic societies. Hence, policy needs to be collaboratively developed and agreed upon. Entrepreneurs in small-scale mining instead of being criminalised by policy makers, policy makers should be more open-minded and think outside the box. If the youth choose the path of mining or pursuing their business in mining areas instead of schooling, farming, pursuing their business at home, they have their reasons. Research should be able to unearth these reasons and factor them into policy.

The local structures work effectively to regulate activities and behaviour at the site. For interventions on small-scale mining to work, attention should be paid to how these traditional/local institutions could be employed. The current militarist approach could yield results which are ephemeral. One area that the services of local institutional

structures could best be harnessed is limiting them to a zoned area which the traditional institutions should police.

At the core of regulations on small-scale mining are environment and health of operators. In view of the widespread use of mercury in the mining process coupled with the inadequate knowledge of operators on the effects of mercury, it is recommended that the inspectorate division of Minerals Commission and/or consultants undertake sustained education of small-scale miners on the effects of mercury on the environment and health. One way to educate them is through the use of theatre for extension communication which has proven to be very useful for attitudinal change education.

Alternatively, more environmentally friendly methods like direct smeltering or the use of retorts could be explored. As Hilson (2001) has it, the government of Ghana made an effort to promote the use of retorts in the early 1990s but the cost of the equipment made the project fail. Experiments of direct smelting also revealed that compared to amalgamation using mercury, direct smelting took shorter time (45 as against 65 minutes) and was cheaper (US$3.20 as against US$5.5) (Amankwah et al. 2010). It is recommended that direct smelting be popularised and promoted by Minerals Commission. Funding agencies like the World Bank, European Union, DFID, etc, could sponsor the production of the furnaces to be sold to small-scale miners at not-for-profit rates. This will encourage adoption and use. Additionally, such efforts could be complemented with progressive reduction in the amount of mercury available for processing. This will automatically boost demand for the retort and other methods.

Yankson et al. (2010) identified financial support to be a factor that most constrains entrepreneurial activities in Ghana. The situation may even be more serious with especially informal small-scale miners. It was therefore not surprising that the youth

interviwed who were members of informal savings and credit schemes had a positive effect on poverty reduction. Moreover, the percentage of youth accessing funding from the commercial banks was neglible (0.5%). The study recommends a number of financial measures that could help solve the financing challenge. The first is financial market integration along the lines proposed by Aryeetey (2005) in which formal financial institutions would lend to semi-formal financial intitutions. Semi-formal financial institutions also lends to informal financial institutions who in turn lends to entrepreneurs who they have closer functional relationship with. These three levels working in synergy will reduce the risk of lending to the small-scale mining sector. Secondly, the current short term loans are expensive and unattractive to the informal sector entrepreneurs. Hence, long term financing which matches the needs of the entrepreneurs could be employed. Especially for those in direct mining who invest over a long period into the contruction of pits, payment of the loan could start two years after accessing funding. The youth in services do not need that much time to start repaying the loan. The loan could be structured in such a way that the monthly repayment amount is a certain percentage of their returns. This calls for basic book keeping by entrepreneurs which may be a challenge for those who are uneducated. The financial intermiadiaries could work collaboratively with the district centres as an intimate knowledge of the context of small-scale mining may be required to reduce the risk involved in lending to entrepreneurs in the sector.

8.5 Contribution to Knowledge

Good knowledege is foundational to an understanding of the myraid of challenges in the sector and motivations driving the youth into the small-scale mining. Buxton (2013) identifies three types of knowledge needed to understand the sector. The first is research-based knowledge held by scientists, academics or professional researchers. This type of knowledge helps to clarify complex or highly politicised issues. The second type of

knowledge is practiced-based and is held by NGOs, companies and consultants based on hand-on experience. The third type is citizen or lay knowledge held by local people or their representative based on their beliefs, experiences and values. This knowledge is invaluable in formulating policy as it is highly context specific. This study makes a contribution to the research-based and citizen/lay knowledge as it employs both quantitative and qualitative measures to study the youth objectively and from their own perspective.

Overall, the study has demonstrated the utility in combining contextual factors as well as the agency of actors in identifying, evaluating, starting and running an entrepreneurial activity. This study has added to the literature seeking to combine social, economic, institutional context with personality traits of entrepreneurs (see Amine & Staub 2012). This was important as some context and personality trait indicators had significant effect on entrepreneurial activity and poverty reduction.

Methodologically, combining quantitative and qualitative approaches proved beneficial as information from the two methods reinforced each other. Also, staying in the settlements for long enabled access to information and opportunity to corroborate information through observation. Moreover, staying with the miner allowed for trust building.

This study has also contributed to the literature of motivation of youth starting activities in small-scale mining. The participants in the sector are understood to be driven by poverty (Barry 1996, Hilson & Garforth 2013) and hence, in the conceptualisation of Global Entrepreneurship Monitor, are necessity-driven. This position departs from earlier perception of the secto that activities were being carried out mainly by people who wanted to "get rich quick" (Hilson & Garforth 2013). This argues that only about one in three people interviewed could be deemed to be necessity-driven as they were unemployed

prior to their entrepreneurial activities in the sites. The rest were driven by the need to make financial progress, the need for achievement and to take advantage of a business opportunity. Besides, this study revealed that some of the young entrepreneurs had more than one motivations which sometimes straddles opportunity/necessity divide. Hence, the study has given a more nuanced analysis of the motivations for the youth that choose the path of entrepreneurship in small-scale mining.

The study, using rigorous statistical tools, answers the question which youth is involved in what activity? The youth were not a homogenous group. Consequently, the entrepreneurial activity undertaken was influenced by the age, gender, educational background, status as migrant or indigene, and experience of shocks. In terms of gender, for instance, women were more likely to be in the service economy while men were more likel to be dealers at the sites.

The study has also made contribution to the literature on local governance. Unlike other scholars (Ghose & Roy 2007; Shoko 2002; Versol 2007) who observed that mining activities are unorganised or poorly organised, this study found that local institutional structures (Committee in Kenyasi No.2, and Chief and Committee in Kui) played legislative, judiciary and executive roles in the study sites. These local institutional structures ensured a good business environment prevailed.

Small-scale mining and its relationship with poverty reduction tend to be analysed at the macro-level. This tends to mask understanding of who is reducing or climbing out of poverty. This study sheds some light on this. Belonging to an informal savings and credit scheme, and/or being a dealer, had a significant effect on poverty reduction. However, experiencing shock in one's entrepreneurial activity, expectedly, had a significant and

negative effect on poverty reduction. Also, being a migrant was negatively associated with poverty reduction even if the migrant has not experienced shock.

The study has also added to the challenges that beset entrepreneurs in the small-scale gold mining sector. Some of the problems were general to the Ghanaian informal sector. Other challenges were specific to small-scale mining sector. The issue of funding is a general problem in the informal sector even though the situation is worse for small-scale mining due to their being portrayed in a negative light. However, accidents, high informal taxes or levies, etc are specific to the informal small-scale mining sector.

The literature on diversification show how complementary farming and artisanal small-scale mining are (Hilson et al. 2013). Farmers, observers reveal, used to migrate during the dry season as a coping strategy not only in search of supplementary income but also to reduce the number of mouths to be fed during this time. The finding in especially Kui, however, points to an increased entrepreneurial activity during the rainy season because of the availability of water for processing of ore. This is also the time that farmers are undertaking their farming activities because farming activities are rain-dependent. It may not be the case that operators were combining farming and small-scale mining as found by Hilson (2013) but that people were migrating even in the rainy season to the mining settlements and staying permanently. This is corroborated by Schraven (2010) who noted that not only is there seasonal migration of people of northern extraction to the south as an adaptive strategy, but that the migration is becoming more and more permanent.

8.6 Directions for Future Research

The study was a snapshot of entrepreneurial activities and outcomes. It would be interesting for future research, granted more time and resources, to follow the respondents over a long period of time to analyse how motivations play out and whether the

respondents come out of poverty on a more permanent basis or not. Future research could also delve more into the power relations and implications of same for the vulnerables' access to resources for their entrepreneurial activities at small-scale settlements.

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Appendix 1 Thesis Questionnaire

INSTITUTE OF STATISTICAL, SOCIAL AND ECONOMIC RESEARCH (ISSER), UNIVERSITY OF GHANA

ENTREPRENEURSHIP AND POVERTY REDUCTION: THE CASE OF THE YOUTH IN SMALL SCALE MINING IN GHANA.

Introduction

This questionnaire is being used to elicit information about youth entrepreneurship and poverty related issues in small scale mining in Ghana. ***The survey is targeting business owners aged 15 to 35 years***. It is not meant to find out which particular response is right or wrong, but what is actually pertaining in either your business or line of business. As a result, you are kindly requested to be candid in your responses. I must assure you that all responses you give will be treated with the strictest confidentiality.
Thank you.

Region	Northern.....1 Brong Ahafo.....2	
District	Bole.....1 Ahafo Kenyasi.....2	
Village/Settlement name	Interviewee number	
Date of interview (dd/mm/yyyy)	2 0 1 3	

Name of the respondent: _____

Address: _____

Mobile Number_____

FIELD CONTROL INFORMATION				
Interviewer Code				

Q No.		Coding categories and codes	Skip to
	SECTION A: BUSINESS ACTIVITIES		
	A. Business Start and type		
A1	Which year did you first arrive in this settlement?	|___|___|___|___|	
A2	When did you start this business?	|___|___|___|___|	

A3	Did you have any experience which may have triggered your move to this settlement to do your business?	Yes.....1 No.....2	
A4	If yes. State any experiences/shocks	Economic ..... Political shocks..... Cultural..... Environmental.....	
A5	What is your business's primary product or service? (*State exactly what the person does*)		
A6	What motivated you to start this business here? (*Tick as many as applicable*)	Need to be own boss.....1 Need for achievement.....2 Financial progress.....3 Unemployment.....4 Dissatisfied with previous job.....5 Take advantage of a business opportunity.....6 No better choices for work.....7 Have a job but seek better opportunity.....8 Other Specify.....9	
A7	Where did you get the idea to start this business?	Own ideas.....1 Parents.....2 Relatives/Guardians.....3 Friends.....4 Apprenticeship.....5 Skills training.....6 Others (Specifiy).....7	
A8	Are you involved in other start-ups in this settlement?	Yes.....1 No.....2	
A9	Are you involved in other start-ups in another settlement?	Yes.....1 No.....2	
A10	Do you have another business elsewhere?	Yes.....1 No.....2	
A11	What would you do if you were to leave this business and/or settlement? (Exit strategy)		
	B. Mining-related questions		
B1	How did you hear about this site? Who told you?		
B2	Is this your first mining site?	Yes.....1 No.....2	
B3	What exactly do you do?		
B4	Do you mine in a group?	Yes.....1 No.....2	Skip to 6
B5	How many are you in the group?	|___|___|	
B6	What technology do you employ in your operations?		
B7	How long has the technology	Less than a year	

	required for this work, product or service been available?	Between 1 and 5 years Longer than 5 years Don't know	
B8	Who owns the land you are working on?	Chief.....1 An individual.....2 Government.....3 Mining company concession.....4 Other.....5 Specify.....	
B9	Where do you sell the gold?	Locally.....1 Regionally.....2 Nationally.....3 Internationally.....4	
B10	What big thing did you want to do/buy from your earnings?		
B11	Have you achieved it?	Yes.....1 No.....2	
B12	Overall, how has mining affected your livelihood?	Very positively.....1 Positively.....2 Negatively.....3 Very negatively.....4 Explain.....	
B13	Do you use mercury in mining?	Yes.....1 No.....2	
B14	Are you aware that prolong exposure to mercury can cause health problems?	Yes.....1 No.....2	
B15	What is your understanding of the environmental damage caused by the mining activities to	Water bodies: Air: Soil:	
B16	Are you aware that it is illegal to engage in small scale mining without mining licence?	Yes.....1 No.....2	
B17	Do you know any mining laws/regulations	Yes.....1 No.....2	
B18	Please tell me any small scale mining laws/regulations that you know		
	C. Business Capital		
C1	How much capital did you require to start your business, if any?	|___|___|___|___|___|___| GHc	
C2	What were the most important sources of funding for starting your business?	**Source** / **Rank** Personal savings Family savings Friends Money Lenders Credit Union/Susu Group Universal Bank	

		Rural/Community Bank		
		Co-operative/Association		
		Micro-finance Institution		
		Other (Specify)		
C3	What proportion of the start up capital requirements of your business did you provide from your own resources?	0%.....0 1-10%.....1 11-25%.....2 26-50.....3 51-75.....4 76-100.....5		
C4	How did you raise the money if personal savings			
C5	How do you usually address your business financing problems?	Use personal funds/savings.....1 Borrow from friends.....2 Cash advances from customers.....3 Obtain suppliers/trade credit.....4 Bank (loan/overdraft).....5 Sell off personal assets.....6 Source from a credit scheme.....7 Other (Specify).....8		
C6	Over the past 12 months, how much have you borrowed into the business?	|___|___|___|___|___|___| GHc		
C7	Have you applied for a loan under a credit scheme for SMEs before?	Yes.....1 No.....2		**Skip to 9**
C8	Please list the scheme	1. ..... 2.		
C9	Have you obtained supplier/trade credit?	Yes.....1 No.....2		
C10	Do you have a bank account?	Yes.....1 No.....2		
C11	Do you have access to credit?	Yes.....1 No.....2		
C12	What is the main source of your credit?	Bank.....1 Savings & credit schemes.....2 Relative(s).....3 Buyer/dealer.....4 Individual.....5 Other Specify.....6		
	D. Business Competition			
D1	How would you rate competition in your line of business?	Very high.....1 High.....2 Moderate.....3 Low.....4 Very low.....5		
D2	How do you differentiate what you do from others?	Lower product prices.....1 Higher quality products.....2 Better customer service.....3 Better location.....4 Other (Specify).....5		
D3	What innovative thing have you done to put you ahead of your competitors?			

D4	What do you see as the major advantages your competitors have over you?	Lower product prices.....1 Higher quality products.....2 Better customer service.....3 Better location.....4 Other (Specify).....5	
	E. Employees and Work		
E1	Excluding you. how many people work for you?	1a. Permanent employees..... |___|___| 1b. Casual..... |___|___| 1c. Unpaid family members..... |___|___| 1d. Nobody/works alone.....	
E2	Do the numbers that work for you vary within the year?	Yes.....1 No.....2	Skip to 4
E3	What accounts for the fluctuation?		
E4	How many days in the week does your business operate?	.....	
E5	How many months in a year does your business operate?	.....	
F. MOTIVATION OF THE YOUTH			
F1	What were you doing before you came here?	Schooling Employed by someone Self-employed Unemployed Others	
F2	If respondent was working, what type of work?		
F3	How long were you involved in your previous work?		
F4	Why did you quit your previous job?	I resigned.....1 I was layed off.....2 Other (Specify).....3	
F5	Compared with your previous work, would you say you are better off or not?	Better off.....1 Same.....2 Worse off.....3 Don't know.....4	
F6	What do you consider to be the advantages of the business you do here over your previous work?		
G. CHALLENGES OF THE YOUTH			
G.1	What are the main challenges/problems you face operating this business and how do you address them		
	Challenges/problems	Response/Solutions	

G2	Please rate the following problems		

	Problem	Severity of the Problem			
		1. Very severe	2. Moderate	3. No problem	4. Not Applicable
	Cost of credit(high interest rate)				
	Poor access to financial credit				
	High taxes				
	High labour cost				
	High/rising cost of non-labour inputs				
	Low cash flow				
	Too much competition/Low demand				
	Limited access to market				
	Bad road network				
	Poor quality of power supply/No power supply				
	Access to raw materials				
	Lack of geological information (*ask only miners*)				

G3	Have you experienced any shocks in the past which may have perpertuated your stay here?	Yes.....1 No.....2	Skip to 1
G4	Explain your answer		
G5	Which year did you experience the shcok(s)?		
H. INSTITUTIONS AND SSM			
H1	Have you registered your business?	Yes.....1 No.....2	**Skip to 3**
H2	Where have you registered your business?		
H3	If no, why have you not registered your business?		
H4	Have you tried to register your business?	Yes.....1 No.....2	**Skip to 7**
H5	Have you faced any challenges in your attempt to register your business?	Yes.....1 No.....2	
H6	Please state the challenges		
H7	Is your business affected in any	Yes.....1	

	way by your inability to register?	No.....2	
H8	Explain your answer		
H9	How do you seek redress when your rights are violated?		
H10	Are there rules/regulations that affect your business negatively?	Yes.....1 No.....2	Skip to 12
H11	Please state them		
	1		
	2		
	3		
H12	Are there rules/regulations that affect your business positively?	Yes.....1 No.....2	**Skip to 1**
H13	Please state them		
	1		
	2		
	3		
J. SSM AND POVERTY			
	Income		
J1	How much do you earn from this business a day/month (*indicate if monthly or daily*)	Daily ..... |___|___| GHc Monthly..... |___|___| GHc	
J2	Do you earn money from any other business(es)?	Yes.....1 No.....2	**Skip to 4**
J3	How much do you earn from investments you have made if any in a day/month? (*indicate if monthly or daily*)	Nature Amount 1. 2. 3.	
J4	Do you get remittances from relatives/friends etc?	Yes.....1 No.....2	**Skip to 7**
J5	Please specify the amount you received in the last 12 months.	|___|___|___|___|___|___| GHc	
J6	How regularly do you get remittances?	Weekly Monthly Yearly Other (Specify)……..	
J7	Do you receive from private organisations (e.g., church, NGOs, donations by community members, etc.)	Yes.....1 No.....2	
J8	If yes, how much money did you receive from private organisations (e.g., church, NGOs, donations by community members, etc.) in the last 12 months?	|___|___|___|___|___|___| GHc	
J9	Do you receive from governmental departments (e.g. social security	Yes.....1 No.....2	

	benefits, subsidies, other assistance etc.)		
J10	If yes, how much money do you receive from governmental departments (e.g. social security benefits, subsidies, other assistance etc.) in the last 12 months?	Source Amount a. ..... b. ..... c.	
J11	Do you have any other source of funds	Source Amount a. ..... b. ..... c.	
	K. EXPENDITURE		
K1	How much do you spend **on yourself** in a day/month?	Daily ..... |___|___| GHc Monthly..... |___|___| GHc	
K2	How much do you spend averagely on business investment in a month?	|___|___|___|___|___|___| GHc	
K3	How much do you spend on other investments	|___|___|___|___|___|___| GHc	
K4	How much do you save in a day/month?	|___|___|___|___|___|___| GHc	
K5	How much do you remit to relatives/friends a month?	Daily ..... |___|___| GHc Monthly..... |___|___| GHc	
	L. ASSET OWNERSHIP		
L1	Kindly tell me the major household assets that you own?	Yes No Num. Cell Phone ..... 1.....2 Television..... 1.....2 Satellite dish ..... 1.....2 Mattress ..... 1.....2 Refrigerator ..... 1.....2 Electric or gas cooker ..... 1.....2 Car ..... 1.....2 Truck.....1.....2 Bicycle..... 1.....2 Motorcycle..... 1.....2 Computer ..... 1.....2 Generator.....1 2 Iron.....1 2 Other (Specify).....	
L2	Does any household member own a working radio, radio cassette, CD player, or 3-in-1 radio system?	None.....1 Only radio.....2 Radio cassette but no CD player nor 3-in-1 (regardless of radio).....3 CD player but no 3-in-1 (regardless of radio or cassette).....4 3-in-1 radio system (regardless of any others).....5	
	M. SELF PERCEPTION OF POVERTY		
M1	Would you consider yourself poor?	Yes.....1 No.....2	

M2	Explain your answer	....	
M3	Are you happy with your life?	Yes.....1 No.....2	
	Explain		
	N. PHYSICAL CAPITAL		
N1	Do you have access to improved sanitation in the house?	Yes.....1 No 2	
N2	Do you have the following **in this settlement**? If so, how many?	Land (**Specify unit**) .....|___|___| Mining equipment (Chanfan machine)....|___|___| Buildings .....|___|___|	
N3	Do you have the following **elsewhere**? If so, how many?	Land (**Specify unit**) .....|___|___| Mining equipment (Chanfan machine)....|___|___| Buildings .....|___|___|	
N4	Do you have the following **in this settlement**? If so, how many?	Cattle .....|___|___| Goats .....|___|___| Pigs.....|___|___| Chicken.....|___|___| Sheep .....|___|___| Guinea fowls .....|___|___| Ducks .....|___|___| Other (Specify).....|___|___|	
N5	Do you have the following **elsewhere**? If so, how many?	Cattle .....|___|___| Goats .....|___|___| Pigs.....|___|___| Chicken.....|___|___| Sheep .....|___|___| Guinea fowls.....|___|___| Ducks .....|___|___| Other.....|___|___|	
	P. SOCIAL CAPITAL		
P1	Who can you rely on for support (financial, personal, in-kind) in hard times?	Family member……1 Neighbour……2 Religious organization……3 Local NGO……4 Self-help group……5 Savings/credit group……6 Women's Association……7 Youth Association……8 Traditional authority……9 Work colleague……10 Other (Specify)……11	
P2	What type of support does this association provide to your business?		
	Are you a member of (Mark if **yes** or **no**)	**Nature of support received** 1. Financial support 2. Marketing assistance 3.Bulk purchase of inputs 4. Information/Advice 5. Advocacy services	**Frequency of contact** 1. Daily 2. Weekly 3. Once/twice a month 4. Yearly 5. Occasionally

				6. Personal security 7. No support 8. Other (Specify)	
	Association	Yes	No		
1	Informal Savings & Credit Scheme				
2	Mining Co-operative				
3	Religious Organisation				
4	Women's Organisation				
5	Youth Organisation				
6					
7					

P3	Over the past 12 months, have you sought any assistance/advice from someone regarding your business?	Yes.....1 No.....2	Skip to 5

P4	**Nature of relationship** 1. Family relation 2. Friend 3. Somebody with much business experience 4. A customer 5. Sponsor/dealer 6. Traditional ruler	**Nature of support obtained** 1. Financial support 2. Marketing assistance 3.Bulk purchase of inputs 4. Information/Advice 5. Advocacy services 6. Other (Specify)	**Frequency of contact** 1. Daily 2. Weekly 3. Once/twice a month 4. Yearly 5. Occasionally
1			
2			
3			
4			

P5	From which of the following institutions have you received support (**Multiple responses possible**)	None.....0 District Assembly.....1 NGO.....2 Minerals Commission.....4 Other (Specify).....5	
P6	State nature of support		
	Institution	**Type of Support received**	
1			
2			
3			
4			
P7	Do you have a valid health insurance?	Yes .....1 No 2	
	Q. LIVING CONDITIONS		
Q1	In what type of dwelling do you live?	Separate house.....1 Semi-detached.....2 Room in compound.....3 Room in other type.....4 Hut.....5 Tents/Improvisedhome/kiosk.....6 Other (Specify).....7	
Q2	What is the main construction material used for the **floor** of your	Earth/Mud/Mud bricks.....1 Wood.....2	

	dwelling place?	Cement/Concrete.....3 Burnt bricks.....4 Tiles.....5 Terrazo.....6 Other (Specify).....7	
Q3	What is the main construction material used for the **outer wall** of your dwelling place?	Mud/Mud bricks.....1 Wood/Bamboo.....2 Burned bricks.....3 Cement/Sandcrete blocks.....4 Landcrete.....5 Thatch.....6 Cardboard/polyethne.....7 Other (Specify).....8	
Q4	What is the main construction material used for the **roof** of your dwelling place?	Palm leaves/raffia/thatch, wood, mud/earth, bamboo, or other..... 1 Corrugated iron sheets, cement/concrete, asbestos/slate, or roofing tiles.....2	
Q5	What is the main source of **lighting** for the dwelling?	Not electricity (mains).....1 Electricity (mains).....2	
Q6	What is the main source of energy for cooking?	Electricity.....1 LPG.....2 Charcoal.....3 Firewood/straw.....4 Kerosene.....5 Other (Specify).....6	
Q7	What is the main source of **drinking water** for the household?	Borehole, well (with pump or not, protected or not), or other..1 River/stream, rain water/spring, or dugout/pond/lake/dam.....2 Indoor plumbing, inside standpipe, sachet/bottled water, standpipe/tap (public or private outside), pipe in neighbours, water truck/tanker, or water vendor.....3	
Q8	What type of **toilet** do you use?	Flush toilet.....1 Pit latrine.....2 KVIP.....3 Pan/bucket.....4 Public toilet.....5 No toilet facility (bush).....6	
R. BACKGROUND CHARACTERISTICS OF RESPONDENTS			
Demographics			
R1	Sex of Respondent	Male.....1 Female.....2	
R2	Age of Respondent	|___|___|	
R3	Marital status of Respondent	Single ..... 1 Married (mono.) ..... 2 Married (poly.)..... 3 Widowed ..... 4 Seperated / divorced..... 5 Cohabiting (informal/ loose unions) 6	
R4	Number of children	|___|___|	
R5	How many members does the household have?	|___|___|	
R6	Nationality	Ghanaian.....2 Other nationality (Specify)..... →	Skip to 11

R7	Region of Origin	Western .....1 Central.....2 Greater Accra .....3 Volta.....4 Eastern .....5 Ashanti.....6 Brong Ahafo .....7 Northern .....8 Upper East.....9 Upper West 10	
R8	Village/Town of Origin		
R9	Ethnic Background of Respondent	Gonja.....1 Dagomba.....2 Dagao/Dagarti.....3 Sissala.....4 Gruni.....5 Akan.....6 Moshi.....7 Mo.....8 Wala.....9 Lobi.....10 Other Specify.....11	
R10	Where did you grow up	Same Region.....1 Same District.....2 Same locality.....3 Another Region Specify.....4 Another District.....5	
R11	Do you consider yourself.....	Indigene.....1 Immigrant 2	
R12	Religion of Respondent?	Christian..... 1 Muslim..... 2 Traditional religion ..... 3 Other (specify) 4	
R13	What is the highest grade you have completed?	No education.....0 Preschool.....1 P1 . 2 P2.....3 P3.....4 P4 .5 P5.....6 P6.....7 JHS1.....8 JHS2.....9 JHS3.....10 SHS1.....11 SHS2.....12 SHS3.....13 Middle School 1.....14 Middle School 2.....15 Middle School 3.....16 Middle School 4.....17 S1 18 S2 19 S3 20 S4 21 S5 22 Lower 6 23 Upper 6 24 Voc/Tech/Agric 25 Teacher training 26 Nursing 27 Tertiary 28 Other (specify) 29	
R14	If SHS and above, what was your education in?	General Art.....,1 Visual Art.....2 Business-related.....3 Science-related.....4 Vocational.....5 Other (specify).....6.	
R15	Are all children ages 5 to 12 in this household in school?	No .....1 Yes, or no children ages 5 to 12.....2.	
R16	What is the highest grade completed by the female	No female head/spouse.....1 None or pre-school.....2	

	head/spouse?	Primary or middle.....3 Any JSS, SSS, S, L, U, or higher.....4	
R17	Is the main job of the male head/spouse in agriculture?	Male head/spouse has no job.....1 Yes, main job is in agriculture.....2 No, main job is not in agriculture.....3 No male head/spouse.....4	

Questions for Key Informant Interviews

Where were you before you came here?
What stage of schooling did you achieve before?
What were you doing before you came here?
What initiated your move to this place?
Which year did you come here?
How did you hear about this place?
Have you always done the same activity here?
If you have changed activities, what activities did you do before?
What accounted for the change of activities?
Could you explain how you started this business here?
What factors facilitated your setting up here (probe for people who were of help, insitutions and other community factors)?
What is your opinion about access to loans/credit for your business?
What recommendations will you give to help facilitate your business?
What factors would you consider to be barriers when you were setting up? (*probe for access to land, access to markets*). How did you get round those barriers?
Who did you get the land from?
What technology do you use? Has it changed over the years? How?
Do you think that your personal circumstances (in terms of Educational, ethnic, occupational, age, nationality) were helpful in setting up here?
What community factors would you say enhances/hinder your business?
Do you belong to any association? What are the benefits you derive if any from being a member of that association? What potential benefits can you derive from such membership of an association. With respect to your business, who do you approach for help?
What is your understanding of who a poor person is? Would you say you are poor? Why?
Looking back, would you say you are better off now compared to the year you first came here?
Explain?
How do you think mining helps you to fight poverty?
Have you made any investment since you came here? Explain.
What do you see yourself doing in the next two years? If you were to leave here today, what job would you do?

Focus Group Discussion

Why do people come here? (*probe for poverty, alternative livelihoods, opportunity vrs necessity,*)

How do you think people's personal circumstances affect the kind of activities they engage in here? *(Probe for age, gender, strength, ethnicity, income level, educational background)*
What gender based specialisations are here in the small-scale sector?

Why do miners here don't register their business?
How do people seek justice here? Who do most people turn to for justice and why? How do you enforce contracts in this place?

What is your understanding of who a poor person is? What will you see in a poor person? Who will you say is not a poor person?
Why do you think galamsey is the way out of poverty? Why not farming, construction, formal sector work?

What are the challenges you face in this place? What can be done to lessen or eradicate these challenges?

What do you consider as the negative effects of small-scale mining in this area?

What do you think must be done to support the development of small-scale mining in this place?

What do you think should be done to reduce the negative effects of small-scale mining?

Bring issues of norms, practices and believes here

Why can't you work on Mondays/Tuesdays?

What are the conditions for the use of land?
How is the actual mining organised (pit owners vrs group ownership)?
Does it vary seasonally?

Generally speaking, would you say that most people can be trusted?
Would you say that most of the time people try to be helpful, or are they looking out for themselves?

Appendix 2 Variables for Construction of wealth Index

1. Cell phone
2. Television
3. Satellite dish
4. Mattress
5. Refrigerator
6. Electric/gas cooker
7. Car
8. Truck
9. Bicycle
10. Motorcycle
11. Computer
12. Generator
13. Iron
14. Sewing machine
15. Ownership of land in mining settlement
16. Ownership of mining equipment in mining settlement
17. Ownership of building in mining settlement
18. Ownership of land elsewhere
19. Ownership of mining equipment elsewhere
20. Ownership of building elsewhere
21. Radio
22. Access to improved sanitation
23. Type of dwelling
24. Construction material used for floor
25. Construction material used for outer wall
26. Construction material used for roof
27. Main source of lighting
28. Main source of energy for cooking
29. Main source of drinking water
30. Type of toilet

Appendix 3 Multinomial probit regression

Log pseudo likelihood = -377.95344

Number of observations= 398
(Std. Err. adjusted for 2 clusters in Dist)

Work type	Coef.	Robust Std. Err.	z	P>z
Digging				
age category (25-29)				
15-19	-0.0667	0.22975	-0.29	0.772
20-24	0.12281	0.60545	0.20	0.839
30-34	0.12056	0.45185	0.27	0.790
35+	0.33384	0.47479	0.70	0.482
Male	1.56681	0.34005	4.61	0.000
Education (No education)				
Prim	-0.2941	0.14168	-2.08	0.038
JHS	-0.4866	0.05366	-9.07	0.000
SHS+	-0.8931	0.05674	-15.74	0.000
Motivation	-1.0372	0.15581	-6.66	0.000
Shock	0.16892	0.15551	1.09	0.277
Migrant	-0.2124	0.05380	-3.95	0.000
Mining experience	-1.7578	0.01264	-139.09	0.000
Religion (Christian)				
Islam	-0.3803	0.44812	-0.85	0.396
Traditional	1.05111	0.40993	2.56	0.010
_cons	0.91773	0.61675	1.49	0.137
Processing				
Age category				
1	0.32082	0.05016	6.4	0.000
2	0.35678	0.04602	7.75	0.000
3	0.48604	0.1634	2.97	0.003
4	0.26732	0.39734	0.67	0.501
Male	2.09639	0.4511	4.65	0.000
Education (No education)				
Prim	-0.0155	0.28106	-0.06	0.956
JHS	0.15763	0.1246	1.27	0.206

SHS+	-0.0594	0.26567	-0.22	0.823
Motivation	-0.673	0.09736	-6.91	0.000
Shock	0.20071	0.14674	1.37	0.171
Migrant	-0.4584	0.08684	-5.28	0.000
Mining experience	-1.4591	0.00437	-334.25	0.000
Religion (Christian)				
Islam	-0.4463	0.14883	-3.00	0.003
Traditional	0.49447	0.32063	1.54	0.123
_cons	-0.7046	0.64482	-1.09	0.275
Sponsor services				
Age category				
1	-1.0075	0.17051	-5.91	0.000
2	-1.2194	0.33454	-3.65	0.000
3	-0.6886	0.59653	-1.15	0.248
4	-0.766	0.83033	-0.92	0.356
Male	2.10641	0.05341	39.44	0.000
Education (No education)				
Prim	-0.0324	0.53044	-0.06	0.951
JHS	0.81804	0.59755	1.37	0.171
SHS+	0.97768	0.58576	1.67	0.095
Motivation	-0.2191	0.82557	-0.27	0.791
Shock	0.01026	0.02195	0.47	0.64
Migrant	-0.6436	0.29135	-2.21	0.027
Mining experience	-1.5436	0.21952	-7.03	0.000
Religion (Christian)				
Islam	-0.0566	0.31314	-0.18	0.857
Traditional	0.85178	1.19063	0.72	0.474
_cons	-1.0688	0.93056	-1.15	0.251
Provide services	(base outcome)			

Appendix 4 Hypothesis Testing

Entrepreneurial activity and Motivation

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	18.308[a]	1	.000		
Continuity Correction[b]	16.809	1	.000		
Likelihood Ratio	21.912	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	18.262	1	.000		
N of Valid Cases	400				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.96.

b. Computed only for a 2x2 table

Appendix 5 Diagnostics for OLS regression

Model Specification test

linktest

Windex	Coef.	Std. Err.	T	P>t
_hat	2.986252	1.205561	2.48	0.014
_hatsq	-0.01541	0.00928	-1.66	0.098
_cons	-61.655	38.37221	-1.61	0.109

Checking for Multicollinearity

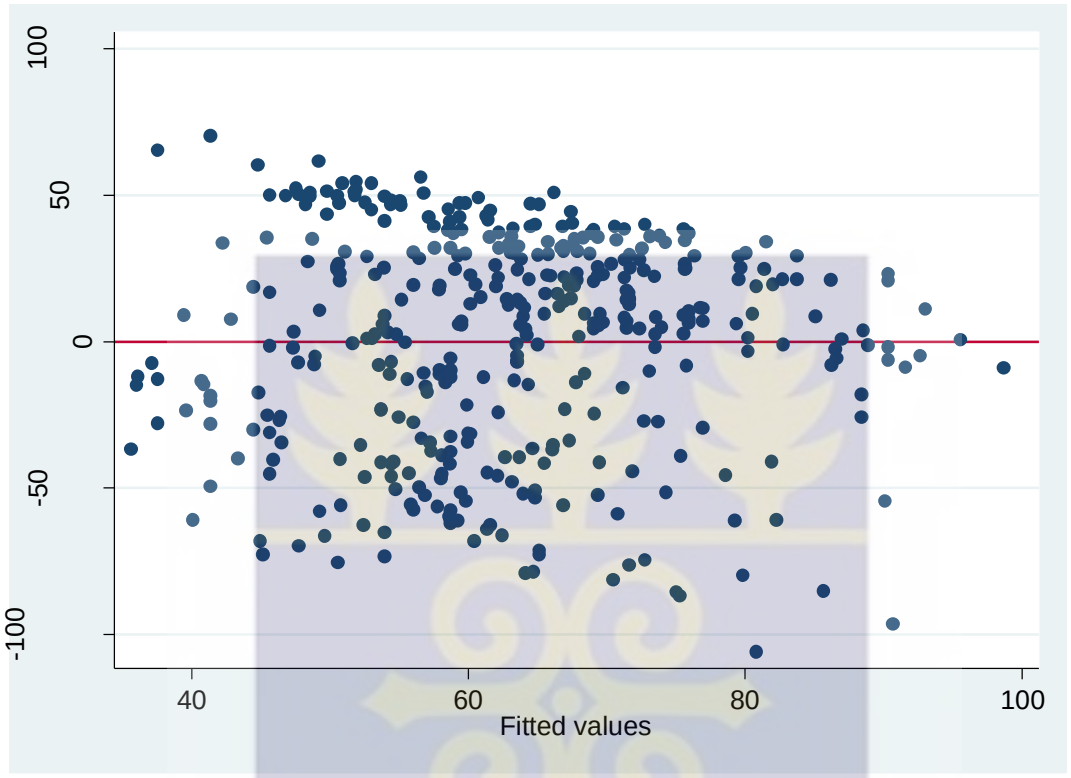
Multicollinearity test using VIF

Variable	**VIF**	**1/VIF**
Male	5.2	0.192239
Informal savings and credit scheme	1.23	0.814089
Asutifi North	2.76	0.362852
Work experience	6.71	0.149138
Worktype (*Digging as reference*)		
Processing ore	1.79	0.558663
Dealer	1.44	0.693502
Provides services	3.86	0.259085
Shock	3.16	0.316624
Education (*No education as reference*)		
Primary	2.08	0.480562
Junior High School	2.25	0.444866
Secondary School or Higher	2.33	0.429116
Shock#migrant		
0 1	3.24	0.308313
1 0	1.51	0.661134
Number of children	1.75	0.570447
Dagao	1.87	0.536002
Mean VIF	4.26	

A cutoff point of 10 is usually used for Variance inflation factor (VIF). Hence VIF values above 10 would indicate multicollinearity. The figures in the table above show that there were no issues with multicollinearity.

Checking Homoscedasticity of Residuals

One of the main assumptions for the ordinary least squares regression is the homogeneity of variance of the residuals. If the model is well-fitted, there should be no pattern to the residuals plotted against the fitted values.



The study also employed a non-graphical method to test for heteroscedasticity. The Breusch-Pagan / Cook-Weisberg test for heteroskedasticity was employed to test for the assumption of constant error variance. This test examines whether the squared standard residuals are linearly related to predicted values (Hamilton 2013).

Ho: Constant variance

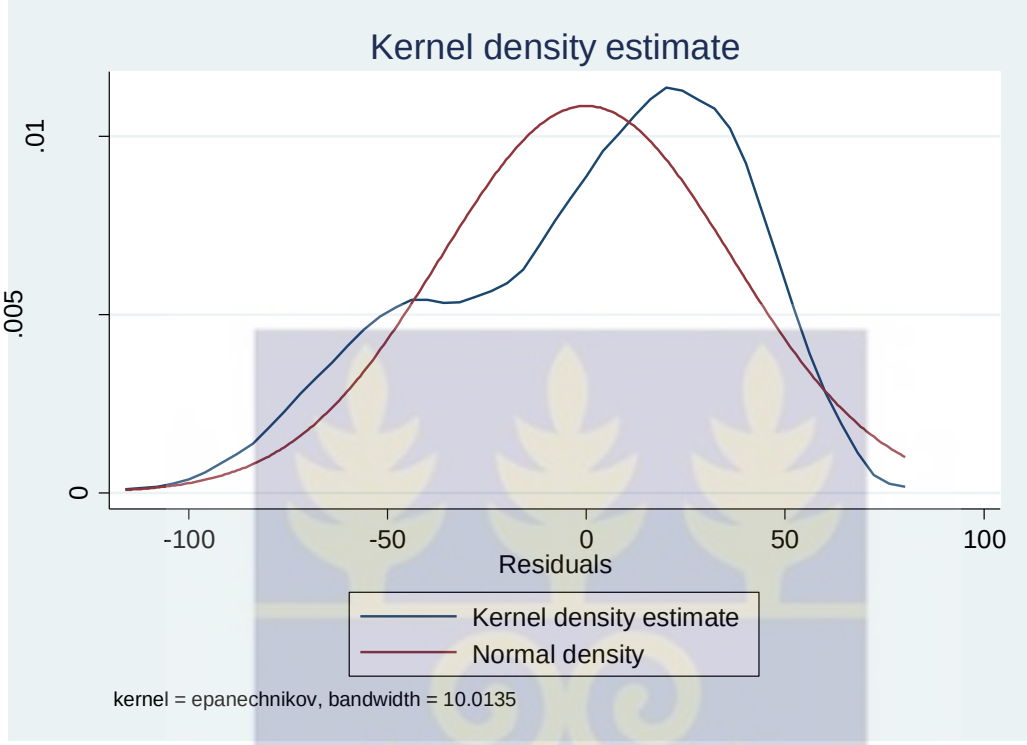
Variables: fitted values of windex

chi2(1) = 2.04

Prob > chi2 = 0.1535

The test indicates that there is no heteroscedasticity in the model as we fail to reject the null hypothesis of constant variance.

Normality Test



From the graph above, there appear to be a slight skewness to the right. Aside from the graphical method using Kernel Density, skewness–kurtosis test (sktest) was employed to test normality non-graphically. It tests the residuals for normality to check on the normal-errors assumption. The Table below shows that the residuals distribution is not significantly different from normal (p = 0.096).

Skewness/kurtosis test for normality.

				—joint—	
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
Windexres	393	0.035	0.6382	4.68	0.0966

Correlation matrix on some selected variables

Variable	A	B	C	D	E	F	G	H	I	J	K	L	M	O	P
A	1.00														
B	0.15	1.00													
C	0.12	-0.04	1.00												
D	0.06	0.01	0.03	1.00											
E	-0.04	0.00	0.06	-0.06	1.00										
F	0.00	-0.04	0.03	-0.04	0.32	1.00									
G	0.30	-0.02	0.21	-0.27	0.48	0.36	1.00								
H	0.01	-0.01	0.21	0.01	0.05	0.01	-0.02	1.00							
I	-0.12	0.01	0.11	-0.03	-0.04	-0.05	-0.05	0.00	1.00						
J	-0.09	-0.02	0.03	-0.04	-0.11	-0.13	-0.07	0.04	0.52	1.00					
K	-0.21	-0.05	0.08	0.00	-0.13	-0.21	-0.10	-0.07	0.51	0.54	1.00				
L	-0.05	-0.05	0.24	0.05	0.06	0.13	0.01	0.60	0.04	0.08	0.04	1.00			
M	0.01	-0.01	-0.04	-0.02	-0.07	0.09	0.05	-0.43	0.00	-0.03	0.00	-0.06	1.00		
O	0.14	0.06	-0.01	0.00	0.01	0.01	0.00	-0.03	0.12	0.12	0.09	0.02	-0.02	1.00	
P	0.13	0.03	0.31	0.02	-0.01	0.12	0.16	-0.23	0.05	0.05	0.11	-0.20	0.17	0.14	1.00