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CURBING ILLEGAL GOLD MINING IN BARBERTON

By

Shoki Ditabeng Mphokane

A thesis submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in fulfilment of the requirements for the Degree of Doctor of Philosophy

October 2018

SHORT ABSTRACT

In the more recent past Barberton has seen an increase in illegal gold mining activities and apparent lack of governance mechanisms by local government institutions to address the problem. This study focuses on examining and analysing the problem of illegal gold mining activities and reflecting on possible mechanisms that can explain mitigating aspects to reduce illegal gold mining. The study examines governance of state institutions (multi-agency departments) in addressing illegal mining at Barberton gold mines.

The research used the qualitative approach to assist in understanding the complexity related to illegal gold mining in Barberton. The study is both descriptive and explanatory. For data collection, the study used in-depth interviews and documentary analysis.

The study reveals persistent lack of coordination (with regard to support, team work and transparency), capacity (with regard to human, communication, equipment, transport and finance) and commitment (around patriotism, job satisfaction and effectiveness) by the institutions that should deal with the problematic of mining. The study concludes that success in the governance mechanisms of public institutions in Barberton essentially requires the integration or interface of the triple c's (capacity; commitment and coordination).

The study also concludes that there is a positive relationship between governance (in the form of integration of the triple c's) and enclavity (structural marginalization of labour) while on the other hand advocating a negative relationship between governance (with regard to governance that is in distress) and the diffusion of responsibility (with regard to who will act accordingly to ensure the integration of the triple c's). This study contends that when governance within necessary institutions is in distress and there is no intervention through the integration of the 3c's, the diffusion of responsibility will come into place, as there will not be accountability.

This study helps in understanding and explaining the challenges of service rendered by the Barberton multi-agency departments and reflects on how governance underpins the efforts to address illegal mining.

Keywords: Barberton, Social Sciences, Qualitative, Natural Resources, Wealth, Illegal Gold Mining, Governance, Capacity, Co-ordination, Commitment, Governance.

LONG ABSTRACT

A growing body of social science experts has argued that even though natural resources are the main source of wealth for many countries, their abundance is viewed as a curse because they are at the centre of many problems around the world, including in Africa and South Africa. As in many other countries, illegal gold mining is proliferating and this constitutes a major security challenge in the South African mining sector. The distinctive aspect of this study is that integrated or interface issues of commitment, capacity and co-ordination were not well considered by previous studies. The management of gold mining as a precious natural resource therefore calls for sound governance which should be necessary in dealing with any recurrent problem that may arise in the mining sector.

This study uses a qualitative research approach which is informed by an interpretative paradigm. The data collection techniques include in-depth interviews and document analysis.

The findings of the study reveal that there are no documented standard operating procedures to help understand the contemplating mechanisms to deal with illegal mining. The existence of such documents should help the relevant public institutions address the problem of illegal mining activities which are informed by new pillars of governance that connect capacity, commitment and co-ordination (triple c's) to manage effectively and efficiently.

Traditionally, the theory of governance suggests that effectiveness and efficiency within the state or institutions may be achieved through proper governance. It suggests pillars of governance for the state and institutions to implement intended plans through collective or interface mechanisms such as commitment, capacity and co-ordination, without losing focus, and to hold failing role-players accountable, in this context this means to curb illegal gold mining and hold those who fail accountable.

The findings reveal that lack of governance that ensures proper triple Cs (capacity with regard to human, communication, equipment, transport and finance; co-ordination with

regard to support, team work and transparency; and commitment around patriotism, job satisfaction and effectiveness) may be at the centre of multiple socioeconomic problems within the Barberton gold mine communities.

The study concludes that there is lack of co-ordination, capacity and commitment by institutions that should govern the mining activities in Barberton. The study further concludes that there is a positive relationship between lack of governance and enclavity (in a sense that governance within state institutions will result in a structural framework of marginalised conditions, where the state must intervene to normalise the situation). The study advocates a negative relationship between the theory of governance (that denotes a reinvented form of government which is better managed when in distress) and the theory of diffusion of responsibility (normally called the 'bystander effect' that underlines the lesser likelihood of taking responsibility for action or inaction when others are present) in a sense that governance sometimes come into being as an intervention because of the lack of institutional participation when service delivery is in distress.

This study suggests that if there is proper commitment, capacity and co-ordination then proper governance could be realized. In this context, the government institutions, specifically those of the security cluster and Barberton gold mines should be governed through proper committed workforces and co-ordinated properly with adequate capacity.

The management within both the institutions of government and the Barberton gold mines should ensure that their workforce is well capacitated, committed and co-ordinated to be more effective and efficient. The research therefore recommends a sound regulatory review framework that ensures a proper combination of the triple c's (capacity, co-ordination and commitment) as mentioned above should guide all mining activities in the Barberton gold mines. A number of strategies should therefore be put in place that include a proper governance system to identify all illegal mining activities that are overlooked by law enforcement agents.

The study also recommends that artisanal small scale mining (ASM) be legalized in order to assist in dealing with illegal mining activities and also to remain current with

developments in the gold mining sector in South Africa. Moreover, such policy and legislative framework should be developed in a conducive way to better support activities of artisanal small-scale gold mining. In this process the re-establishment of a government stakeholder forum will be an important element to promote improved management of artisanal small-scale mining.

Keywords: Barberton, Social Sciences, Qualitative, Natural Resources, Wealth, Illegal Gold Mining, Governance, Capacity, Co-ordination, Commitment, Management.

DECLARATION

I, Shoki Ditabeng Mphokane, declare that this thesis is my own unaided work and that the technical assistance which I received is in the detailed acknowledgements, that all field work and data collection was undertaken by myself, and that I am responsible for the text of this study and all decisions reached.

No part of this thesis has been submitted in the past, or is being submitted or is to be submitted for any degree at any other university. The process for collecting data in this thesis commenced in October 2015 and continued through March 2016 while I was a full-time employee of the Department of Home Affairs in Head Office, Pretoria.

_____ _____

S.D. MPHOKANE **DATE**

DEDICATION

I dedicate this thesis to the upliftment of the Umjindi Local Municipality, namely Umjindini Location, Emjindini Trust, Sheba Siding, Fairview Trust, Josefsdal Trust, Louisville and Louwscreek.

ACKNOWLEDGEMENTS

I express my heartfelt appreciation and gratitude to the following individuals and groups of people: My Supervisor, Dr Horàcio Lucas Zandamela for his impeccable guidance, encouragement, professional and technical advice during my research study. Without you it was not going to be possible.

Illegal gold miners in Barberton area and its surroundings for their support and co-operation during the research process.

Mamokhele Jeminah Morobela-Mphokane, my lovely mom, for believing in me when no-one could, those times when everyone declared me null and void. To my late father, “The disciplinarian, Iron fist” Good Alfred Mphokane, you were and always will be a good father. I wish you were still here to witness in me, all that you loved and cherished so dearly, education. Your lovely words that education can unchain all the curses and demons of poverty will always be remembered. Even when my world was down through my divorce, you would boldly say ‘’there is only one solution to your problems that can earn you respect and make you command everything with authority and that is success nothing else but success. To ensure that, you need education and that should be the greatest gift you could ever give me,’’ Here I am now to deliver that gift to you. Unfortunately, you are no more. Nonetheless you will always be our hero “*Matsako wa Mphokane” wa Mokaiseng wa Mathesane, Nkwe ya Batau*.

Stellar Prudence Hlatswayo, my loved one, your continued support is highly appreciated. My children, Masedi, Dzunani and Mokaiseng Lehumo Katlego Mphokane. You are the reason why I count every day a blessing from God.
Stakeholders from various departments and mines and institutions consulted, for their co-operation and support.

My brothers Mathesane, Mmoneng and Sedikane - against all odds I’m still proud of you and will always count on you.

Above all, I thank God the Almighty, for His divine inspiration and guidance.

LIST OF ABBREVIATIONS

CEO	Chief Executive Officer
CEO 1	Chief Executive Officer of none disclosed institution for safety reasons
CEO 2	Chief Executive Officer of none disclosed institution for safety reasons
CEO 3	Chief Executive Officer of none disclosed institution for safety reasons
Cit 1	Citizen and or resident of Barberton Township
Cit 2	Citizen and or resident of Barberton Township
Cit 3	Citizen and or resident of Emjindini Trust
Cit 4	Citizen and or resident of Emjindini Trust
Cit 5	Citizen and or resident of Sheba Siding Settlement
Cit 6	Citizen and or resident of Sheba Siding Settlement
Cit 7	Citizen and or resident of Louwscreek Trust
Cit 8	Citizen and or resident of Louwscreek Trust
COGTA	Department of Cooperative Governance and Traditional Affairs
DHA	Department of Home Affairs
DOCS	Department of Correctional Services
DOD	Department of Defence
DOJ	Department of Justice
DOME	Department of Minerals and Energy
DV1	Data Verification Interview 1
DV2	Data Verification Interview 2
DV3	Data Verification Interview 3
DV4	Data Verification Interview 4
EM	Executive Manager
EM 1	Executive Manager of none disclosed institution for safety reasons
EM 2	Executive Manager of none disclosed institution for safety reasons
EM 3	Executive Manager of none disclosed institution for safety reasons
EM 4	Executive Manager of none disclosed institution for safety reasons
EM 4	Executive Manager of none disclosed institution for safety reasons
EM 6	Executive Manager of none disclosed institution for safety reasons
EM 7	Executive Manager of none disclosed institution for safety reasons
EM 8	Executive Manager of none disclosed institution for safety reasons
FET	Further Education and Training College
HDSA	Historically Disadvantaged South Africans
IDP	Integrated Development Plan 2009/10
NPA	National Prosecution Authority
NPM	New Public Management
SANDF	South African National Defence Force
UK	United Kingdom

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CHAPTER ONE - OVERVIEW OF THE STUDY

1.1. Introduction

The research focuses on the concerns regarding an increase in illegal mining activities in Barberton, Mpumalanga Province of South Africa. Research has confirmed activities of illegal mining in South Africa and attributed it to lack of governance mechanisms by local government institutions to deal with this problem (Hilson, 2002; Van Grembergen & De Haes, 2018; Mawowa, 2013; Thornton, 2014). This study reflects on possible C's (capacity, commitment, and coordination) mechanisms to deal with illegal mining by government structures.

The study, therefore, seeks to examine or reflect on the governance of state institutions (multi-agency departments) to address the reasons for illegal mining at Barberton gold mines. The study further reflects on possible ways to curb illegal gold mining in South Africa. This research focuses its analysis on the Barberton gold mines and its community as well as the implication of their illegal activities in addressing the situation.

Mining is defined as the extraction of valuable minerals or other geological materials from the earth (Hartman & Britton, 1992; Ugwuegbu, 2013; Hartman, 1992; Wolle, 2018). It is any form of excavation of the earth to extract soil and/or minerals for personal use or profit-making purposes (Hartman & Britton, 1992, Hartman 1992; Ugwuegbu, 2013; Sterck, 2016; Minerals Act 50 of 1991). On the other, illegal mining is any act of mining or extraction of soil or minerals from the earth for personal use or profit-making purposes in contravention of the applicable mining laws, rules and regulations of a country (Sterck, 2016).
Mineral and petroleum resources are the common heritage of all the people of South Africa, and the State is the custodian thereof for the benefit of all South Africans (MPRDA 2002).

The current study draws on the New Public Management (NPM) and broadly on governance theories to reflect on the challenges generated by illegal mining in the Barberton mining area within the Mpumalanga Province, formerly known as De Kaap,

Eastern Transvaal. The focus will be on governance theory, even though the NPM was used as an entry point or platform to deliberate better on governance issues.

1.2 Background OF Gold Mining

1.2.1 The history of Barberton gold mine

In Southern Africa, the mining industry has been key in the development of infrastructure and in the establishment of manufacturing industries (Butler, 2017; Ashton, Love, Mahachi, & Dirks, 2001). The economic environment in Barberton proliferated because of the gold rush. This warranted the establishment of the first stock exchange and resulted in the registration of the De Kaap Gold Fields Stock exchange on the 23rd November 1886. Barberton is the oldest gold mine in South Africa (Figures 1 and 5). The stock exchange is an institution evolved in industrially developed capitalist economies with a free market mechanism (Weber 1961; Norman, 2010 and Yardeni & Abbott, 2018). The stock exchange is also an institution where large and small investors can buy and sell shares and bonds (Norman, 2010, 2011).

Gold mining in Barberton has existed for more than one and a half centuries since 1867, and commercial gold mining was noted to be 149 years old (www.exploresouthafrica.net). Gold is recognized as a natural resource that may be a source of wealth (Humphreys, 2005; Ross, 2006; Umukoro, 2013; Boersma & Foley, 2016). Gold was discovered in 1888 at Agnes Gold Mine, by Jack Greaves who was a prospector from the United Kingdom. Greaves named the mine after his wife, Jessie Agnes. On the other hand, Fairview Gold Mine was first named Kidson Reef Gold Mining Company Limited, was established in 1887. The mining complex where gold was produced consisted of three mines: Fairview, Consort, and Sheba. Barberton produces approximately 100,000 ounces of gold per annum at an average cash income of approximately US$45/oz." (http://www.panafricanresources .com).

This indicates that rocks extracted in Barberton mines have more gold content than others of similar size elsewhere and because of economies of scale it may be cheaper to mine gold in Barberton than elsewhere. Figure 1 below shows visible raw gold in a rock sample taken from Fairview Mine where gold is clearly visible in this rock.



Figure 1: Visible gold in rock sample taken from Fairview Mine

Source: http://www.panafricanresources.com

Since the start of commercial gold mining, Barberton has enjoyed a high degree of prosperity, even though it remains a rural town. The gold rush and prosperity resulted in the stock exchange being established in Barberton.

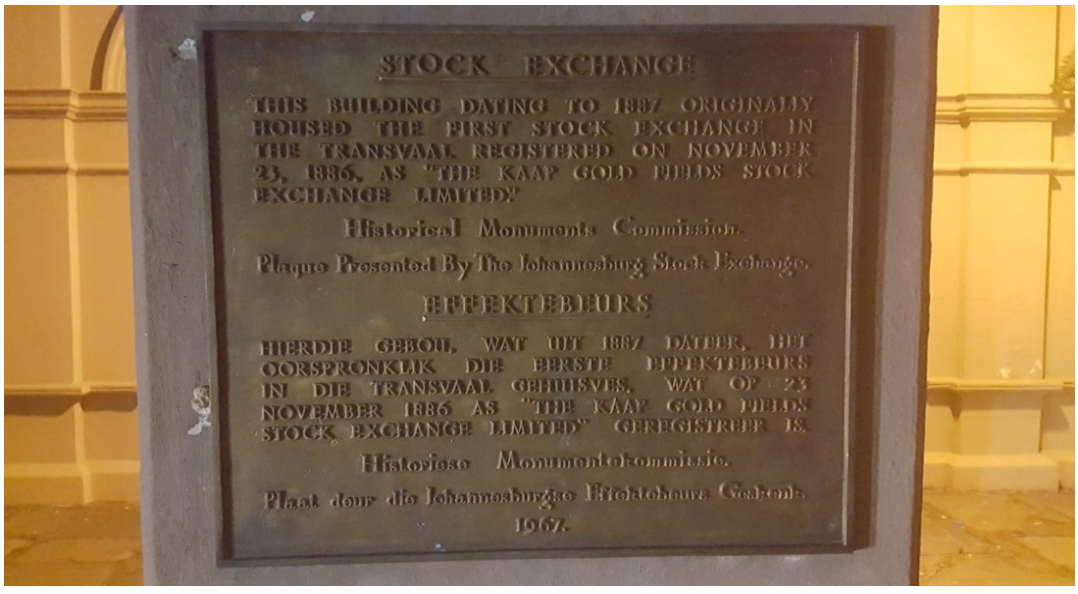


Figure 2: The historical monument plaque showing the Building in Barberton that housed the De Kaap Stock Exchange from 1867

Source: Own Photo, 2015

Even though gold is considered as a source of wealth, some authors argue differently and refer to gold as a challenge to economic growth or a 'natural curse' (Harding & Venables, 2010; Ross, 2006, 2012; Haber & Menaldo, 2011; Torvik, 2009; Mellor, 2018;. Figures 2 and 3 show the Building in Barberton, which from 1867 housed the De Kaap Stock Exchange, which is the first Stock Exchange established in the old Transvaal, South Africa. As alluded to by (Hodgson, 2017), the stock exchange, as illustrated below, showed that Barberton was developing industrially.

Figure 2 depicts the first Stock Exchange in South Africa and indicates the period of mining activities and how these generated finance in order to warrant having a Stock Exchange. Economically active towns attract people because of jobs, shopping, and residential opportunities. Economic migrants who were attracted to the economic benefits of Barberton brought their own culture, ethical conduct, language, ethnicity, value systems, and religion as settlers in Barberton.



Figure 3: De Kaap. The first Stock Exchange in South Africa

Source: Own Photo, 2015

Since the 1800s, Barberton has been an economically established community because of the gold rush after the establishment of Pilgrim's Rest and Lydenburg. European economic migrants settled in Barberton, which began to grow as a town, with gold mining as a main economic driver. Migrant settlement for economic reasons is understandable in this regard since they were responsible for driving investments as a way to maintain a healthy stock exchange (Gupta, 1992; Kirkby, 2018).

Other perspectives on settler economies highlight that these economies sustained a symbiotic relationship with the economy of origin of its primary settler group (Sutch, 2003; Kirkby, 2018). The symbiosis in the relationships involve politics, commercial activities, cultural and financial activities (Sutch, 2003). This further suggests that for a community to be moral, have ethics and ethos, there is a need for a sense of cohesion in such communities. Churches or places of worship may promote such values, and the church below may be a symbol of such suggestion. The roles of "indigenous scarcity, large-scale immigrant labour, land abundance, trade, capital, and the settler institutions are central to the economic formation and it history of most mining communities (Magee, 2014). Figure 4 depicts the first church in Barberton, which was used by European economic migrants.



Source:

Figure 4: The closer snapshot of signage on the De Kaap Stock Exchange.

Own Photo, 2015.

As elaborated by (Ashton et al., 2001), gold mining in Barberton contributed to the development of Barberton into an established town that attracted people who arrived in numbers as workers both skilled and unskilled. It can also be seen today that towns and cities with stock exchanges are doing well economically (Norman, 2010) and this is an indication of how economically viable Barberton was.

1.2.2 Overview of Barberton Gold Mines

Mpumalanga, meaning “the place where the sun rises” - is a province of scenic beauty and an abundance of wildlife, located in the north-east of South Africa (Mpumalanga Integrated Development Plan, 2009/10).



Source:

Figure 5: The first church in Barberton opposite the De Kaap Stock Exchange building

Own Photo, 2015



Figure 6: Token of appreciation to Johannesburg Stock Exchange for the restoration of De Kaap Stock Exchange in Barberton

Source: Own Photo, 2015

In 2009, Pan African Resources, a junior mining company, took full control of Barberton Mines (http://www.barberton.co.za). As explained by Pan African Resources (2016), Shanduka Group holds 23.86% of the issued share capital of Pan African via its wholly-owned subsidiary Shanduka Gold (Proprietary) Limited ("Shanduka Gold").

Barberton is located in Mpumalanga Province," bordered by Mozambique and Swaziland to the east and Gauteng Province of South Africa to the west. It is situated mainly on the high "plateau grasslands of the Middleveld," which extend eastwards for hundreds of kilometers. In the north-east, it "rises towards mountain peaks and terminates in an immense escarpment. This escarpment plunges hundreds of meters down to the low-lying area known as the Lowveld" (Mpumalanga Integrated Development Plan, 2009/10).



Figure 7: Map of Barberton

Source: http://www.weather-forecast.com/locations/Barberton-1

Barberton community tourism notes that gold is found in the south-western and north-eastern parts of the Province. The area around Barberton and Pilgrim's Rest towns was the scene of a classic gold rush in the 1880s, and the latter town still has the ambiance of an old mining village. An abundant quantity of gold is still produced in the area.

Barberton mines are the oldest gold working mines in South Africa after the Lydenburg and Pilgrim's Rest gold rush. The Barberton Museum records and Barberton's Umjindi Municipality website (http://www.umjindi.org) indicate that of the many of gold mines discovered and worked in the late 1880s, four are still producing gold: Agnes (African Pioneer Mining) and the three mines (New Consort, Fairview, and Sheba collectively known as Barberton Mines). Figure 8 below depicts the entrance to Fairview Mine.



Figure 8: Picture of Barberton Goldmine in the early 1900s: the Fairview mine dates from 1887 and is a warren of mining tunnels and shafts
Source: http://lh3.ggpht.com

1.2.3 History of ownership of Barberton mines and illegal mining

Barberton mines were first owned by the company Metorex, which later sold them to Pan African. Currently, Fairview is the only gold mine in South Africa which has a biox plant to extract gold". Usually mining companies get government licenses to operate the mines for a set number of years, and in turn, they pay royalties to the South African government; however, when the mine has come to the end of its working years, such mines are usually abandoned. According to businenndaylive.com (2018), up for grabs are over 6,000 disused gold, diamond, chrome and platinum mines spread across South Africa. These formally legal mines become illegal mines, and they are usually

managed by underground miners known as ‘zama zamas,’ which in Zulu loosely translates to “those who try to get something from nothing.

New Consort Gold Mine is one of the oldest working gold mines in the world, established in 1885, while Sheba Gold Mine was established by Edward Bray (1824-1887). Bray discovered the rich Golden Quarry which yielded 8 ounces of gold per ton in a trial crushing. This led to intense prospecting and mining activity in the vicinity, and numerous companies were formed.

Illegal miners have been transferring skills from generation to generation since that time. In 1885, ventilation technology was not as advanced and consisted of exhumation fans and air-conditioning machines. The old ventilation pits are now customarily left unattended, and that renders them vulnerable as a gateway to illegal mining (Baland & Platteau, 1996, 1997; Rode, Gómez-Baggethun, & Krause, 2015). Moreover, old abandoned ventilation pits which are left unattended (see Figures 8(a) and 8(b) below), as described above, for decades, and in the case of Barberton for more than a century, becomes a magnet for illegal mining as the natural resources, in this case, gold, are readily available to the public with easy access (Twerefou & Tutu, 2017).

Figures 8(a) and 8(b) indicate how quickly the illegal gold miners are entering the gold mines through old ventilation pits. In December 2010, 550 illegal miners were arrested, and a series of shootouts took place below ground where three of the miners were injured (http://www.miningmx.com). This is because the access to the mines was exposed to an unauthorized entrance (Baland & Platteau, 1997; Rode et al., 2015; Twerefou & Tutu, 2017). This is one possible reason for the increase in illegal gold mining activities in Barberton. Figures 8(a) and 8(b) above illustrate how these ventilation pits can readily provide an entrance for the illegal gold miners.



Figure 9: Picture of illegal gold miner entering through old ventilation pit.

Source: www.wsj.com, 2015



Figure 10: Picture of illegal gold miner entering through old ventilation pit

Source: www.photoshelter.com, 2015

1.2.3 Historical and Political Context

Southern Africa has an abundance of gold deposits, most of which were formed during the Achaean Period of the Pre-Cambrian between 2,500 and 3,500 million years ago (Bandama, 2013; Miller, Desai, & Lee-Thorp, 2000). It is difficult to determine the beginning of gold mining in Southern Africa, not least because the first stages of any technology leave a little archaeological trace and it is even less likely to be found than later evidence (Miller et al., 2000). Researchers show that the mid-13th century A.D. was the earliest date of gold mining in Southern Africa and jewelry was then discovered at the archaeological site of Mapungubwe on the Limpopo river (Bandama, 2013; Miller et al., 2000; Van Ewyk, 2014).

Historically, gold has been in use since 3500 BC (www.randrefinery.com), and the first international gold currency was created in 564 BC, but according to Barberton museum records (http://www.barbertonmanor .com) it has been recorded that on 21 June 1884 Graham Barber, one of the founders of Barberton, informed the then State Secretary of South Africa that payable gold had been discovered on the state-owned land. Apart from diamond mining, the most profitable small-scale mining enterprises are those of gold (Miller et al., 2000). There is a tendency for governments to invest in projects with high prestige or political payoff but with little economic rationale (Barma, Kaiser, & Le, 2012; Gavin, 1993; Kimenyi, 2018). It is also evident that before 1994, South Africa's system of governance was based on racial discrimination or apartheid which deprived black people of owning mines or occupying any position in executive decision-making (Ziltener & Künzler, 2013). Literature also cites that even post-1994 democracy, mining is still politicized because of some politicians who might be greedy and corrupt (Gavin, 1993; Robinson, Torvik, & Verdier, 2006; Torvik, 2009); Gavin 1993; Kimenyi, 2018). As argued in the literature (Bazerman & Lewicki, 1983; Van der Ploeg, 2008) lack of governance, greed, corruption, irrational investments and economic exclusions will be demonstrated in this study under the conceptual framework of how an abundance of natural resources (in this case gold) might lead to illegal mining.

It is worthy of note that the mining laws in South Africa have their roots in the regulatory frameworks developed during the colonial era. These frameworks were designed towards promoting maximum extraction of resources without giving undue attention to

the local population that remained marginalized and poor; the host communities are not even expected to know about the financial situations of the mining companies, and any forms of profits made were sacrosanct, often to the detriment of the host community. This is explained further in section 2.15 and 2.16.

Due to racial politics in most South African towns, Barberton before the 1994 first democratic elections had a strong apartheid influence. No Black people stayed in town and children of different races attended different schools (Van Veuren, 2012; McClendon, 2016; Butler, 2017). What was most striking about Barberton in the years of apartheid was the notorious Barberton prison. The central prison was built in 1884, starting as a small hut which held offenders who had committed common offenses such as public violence, stock theft, widespread theft and possession of marijuana. Furthermore, illegal gold miners were also held there. The relevance of this historical and political context to the study is to demonstrate the problematic social reality that existed in Barberton and its potential malicious effects (Bazerman & Lewicki, 1983; Van der Ploeg, 2008; Ziltener & Künzler, 2013).

1.2.4 Policy and Legislative Context

1.2.4.1 Legislative framework of Gold Mines

The mining industry requires a holistic approach regarding recruitment and selection of workers with necessary skills. The mining sector employs people with backgrounds in medicine, surveying, geology, engineering, administration, accounting, nursing, and law, amongst others. This encompasses different skills, including high-level skills, that may be needed anywhere. The researcher, therefore, considered some of the South African Department of Home Affairs legislation on Scarce Skills and Work Permit Quotas Act, Immigration Act No. 13 of 2002, and Temporary Residence permits. The researcher also considered that the gold as a natural resource and people as a human resource would be administered under the Mineral Act, the South African Constitution and the Disclosure of information Act respectively.

1.2.4.2 Mineral Act

Minerals and precious metal resources in South Africa such as gold are administered through the Mineral and Energy Laws Rationalisation Act 47 of 1994 and the Precious Metals Act, 2005. The Mineral and Energy Laws Rationalisation Act No. 47 of 1994 and the Precious Metals Act of 2005 supports the Constitution of the Republic of South Africa (Act 108 of 1996) and give the Regulator a mandate to ensure that the precious metal resources of the Republic are exploited and developed in the best interests of the people of South Africa. The Acts also promote equitable access and local beneficiation of the Republic's precious metals. They also promote the sound development of precious metal enterprises in the Republic, and to advance the objectives of broad-based socio-economic empowerment" as prescribed.

Minerals Act 50 of 1991 as amended by Minerals Amendment Act 103 of 1993, Mine Health and Safety Act 29 of 1996 and the General Law Fourth Amendment Act 132 of 1993 (Ugwuegbu, 2013). On the other hand, authors such as (Baistrocchi, 2017; Mcdermott, 2017) claim that the Minerals Act, for specific items in the Schedule, have been repealed by section 110 of the Mineral and Petroleum Resources Development Act 28 of 2002.

Although the Act addresses interesting aspects, there are missing aspects concerning the security of mines. It concentrates more on the issues of extraction of minerals while considering fewer issues of concern such as the recruitment and selection of workers, including foreign nationals. It also addresses foreign nationals' influx since Swaziland and Mozambique border Barberton, and people who invade the old ventilation pits heavily armed with the intention to mine without authority, including potentially robbing the legally employed miners found inside the mine.

1.2.4.3 Scarce Skills and Work Permit Quotas Act

Based on a variety of skills needed in the mines, most of which are technical, the mines source skills from outside the Republic of South Africa as a result of skills shortage. The Accelerated and Shared Growth Initiative for South Africa (ASGI-SA) is a comprehensive government plan that was launched on 6 February 2006 with the

aim of ensuring the continuation of South Africa's vibrant economic growth. One of the critical elements of this plan is to recruit skilled foreigners in certain vital areas. The Immigration Act of 2002 allows for the Minister of Home Affairs to consult with the Minister of Labour and the Minister of Trade and Industry and to identify areas of limited, critical and specialized skills required by the South African economy each year (http://www.dha.gov.za).

Once the skills gaps are identified in the country, a list of professional categories and occupational classes is then compiled and work permits made available. The most recent list, dated March 2016, identifies almost 35,000 such positions across 53 different categories, nationally. In this sense, anyone with formal qualifications in any of these areas and who has a minimum of five years of practical experience qualifies for such quota work permit. Most of the illegal miners are from the neighboring SADC countries (N. J. Allen & Meyer, 1996). The legislative framework of gold mines demonstrate the skills level of foreign technical workers, recognizes nature of scarce skills, is governed by the Mineral Act, the Scarce Skills and Work Permit Quotas Act of a particular country (Amponsah-Tawiah & Dartey-Baah, 2011; Buadee, 2016; Hilson, 2002; Iddirisu & Tsikata, 1998).

1.2.4.4 Immigration Act (Act No. 13 of 2002): Temporary Residence.

The literature cites that the most suitable body stature for illegal miners is lighter in weight in order for them to move their bodies' kilometers down through ventilation pits and old unused shafts (Amponsah-Tawiah & Dartey-Baah, 2011; Buadee, 2016; Iddirisu & Tsikata, 1998). The Mail and Guardian (2010) reported that the Pan African chief executive officer Jan Nelson argued that in Barberton, the mine workings are situated close to the Swaziland and Mozambique borders, and many of the illegal miners were coming in from those countries, as well as from Zimbabwe. The objectives of the Immigration Act No. 13 of 2002, which was implemented on 7 April 2003, include, *among other thi*ngs, facilitating and simplifying the issuance of permits to regulate the influx of foreigners by encouraging foreign investment and attracting skilled and qualified foreigners to the Republic, as well as promoting tourism to South Africa. The Home Affairs Sub-directorate: Temporary Residence is tasked with the admission of persons who intend to apply for an appropriate temporary residence

permit to sojourn in South Africa (http://www.dha.gov.za). Researchers reported that the Policy and Legislative Context cited in this study is interspersed and will be collectively considered during the research process (Agyapong, 1998; Amponsah-Tawiah & Dartey-Baah, 2011; Buadee, 2016; Iddirisu & Tsikata, 1998).

1.2.4.5 Barberton Mining Limited (BML) Legislation

The regulatory environment as explained by BML (2007) from a 'Competent Person's Report' on Barberton mines by SRT Consulting South Africa (Pty) Limited, includes the rationale of ensuring that the Barberton gold mining operated in the regulated environment. The Mine, therefore, operated under the following legislature.

1.2.4.5.1 South African Law: The Minerals and Petroleum Resources Development Act (MPRDA)

The MPRDA "was promulgated by the South African Parliament in July 2002 and came into effect on 1 May 2004 (MPRDA). Prior to 1 May 2004, mineral rights in South Africa were held privately or in some instances by the State" (BML, 2007). With the enactment of the MPRDA, all mineral rights were declared as being vested in the State whether found over or under the surface of the soil. The Act further has transitional provisions, which allow mining companies to convert their existing "old order" rights to "new order" rights" (BML, 2007). In clarifying the transitional provisions, BML (2007) "contemplates three categories of old order rights:

(a) unused old order rights, may be regarded as mineral rights with no prospecting permit or approved mining authorisation issued under the former Minerals Act, No. 50 of 1991 (South Africa) (the "Minerals Act") or, where an issue of such nature had occurred, without prospecting or mining activities that took place as at 1 May 2004;
(b) old order prospecting rights, may be regarded as rights to prospect in respect of which a prospecting permit had been issued under the Minerals Act and prospecting had taken place prior to 1 May 2004; and
(c) old order mining rights, may be regarded as rights to mine where a mining authorization had been issued under the Minerals Act and mining had taken place".

The three categories of “old order rights” suggests that ” the holders of unused order rights were required to apply for prospecting or mining rights under the MPRDA within one year as of 1 May 2004 (BML, 2007).

Under the MPRDA (BML, 2007), old order prospecting rights and old order mining rights and the related permits and authorizations granted under the Minerals Act will continue to be valid for the period granted under that legislation. Subject to a maximum period of two years in the case of old order prospecting rights, and five years in the case of old order mining rights. To continue after that with prospecting or mining operations, holders of old order prospecting and mining rights are required to apply within these periods to convert their rights to the "new order" prospecting and mining rights provided for by the MPRD" (BML, 2007).

Authors made the argument about the environmental impact of gold mining (Thornton, 2014; Zwane, Love, Hoko, & Shoko, 2006), illegal gold mining in Zimbabwe, and South Africa (Thornton, 2014) but the is a dearth of literature on the usefulness of the MPRDA. According to the MPRDA, prospecting rights are granted initially for a maximum period of five years and can be renewed once on the application for a further period of up to three years (BML, 2007). After that, mining rights are valid for a maximum period of 30 years and can be renewed on an application for further periods, each of which may not exceed 30 years. The provision mentioned above is made for the granting of retention permits in circumstances where prospecting has been completed, but mining is not commercially viable.

In the current political, economic environment of South Africa, compliance with empowerment acts is imperative. A wide range of factors and principles, including proposals relating to black economic empowerment and social responsibility and evidence of an applicant's ability to conduct mining optimally, are the pre-requisites for the approval of such applications (BML, 2007)

1.2.4.5.2 South African Law: “The Mining Charter."

The Mining Charter was signed on the 12th October 2002 by the South African Minister of Minerals and Energy, and the representatives of the South African mining industry and the South African National Union of Mineworkers (Antin, 2013; BML, 2007). The Mining Charter outline provisions for prospecting and mining right applications and conversion applications (BML, 2007). The criteria in the Charter include human resources development, employment equity, procurement, community and rural development and ownership of mining assets by Historically Disadvantaged South Africans” (HDSAs).

The Mining Charter requires that mining companies achieve 15% HDSA ownership of mining assets by 1 May 2009 and 26% HDSA ownership of mining assets by 1 May 2014. The Mining Charter envisages that transactions directed at achieving the required HDSA status should transparently take place and at fair market value" (BML, 2007).

A scorecard is used for assessment of applications for the conversion of old order rights as promulgated by the South African Department of Minerals and Energy (BML, 2007). The scorecard assesses human resources development, employment equity, migrant labour, mine community and rural development, housing and living conditions, ownership and joint ventures, beneficiation and reporting (Ndebele, 2013). Arguments cite that limitations of the scorecards that it has the lack of relative significance of each item, unavailability of a particular score which an applicant must achieve to comply with the Mining Charter for obtaining granted new rights under the MPRDA (MPRDA; BML, 2007).

1.2.4.5.3 South African Law: Mineral and Petroleum Resources Royalty Bill

Also useful in the mining industry is the South African Law: Mineral and Petroleum Resources Royalty Bill. The document does not have provisions for of royalties concerning Barberton gold mines. Due to this gap, the royalty regulations apply the Zimbabwean legislature (BML, 2007; M. G. Allen & Porter, 2016). In South Africa, under the terms of the earlier Royalty Bill, the royalties were to commence as soon as companies had met the requirements of the Mining Charter (BML, 2007). The Minister

subsequently indicated that the royalty would not take effect until the transitional period for conversion of mining rights under the MPRDA had expired, namely 1 May 2009". This is confirmed in Section 33(2) of the New Royalty Bill.

Scholars have been presenting arguments on issues of marginalized local communities who are not prioritized in relation to the natural resources (Murombo, 2013; Pritchard, 2013; Ross, 2012). Despite the marginalization, the New Royalty Bill proposes to impose a revenue-based royalty on South African gold producers, payable to the South African Government.
While there has been an extensive debate on the matter of royalties, the research undertaken by BML (2007) is of note as it also involves the current issues related to gold mining.

It may also be imperative to consider the following Acts when dealing with gold mining activities whether legally or illegally.

1.2.4.5.4 Minerals Petroleum Resource Development Act, 28 of 2002 (MPRDA)

Minerals Petroleum Resource Development Act, 28 of 2002 (MPRDA, 2002) regulates the South African Mining Law. This Act aimed at dealing with acquisitions or rights to conduct reconnaissance, prospecting, and mining.

According to (Baistrocchi, 2017; Mcdermott, 2017), reconnaissance is defined in South African law as “any operation carried out for, or in connection with, the search for a mineral or petroleum by geological, geophysical and photo-geological surveys that includes any remote sensing techniques but does not include any prospecting operations other than acquisition and processing of new seismic data”.

The MPRDA (2002) states that mineral and petroleum resources are the common heritage of all the people of South Africa and the State is the custodian thereof for the benefit of all South Africans. As the custodian of the nation's mineral and petroleum resources, the State, acting through the Minister, may grant, refuse, control, administer and manage any reconnaissance permission, prospecting right, permission to remove, mining right, mining permit, retention permit, technical co-operation permit,

reconnaissance permit, exploration right, and production right; and in consultation with the Minister of Finance, determine and levy, any fee or consideration payable in terms of any relevant Act of Parliament (MPRDA, 2002).

Furthermore, there are several other pieces of legislation which deal with such ancillary issues such as royalties (the Mineral and Petroleum Resources Royalty Act, 2008), title registration (the Mining Titles Registration Act, 1967), and health and safety (the Mine Health and Safety Act, 1996).

Exports are exempted or prohibited in terms of the Precious Metals Act, 2005 unless one has a permit to allow such an export levy is imposed. Precious metals include gold, silver, and the platinum group metals (Baistrocchi, 2017; Mcdermott, 2017).

Currently, the holder of a prospecting right or mining right is required to have an approved environmental authorization, before the conducting of the relevant activities. Also, the right to use water is governed by the National Water Act, 1998.

1.2.4.5.5. Precious Metals Act, No. 37 of 2005.

The main purpose of the Precious Metals Act, No. 37 of 2005 (PMA, 2005) is to provide for the acquisition, possession, smelting, refining, beneficiation, use and disposal of precious metals; and to provide for matters connected therewith (PMA, 2005).

PMA (2005) states that no person may acquire, possess or become the holder of the refining license and acts following the terms and conditions of his or her license. The Act also authorizes dealer; production of, and disposal of recovered unwrought precious metal. The licensee can either as principal or as an agent, any unwrought precious metal unless he or she has obtained a certificate from the Regulator authorizing him or her to acquire or to dispose of such unwrought precious metal. It is required that the unwrought precious metal not exceed a prescribed mass and is acquired following a special permit issued by the Regulator for scientific, beneficiation or jewelry making purposes. Licensees are also bound to the terms and conditions of the license.

1.2.4.5.6. Mine Health and Safety Act 29 of 1996

The Mine Health and Safety Act 29 of 1996 provides for the protection of the health and safety of employees and other persons at mines. The Act aims to promote a culture of health and safety; to provide for the enforcement of health and safety measures; to provide for appropriate systems of employee, employer and State participation in health and safety matters; to establish representative tripartite institutions to review legislation, promote health and enhance appropriately targeted research; to provide for effective monitoring systems and inspections, investigations and inquiries to improve health and safety; to promote training and human resources development; to regulate employers' and employees' duties to identify hazards and eliminate, control and minimise the risk to health and safety; to entrench the right to refuse to work in dangerous conditions; and to give effect to the public international law obligations of the Republic relating to mining health and safety.

To ensure that the mines are safe and do not pose a danger this Act has to be considered.

1.2.4.5.7. National Environmental Management Act of 1998 (NEMA)

NEMA (1998) states that the environmental management, must place people and their needs at the forefront of its concern and serve their physical. Psychological, developmental, cultural and social interests equitably. It is further stated by NEMA (1998) that development must be socially, environmentally and economically sustainable. Www.environment.gov.za also notes that the Environmental Management Act provides for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment and as such institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state (www.waternet.co.za).

1.2.4.5.8. Explosives Legislation and Hazardous Act

The whole of this Act (Explosives ACT 26 of 1956) has been repealed by section 34 (1) of the Explosives Act 15 of 2003 (www.saps.gov.za). This Act was assented to 02

May 1956, and its date of commencement is 04 May 1956. The following Acts also amended the Act: Explosives Amendment Act 79 of 1962; Explosives Amendment Act 21 of 1963; Mines and Works and Explosives Amendment Act 46 of 1964; Explosives Amendment Act 20 of 1965; Explosives Amendment Act 12 of 1967; Explosives Amendment Act 74 of 1972; Explosives Amendment Act 35 of 1975; Explosives Amendment Act 101 of 1977; Explosives Amendment Act 5 of 1981; Explosives Amendment Act 18 of 1983; Transfer of Powers and Duties of the State President Act 97 of 1986; Application of Certain Laws to Namibia Abolition Act 56 of 1991; Explosives Amendment Act 178 of 19 93; Explosives Amendment Act 83 of 1997 as mentioned by www.saps.gov.za. The purpose of this Act is to consolidate the laws relating to the manufacture, storage, sale, transport, importation, exportation and the use of explosives. It further states that No person, other than the manufacturer, shall sell or deal in any explosive unless he is in possession of a license granted under regulations, which shall be in addition to any other license, which may be required concerning any other law.

The Act has been considered because some illegal gold miners use explosives in the execution of their duties. Another important point is that in mining, when a policy is not enough, it gives effect to prospects and challenges of artisanal and small-scale mining in South Africa (Ledwaba & Nhlengetwa, 2016).

1.2.5 Socio-economic context

The effects of illegal mining, when not well managed, can be dangerous to the environment, society, economy and political context (Hilson, 2002),. Drawing from the experience of Ghana, by the enactment of the small scale Gold Mining Law in 1989, small-scale gold mining got legalized, and industrial operations collectively made important contributions to national gold output, foreign exchange earnings and increased employment (Hilson, 2002).

The economic impact of illegal mining extends beyond the decreased tax revenue for the government and the loss of the mining company‘s prime product to the loss of other company assets such as explosives, machinery and equipment, and copper

cables" (www.miningweekly.com). Further business risks for the company include the threat of mine closure because of explosives violations and fatalities.

According to the report of the Department of Mineral Resources (DMR), theft of precious metals is estimated at the value of gold lost through criminal activities which amount to about R5,6 billion (Van der Merwe 2009; www.miningweekly.com; South African Institute for Security Studies; The Chamber of Mines). Furthermore, it is reported that one-tenth of all gold mined in South Africa is lost through criminal activities (http://www.miningweekly.com).

South Africa's high unemployment rate and the influx of illegal immigrants have been cited as some of the factors contributing to increased activities of illegal mining (Godfrey & Buhlungu, 2013; Phala, Mistry, & Matlala 2017). Mining analyst Peter Major observes that close to 400,000 skilled gold miners have been retrenched and hundreds of mines abandoned since the democratic dispensation of 1994, creating fertile ground for illegal mining (Eye Witness News, 2014). The claims by Mining Weekly and the Eye Witness News are depicted in Table 1 below.

	2011	2012	2013	2014
Real GDP growth	3.5	2.5	2.8	3.5
Real GDP per capita growth	2.8	2	2.3	3.1
CPI inflation	5	5.6	5.7	5.5
Budget balance % GDP	-4.2	-4.7	-4.5	-4
Current account % GDP	-3.4	-5.9	-5.6	-5.3

Table 1a: Macroeconomic indicators, South Africa - African Economic Outlook. Source: http://www.africaneconomicoutlook.org

Figures for 2012 are estimates, while for 2013 and later they are projections. (http://dx.doi.org). Table 1 above indicates that real GDP growth went down from 3.5% in 2011 to 2.5% in 2012. This means that this was a challenging time for companies and the implication is that the unemployment rate will grow, resulting in people seeking other ways of making money for a living, whether legally or illegally. Even though the

real GDP growth grew at a steady rate after that from 2.5% in 2012 to 2.8% in 2013 and then back to 3.5% in 2014, companies were challenged to remain in business and continue to create employment.

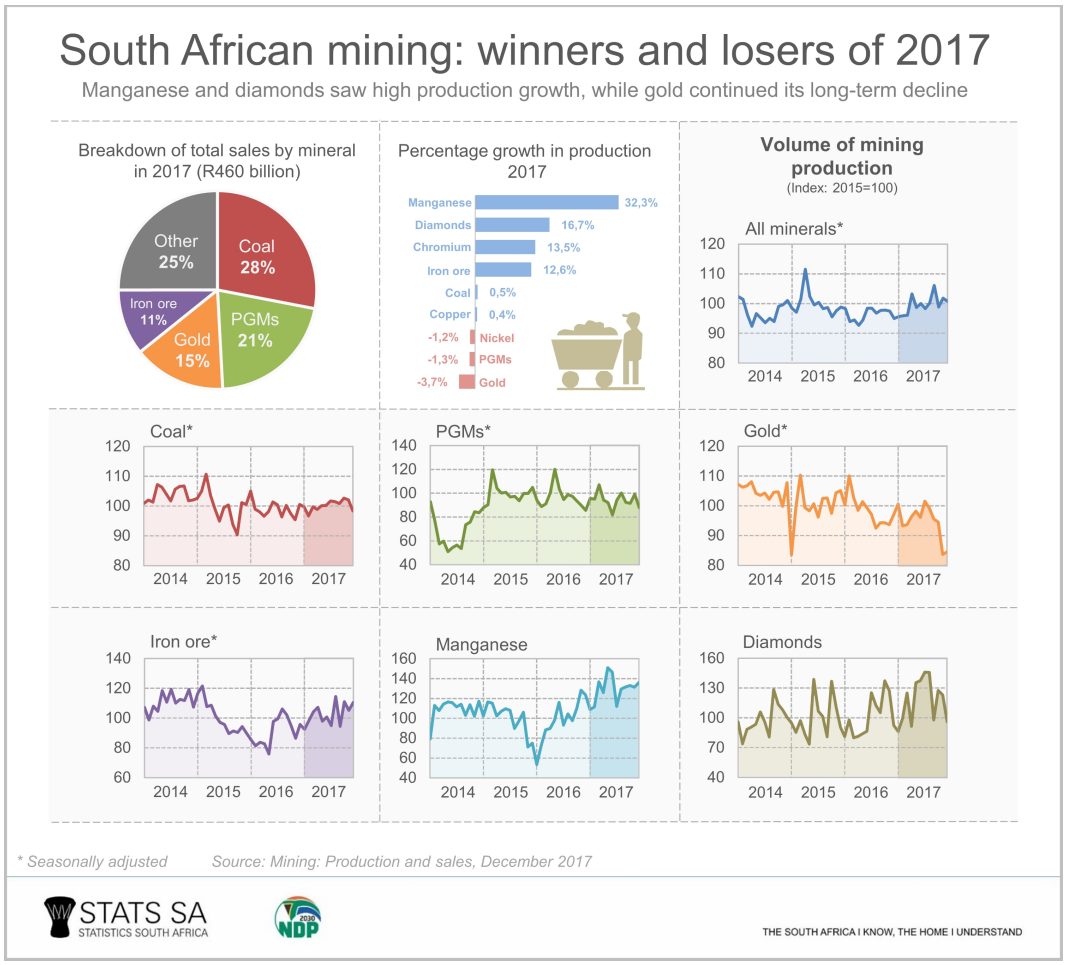


Table 2b: South African Mining Sector outlook 2017

Source: StatsSA http://www.statssa.gov.za/?p=10963

Table 1b consists of 9 figures; each with its own heading. What should be noted as prime in this context is to annotate that Gold, represents 15% of the R 460 billion total sales by mineral in the year 2017(as per Table 1b, figure1). This equates to R69 billion (R460 billion x 0.15) (Statssa 2017). When compared to 0.99% improvement from 2011 till 2017, where it was enunciated that the improvement in mineral sales in 2011 was driven by the 30% rise in gold sales to R68.9billion, as articulated by facts-and-figures-2012.pdf (Chamber of Mines 2018). Such a small growth denotes lack of growth in the gold mining employment sector. In particular percentage growth in gold production was at -3.7% (as per Table 1b figure 2), which showed a negative growth.

Articulating sense out of Table 3b figure 6, volume of gold mining, in 2017 declined to approximately 85 bases from approximately 108 bases in 2014.

Moreover, the macroeconomic indicators in South Africa in Table 1 above clearly indicate that the unemployment rate has increased in recent years due to the economic recession (www.africaneconomicoutlook.org). The financial constraints have forced many companies in South Africa to use alternative strategies. Some have opted to close down completely while others have retrenched workers (Bhorat, Van der Westhuizen, & Jacobs, 2009). This situation is not an exception in the mining sector. Financial constraints have pushed mining companies in South Africa to retrench workers who often remain unemployed. These unemployed miners with the extensive experience gained when they were formally employed engage in illegal mining activities to generate some form of income (Mhlongo & Amponsah-Dacosta, 2016).

Barberton mines also, over the last ten years has seen an increase in illegal gold mining activities, accompanied by many social problems. Apart from diamond mining, the most profitable small-scale mining enterprises are for gold ((Miller et al., 2000)). Illegal miners tend to become role models in the Barberton community, and this encourages school dropouts as children believe they can make easy money from illegal mining.

Mining as a whole is still an essential player in the South African economy. The industry contributes R8 for every R100 produced by the national economy5 and employs one in every 40 working individuals (or 2,5% of the entire workforce) hence, the kind of decline shown on table 1b in the mining sector is hugely significant for the economic stability of the South African economy.

Previous studies indicate that most legal miners take up illegal mining because of low wages, which constitute the primary and persistent source of complaint (Bezuidenhout & Buhlungu, 2011; Buhlungu & Bezuidenhout, 2008; Crush, Ulicki, Tseane, & Van Veuren, 2001). Recent unrest in various mines in South Africa may be an indicator of this imperative. These illegal activities result in socio-economic and environmental challenges including soil erosion, teenage pregnancies, alcohol and drug abuse (because of easy cash in circulation), HIV/AIDS, robbery and general crime.

Lack of good governance may be the primary reason for the range of problems that have developed within the Barberton gold mine communities (Donovan and Lukhele 2013). These arguments provide a platform for this study, which seeks to examine illegal gold mining in Barberton and possibly increase the understanding of how to deal with issues of illegal mining.

1.2.6 Environmental Context

The environmental effects of illegal gold mining and transient small-scale gold mining activity are reported to cause of environmental destruction in many different locations around the world (Hilson, 2002; Hilson & McQuilken, 2014). In addition, Pathak (2014), reported that the contamination resulting from leakage of chemicals also affects the health of the local population. Environmental issues can include "erosion, the formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes" (http://ngm.nationalgeographic.com). The rate and method of mining, the location, variety, and scale of mine infrastructure also influence the nature and extent of impact (P.J. Ashton et al., 2001).

1.2.7 Mining phases and environment

Typical mine infrastructure includes haul roads and ore dumps; ventilation shafts; surface facilities (offices, workshops, car parks and warehouses); tailings and waste rock disposal areas and methods; transport and service corridors (railway lines, roads, pipelines, conveyors, airstrips, port facilities, power, water and gas corridors); product stockpiles; ore processing facilities; chemicals and fuel storage and the locations of towns and housing facilities" (Australian Environmental Protection Agency; 1995-1996; Fuggle and Rabie, 1996; (C. M. Ashton et al., 1999).

The MMSD (SA) as adapted from the Environment Canada (1969) and the (Williams & West, 2000), provides an overview of the potential environmental impacts associated with different phases of mining activities (P.J. Ashton et al. 2001, Williams & West 2000).

The following mining phases adjusted from (P.J. Ashton et al., 2001) and discussed in sections 1.2.7.1 to 1.2.7.7 explains, "the stages of mine development from start-up to closure and lists the potential environmental impacts associated with each of these phases."

1.2.7.1 Exploration and Surveying Mining Phase

The main activities this phase include geochemical, geophysical and airborne surveys; drilling and trenching; blasting of exploration audits; exploration camp housing; vehicle and machinery parks; fuel points and service bays; access road construction, waste disposal (garbage) and camp sanitation systems (O'Donnell 2013),.

The environmental impacts of this mining phase involve vegetation removal, damage, and destruction, habitat disturbance due to noise/vibration, disturbance to wildlife and local residents to name a few (Gordon 2007, Hitzman 2007; Chadwick 2008),

1.2.7.2 Mine development start-up; sourcing and stockpiling of raw materials mining phase

The main activities include mine construction; stripping/storing of soil "overburden", installation of power lines, surveying and levelling of sites for buildings and plant, installation of mine and surface water treatment plants, construction of processing plant, smelter and refinery, construction of storage facilities, landscaping of site, construction of staff housing, infrastructure and recreational facilities, and construction of railway lines and sidings" (Hitzman 2007; Chadwick 2008, www.forums.wetlands.net).

Potential Environmental Impacts include loss of fauna and flora habitat, reduction in biodiversity on site, potential loss of heritage sites, decreased aesthetic appeal of sites, altered landforms due to construction, littered drainage patterns and runoff flows, increased erosion of site area, increased siltation of surface waters, contamination of surface and ground waters. This is by seepage and effluent discharges, discharge of contaminants via mine de-watering activities, methane emissions from mines contributing to greenhouse gases, increased demand on local water resources,

seepage/discharge of acid rock drainage, ground and surface water contamination from seepage and radionuclides, contamination from fuel spills and leakages, and increased demand for electrical power (Hitzman 2007; Tosh 1980).

1.2.7.3 Removal and storage of ores and waste materials Mining Phase

The activities for this phase include “stripping/storing of soil “overburden”; waste rock stockpiles; low-grade ore stockpiles, and high-grade ore stockpiles (O’Donnell 2013). Potential Environmental Impacts are land alienation from waste rock stockpiles and disposal areas, disturbance from vehicle and machinery noise and site illumination, acceleration of acid rock drainage through exposure of ores to air and water, spontaneous combustion of coal fires, increased erosion and siltation of nearby surface water bodies (rivers and lakes), and contamination of local groundwater.

1.2.7.4 Blasting, milling, and grinding

The main activities include blasting of rock to release ores; transport of ore to the crusher, extraction and preliminary crushing of ore, milling, and grinding of ore, flotation and chemical concentration/leaching of ore and a final product, and transport of ores to the smelter (O’Donnell, 2013),.

Potential Environmental Impacts are ground surface disturbance, disturbance due to noise and vibrations, dust and fumes from explosives, mine vehicles and transportation systems, contamination from explosive residues, discharge of contaminated water, windborne dust and radionuclides, sulphur dioxide emissions from roasters and acid plants, and metal vapour emissions from smelters (www.ilo.org).

1.2.7.5 Smelting, refining, and beneficiation.

The main activities include mineral processing through smelting, roasting and other methods for refining ore, replenishment of refinery plant processes/solutions, and stockpiling of final product” (www.ilo.org).

Potential Environmental Impacts are the discharge of contaminants to air, including heavy metals, organics and SO_2, leakages from electrolytic plant leading to site contamination, spillage of corrosive liquids, and increased demand for electrical power (www.ilo.org).

1.2.7.6 Transport of final product to markets

The main activities include “packaging/loading of final product into transportation and transport of final product via rail link (http://www.pubs.iied.org).

Potential Environmental Impacts are disturbance due to noise, vibration and site illumination; and dust and fumes from exposed product stockpiles (http://www.pubs.iied.org).

1.2.7.7 Mine closure and post-operational waste management

The main activities according to (www.forums.wetlands.za.net) include decommissioning of roads, dismantling buildings, re-seeding/planting of disturbed areas, re-contouring pit walls/waste dumps, water quality treatment, fencing dangerous area; and monitoring of seepage” (http://www.pubs.iied.org).

Potential Environmental Impacts are subsidence, slumping and flooding of previously mined areas, underground fires in abandoned coal mines, acid rock drainage from exposed ores, continuing discharge of contaminants to ground and surface water via seepage, fauna and flora habitat loss and disturbance, windborne dust, including radionuclides, and dangerous areas that pose health risks and possible loss of life (shafts, pits)

1.2.8 Environmental effects of gold mining

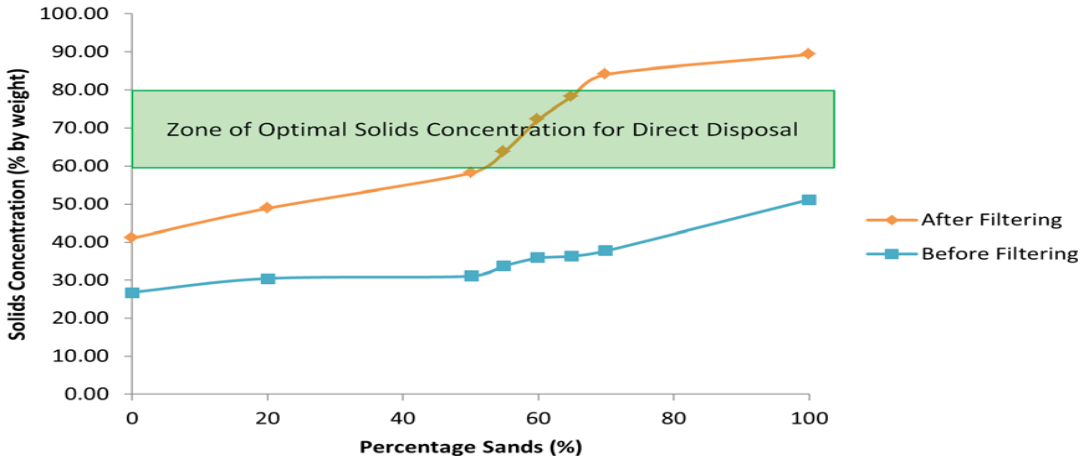
Meyer (1998) cited the concentrations of metals associated with mining waste in sediments, biofilm, benthic macroinvertebrates, and fish, as the other source of environmental contamination and toxicology. Stronger environmental legislation and policies are required to promote a cleaner environment. Polluting activities are often relocated to areas with less stringent regulations (Tang, 2015; Copeland & Taylor,

2004; Brunnermeier & Levinson, 2004). Several studies have been conducted globally to improve water management, decrease tailings management costs and reduce the overall time for mine habitation closure and to recommend more sustainable disposal techniques (Macdonald, Lund & McCullough 2015; Hilson, 2002; P.J. Ashton et al., 2001). Macdonald et al., (2015) undertook a study based on experimental testing that included sedimentation, filtration and cementation tests, to determine the application of each in improving current waste management practices.

Contrary to the study by Kolominskas (2015) that concentrated on using technology to meet environmental obligations effectively and efficiently on-air quality and noise reduction, the study by Macdonald et al., (2015) reveals that an increase in sand content increases the overall filterability of fine particle mine waste, from the heavy mineral sands mine, as depicted in graph 1 below.

Testing indicated that a maximum change in solids concentration occurs at 70% sand with increases above that level providing mineral benefits. This is currently one of the mining methods in an environmentally secured environment, with less wastage compared to mines that did not implement the above strategies by (P.J. Ashton et al., 2001).

Graph 1: Effects of filtering on solids concentration of heavy mineral sand tailings

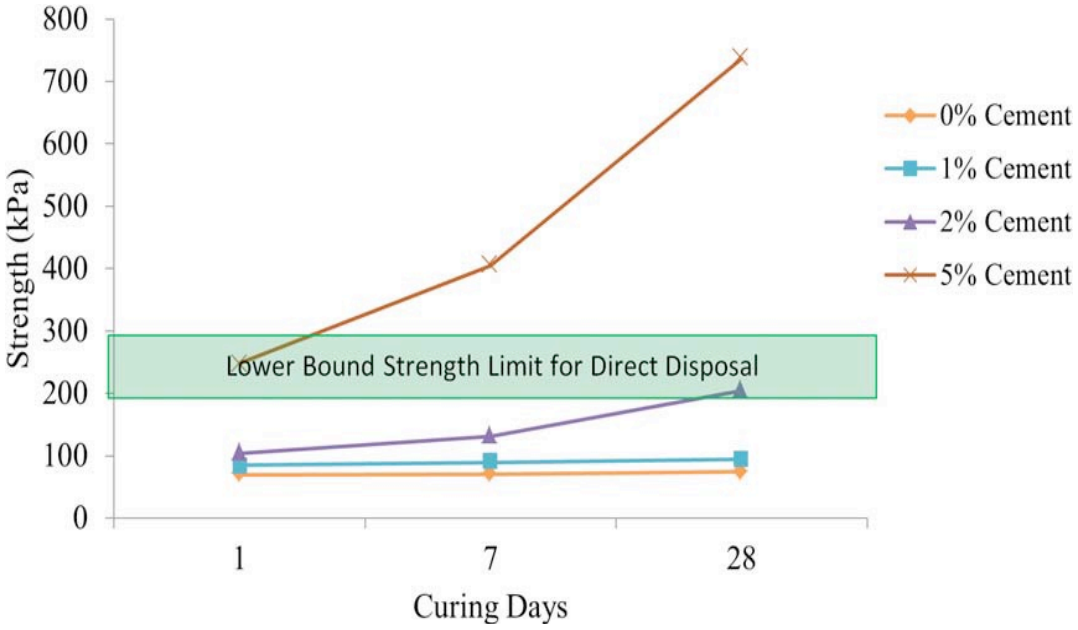


Source: Macdonald et al., (2015)

Graph 2 indicates the comprehensive strength of cement and how cement improves the compressive strength and durability of co-disposed waste.

According to Macdonald et al. (2015) and Obe, de Brito, Lynn & Silva (2017), experimental testing of the pasting process shows that an increase in cement content and curing period significantly improves the compressive strength and durability of co-disposed waste. The addition of cement binder to fine particle mine waste allows for effective waste management practices to be implemented across the Eucla Basin. Furthermore, the results of pasting tests, according to Macdonald et al., (2015) showed that the addition of approximately five percent of cement to the waste material provides sufficient strength. This will allow for the direct disposal of the waste into the excavated mine void, avoiding the need for a tailing's storage facility. Graph 1 above shows the effect of cement concentration on the uniaxial compressive strength and durability of samples after curing for one, seven and twenty-eight days.

Graph 2: Compressive strength of cemented waste after one, seven and 28 days.



Source: Macdonald et al. (2015)

Four main recommendations for improving waste management were: Improving and optimizing the current operation; Implementing a filtration system; Improving a filtration system to be sustainable; and Investigating other options that require further research (Macdonald et al., 2015).

The recommendations are meant to improve the overall sustainability of the mining operation and provide a basis for improved waste management in future operations, especially when considering that old closed mining shafts and ventilation pits become vulnerable to ASM and illegal gold miners. These could combat the effects of using mercury in the processing of gold into the final product, which carries the risk of contaminating water in the nearby rivers.

In the process of illegal mining, large pits are left uncovered, which has rendered land unsuitable for any other purpose. Many have filled with water and now serve as breeding grounds for malaria-infected mosquitoes (Amponsah-Tawiah & Dartey-Baah, 2011; Agyapong, 1998; Buadee, 2016; Iddirisu & Tsikata, 1998).

During the development and start-up phase of mining, exposure of rocks, ores and soils to rainfall and winds leads to relatively high levels of atmospheric contamination by dust and water contamination by eroded and oxidized materials, accompanied by increased erosion of the site and sedimentation of local water (P.J. Ashton et al., 2001; Obe et al., 2017). This contributes to adverse environmental impacts consistent with the problem of illegal gold mining that this research seeks to examine.

The different contextual dimensions that impose the matters of concern for this study include political and historical context, policy and legislation context, economic and social context, and environmental context. The major context that informs this research is economic and social context as mining contributes to the well-being of the economy and society.

1.3 Research Problem

The macroeconomic indicators in South Africa suggest an increasing rate of unemployment rate in recent years due to economic recession (www.africaneconomicoutlook.org). The financial constraints have forced many companies in South Africa to use alternative strategies. Some have opted to close down completely while others have retrenched workers to ensure their continuance (Bhorat et al., 2009). This situation is not an exception in the mining sector. Financial constraints have pushed mining companies in South Africa to retrench workers, and it

is often these unemployed miners with the experience gained when they were formally employed who become involved in illegal mining activities to sustain themselves and their families (Mhlongo & Amponsah-Dacosta, 2016).

Barberton is no exception in this regard, where over the last ten year there has been an increase in illegal mining activities. This has brought with it many social problems. For instance, apart from diamond mining, the most profitable small-scale mining enterprises are those for gold (Miller et al., 2000). Illegal miners become role models in the Barberton community with the attendant negative consequences, including school drop-outs who see illegal mining as a virtuous mode of life (Kouame, Jiang, Feng & Zhu, 2017). These illegal activities result in socio-economic and environmental challenges including water pollution and soil erosion, as well as teenage pregnancy, alcohol and drug abuse, HIV infections, and petty crime (Douine, Mosnier, Le Hingrat, Charpentier, Corlin, Hureau & Demar, 2018).

This provides the context for the research on curbing illegal gold mining in South Africa with specific reference to Barberton gold mines from 2011 to 2016. Research revealed that lack of leadership and good governance might be at the center of multiple problems within the Barberton gold mining communities (Donovan and Lukhele, 2013; Donovan, Salmon, Horberry, & Lenné, 2018 and Swanson, 2018).

1.4 Problem Statement

1.4.1 Problem Area and Knowledge Gap

Over the last ten years, Barberton has seen an increase in illegal gold mining activities and an apparent lack of governance mechanisms by local government institutions to manage the related challenges. While this is in itself might be seen as a governance issue on one level, on a macroeconomic scale, it is noted that one of the huge motivations for the increase in illegal mining is due to the increasing commodity prices. It is reported that about 10% of South Africa's gold production is stolen and smuggled out of the country. This amounts to around R7-billion per annum. Which such considerable losses to the South African state, there is an imperative need to

extensively study the causes of these illegal activities using various research methodologies intending to developing sustainable mechanisms to curbing them.
There has been extensive research undertaken on illegal mining in Africa. Studies that have been conducted on illegal mining are in the following topics, effects of illegal mining are contributing socially and economically in South Africa (Thornton, 2014; Mawowa, 2013; Zwane et al., 2006). The political economy of mining and the challenges of eradicating illegal mining (Kessey & Arko, 2013), small-scale gold mining activities and environmental sustainability (Banchirigah, 2008).

Some studies on illegal gold mining were conducted in Ghana by Ntibrey (1984-2001) and in Zimbabwe by Makuluma (1995-2012) and by Maponga and Mutemererwa (1995-2013). These scholars focused on policy issues and gave little attention to governance perspectives that provide additional understanding of the problem of persistent illegal gold mining activities in Barberton, South Africa, which constitutes the focus of this research.

1.4.2 Context of the study

Illegal gold mining activities have increased in Barberton over the last decade. Recent economic recession as reflected in macroeconomic indicators shows a high rate of unemployment. In 2011, when the researcher decided on this study, macroeconomic indicators in South Africa showed 3.5% real GDP growth, which was then projected to be 3.5% in 2014. However, as at the time of compiling the results of this research, South Africa's consumer inflation rate jumped to 4,5%; this negates any gains made in the GDP growth.
This study took place from 2011 to 2016 in Barberton, South Africa. The stakeholders involved are the local government institutions which include Department of Home Affairs, Department of Justice, Department of Correctional Services, National Prosecution Authority, South African National Defence Force, South African Police Services, Department of Minerals and Energy, Department of Cooperative Governance and Traditional Affairs, local corporate institutions which include the Barberton mines (Fairview Mine, Sheba Mine and Consort Mine) and lastly the local communities of Barberton (Barberton Township, Emjindini Trust, Sheba Siding and Louwscreek).

1.4.3 Research need/logic and documentation

Natural resources suffer from abysmal governance since state officials can easily manipulate the situation to meet unpopular, controversial or illegal objectives (Pritchard, 2013; Torvik, 2009; Ascher, 1999). Research shows that poor governance leads to illegal gold mining (Bezuidenhout & Buhlungu, 2011; Buhlungu & Bezuidenhout, 2008; Crush et al., 2001; Redford, 2018). Barberton has seen an increase in illegal mining over the past ten years. According to the researcher, this might be due to lack of governance or the existence of poor governance. Previous studies on curbing illegal gold mining have focused on policy and have not dealt with the governance perspective, which justifies the focus of this research.

1.5 Purpose Statement

1.5.1 Purpose

The purpose of the study is to reflect on possible coordination mechanisms to deal with illegal mining by government structures.

1.5.2 Addressing the knowledge gap

Previous studies have shown a knowledge gap on governance perspectives in curbing illegal gold mining in South Africa, with specific reference to Barberton gold mines. The study, therefore, seeks to examine the governance of state institutions (multi-agency departments) to examine reasons for illegal mining at Barberton gold mines. The findings of the study will help in understanding the challenges of services rendered by the Barberton multi-agency departments and reflect on how governance underpins the challenges of addressing illegal mining.

1.5.3 Goal

The study used a descriptive and explanatory qualitative approach. It clarifies the assumption that a lack of governance is a contributing factor in illegal mining activities in Barberton.

1.6 Research Questions

The main research question is:
Why is illegal gold mining increasing and what approaches need to be put in place to curb illegal mining in Barberton South Africa?

The sub-questions are the following:

- What are the commitment mechanisms available to government institutions and Barberton gold mines in their attempt to reduce illegal mining in Barberton, South Africa?
- How can capacity of government institutions and Barberton gold mines help to deal with illegal mining activities in the Barberton area?
- Which coordination mechanisms are relevant to curb the increase in illegal mining activities at Barberton gold mines in South Africa by government institutions and Barberton gold mines.
- Why is there lack of integration of coordination, commitment and capacity in curbing illegal gold mining in Barberton?

1.7 Structure of the Thesis

Chapter One: Introduction:
This chapter introduces the study to the reader by providing an overview of the study with contextual information to allow the study to be grounded in its location. The chapter further presents the background to the research on the illegal gold mining challenges facing Barberton and presents the research problem, purpose and objectives. The chapter offers a summary of the research being undertaken in illegal gold mining and offers a brief overview of what the subsequent chapters will present.

Chapter Two: Literature review: Understanding socio-economic issues of natural resources:
The chapter presents the review of literature and definitions of concepts and phenomena around mining and illegal mining. The linkage between natural resources and economic growth, wealth, social factors and environmental factors and how they contribute negatively or positively towards the economy of the country. The

relationship between large-scale mining and small-scale artisanal mining is also discussed touching on mining and policy issues and how these affect mining and economy and possibly lead to unrests in the mining sector in South Africa.

Chapter Three: Theoretical and conceptual framework:
This chapter identifies the governance theory to inform the study as selected from theories such as Public Value Theory, Open Access Resource Theory, Common Access Theory, Resource Curse or Blessing Theory, Rent-seeking Theory and New Public Management Theory. It presents the issues around governance such as commitment, capacity, and coordination that informs the conceptual framework of the study. It links the discussions on governance and illegal gold mining and selects governance as the model for supporting the curbing of illegal gold mining.

Chapter Four: Research Methodology:
A brief methodological orientation, ethical issues including the paradigm is discussed. The research approach is presented as a qualitative explanatory study because it helps the researcher to understand and make sense of the phenomenon from the participants' perceptions. It presents the research design for this study is a case study and locates the explanatory purpose of the study. The study is explanatory as its primary purpose is to explain why events occur and to build, elaborate and extend.

Chapter Five: Complexities of illegal gold mining activities in Barberton.
The chapter presents the findings from the data based on interviews and document analysis. In this chapter, the reader is reminded about the research questions. The setting of the data presentation of the study is clarified. Thematic issues are developed based on the research questions so that the research questions are clarified more simplistically.

Chapter Six: Reflecting on the complexity of illegal gold mining activities in Barberton.
In chapter six data interpretation and discussions are presented. It starts with discussions of findings from the interview with the participants, followed by the findings from the document analysis and ending with a grouping of common themes that emerged from the participant responses. The findings from the data in the previous

chapter are interfaced with the literature. The data is compared with the literature and integrated with the views of the researcher.

Chapter Seven: Conclusion and Recommendations:
This chapter presents the conclusions and the recommendations of the study. The chapter revisits the problem statement, purpose statement, research questions and the objectives of the research. The themes are grouped to give conclusions and show the theoretical implications based on the theoretical and conceptual considerations.

The success of most organizations depends on management and employee commitment that is sympathetic to institutional growth to service delivery. This is positively linked to both individual job performance and organizational performance in a broad range of settings, thereby enhancing effective governance.

A cultural expectation of African communities in Barberton is that they should take care of the extended family. The need for additional income **led to** some people to consider illegal activities. Employers may not be sympathetic to the concerns of their employees. In this perspective, the study suggests that a lack of employer patriotism and job satisfaction indicates a lack of commitment.

CHAPTER TWO - UNDERSTANDING SOCIO-ECONOMIC ISSUES OF NATURAL RESOURCES

2.1 Introduction

This chapter focuses on the review of literature on the understanding of natural resources, legal and illegal mining. Pritchard (2013) and Ascher (1999) both argues that natural resources often lack proper governance and this creates a platform for corruption and illegal objectives by political office bearers. The inappropriate governance is classified by other scholars to be a natural curse and a recurrent problem.

Natural resources determine the growth and wealth of the country and with proper governance contribute to the economic development of that country (Umukoro, 2013; Ross, 2012; Van der Ploeg, 2011; Humphreys, 2005; Ross 2002 & 2010). Research conducted in the area of gold mining confirms that improper governance or lack thereof promotes illegal gold mining (Rothstein 2011; Maponga & Mutemererwa 1995).

2.2 Natural resources as a problem for economic growth (Natural curse)

The notion that countries rich in natural resources tend to have poor economic performance has been shown empirically and analyzed (Sachs (Pritchard, 2013; Frankel, 2010). The literature on economic growth identified a substantial number of variables that are partially correlated with the rate of economic growth (Cavalcanti, Mohaddes, & Raissi, 2011; R. M. Auty, 1990).

Lujala, (2010); Humphreys, (2005) reported that since natural resources are necessary for life and growth, it is not surprising that resource scarcity, environmental degradation and unsustainable consumption sometimes contribute to or cause violent conflict. Over many decades many economists, economic geographers and political scientists such as began to view natural resource wealth as a problem for economic growth (Pritchard, 2013). This is because the abovementioned academics view countries that are invested in natural resources as having a natural curse and that poor governance of these natural resources often results in conflict (Ross, 2012; Haber & Menaldo, 2011; Torvik, 2009; Van der Ploeg, 2008).

Other authors classify natural resources as one of the ten most robust variables in empirical studies on economic growth (Doppelhofer et al., 2000; Sachs & Warner, 2001; Umukoro, 2013). A growing body of social science experts such as (Ross, 2012; Haber & Menaldo, 2011; Harding & Venables, 2010; Torvik, 2009; F Van der Ploeg, 2008) have also identified the abundance of natural resources as a curse, because they are at the helm of many conflicts and internal strife in many countries. For instance, illegal gold mining in South Africa is flourishing, and this constitutes a significant challenge to the South African mining sector. Illegal gold mining poses a risk to the safety of employees and the illegal gold miners themselves, undermines the sustainability of operations and threatens the livelihoods of employees and communities in gold mining areas (Mhlongo & Amponsah-Dacosta, 2016).

Literature also suggests that many resource-rich countries have been resource-rich for a long time, but it is of concern that there no positive correlation between natural wealth and other kinds of economic wealth to date (Frankel, 2010; Sachs & Warner, 2001). These authors also confirmed that extremely resource-abundant countries such as the Oil States in the Gulf, or Nigeria, Mexico and Venezuela have not experienced sustained rapid economic growth Natural resource countries, according to Merkel and Schipek (2012) would thus experience lower innovation, lower entrepreneurial activity, more impoverished governments and lower growth. Also, resource-abundant economies are entangled in political processes which stifle general economic development due to gate-keeping (Van der Ploeg, 2011; Frankel, 2010; R. Auty, 2002; Sachs & Warner, 2001).

Policy choices by powerful governments and international organizations and their concomitant advice benefit only a small portion of the world's population (McLennan & Ngoma 2004; Bryson, 2018; Winter, Forest & Sénac, 2018). Other researchers also affirm that governments tend to invest in projects with high prestige or political payoff but with little economic rationale (Barma et al., 2012; Torvik, 2009; Robinson et al., 2006; Gavin, 1993; Bryson, 2018). Strategies used to promote high economic rationale include a comprehensive overhaul of the access control system to underground operations, culminating in the installation of a biometric access control system on all access points to shafts (Merkel & Schipek, 2012). Despite these

strategies, it has been reported that mining companies continually fail to implement suggested strategies (R. M. Auty, 1990).

The lack of success of the implementation measures could be due to the lack of coordination of government institutions. However, in some instances, an abundance of natural resources is a trigger in political issues. In order to regulate its extra-legal trading activities, a dissident movement will try to establish a monopoly on predatory behaviour, and to do so, it must achieve a monopoly on rebel violence (Collier, 1999). Rebel groups often fight each other to become the sole beneficiaries of lootable resources, and this is made possible because they will assert their sovereignty over land where lootable resources are abundant by threatening, torturing and killing neighbouring villagers (David & Gagné, 2007). As a result, civilians are often the first casualties of war and become the primary target.

While theoretical approaches posit different determining factors for a monopoly on predatory behaviour and sovereignty over land to monopolize resources, cross-empirical evidence supports two theses. The first, being the onset of civil conflict, which is strongly associated with weak states in which oil represents the wealth of the nation; and second, the economic factors that are decisive in determining the duration of conflicts (David & Gagné 2007). Moreover, (Collier, 1999) asserts that a useful conceptual distinction in understanding the motivation for civil war is between greed and grievance.

Since the mid-1990s, three analytic approaches have dominated the field of resource-based conflict analysis (David & Gagné, 2007; Kimenyi, 2018; Van Grembergen & De Haes, 2018). One approach stresses environmental factors, focusing on grievances created by the increasing scarcity of renewable resources. The second approach centres on economic factors and regard the greedy motivations of individuals as the primary driver of conflict. The third approach takes a more state-centric approach, concentrating on political factors and institutional weakness.

Ross (2002) posits a “booty futures” story in which resources matter because revenues can be raised in advance to gain control of them. Countries with natural resources may have leaders who receive bribes from potential mining license

applicants in order to assure a positive outcome of such applications. The activities around licensing and mining ownership pose as the resource cause of corruption (Ross, 2002).

Although some scholars address the issue of the natural resources curse, one of the most profound is Maphosa (2002) who believes that natural resources on the African continent have played a significant role in many violent conflicts, their character often embedded in an understanding of the grievance narrative, within a context of social, economic and political factors. There are very few cases where natural resources are the sole cause of the insurgency. However, empirical studies also assert that countries whose wealth is largely dependent on the exportation of primary commodities, which include both agricultural produce and natural resources, are highly prone to public violence (Rice and Patrick, 2008). This is because most people believe natural resources belong to everyone and as such everyone should benefit from them (Porter and Allen 2016; (Boschini, Pettersson, & Roine, 2008).

2.3 Relationship Between Natural resources and Economic Growth

Acemoglu, Johnson, & Robinson (2002) explored differences in European mortality rates to estimate the effect of institutions on economic performance. Easterly and Levine (2003) tested the endowment, institution and policy views against each other using cross-country evidence. Acemoglu et al., (2001) argued that Europeans adopted very different colonization policies in different colonies, with various associated institutions. In places where Europeans faced high mortality rates, they could not settle and were more likely to set up extractive institutions.

Natural resources provide a large share of government revenue, and there is potential for growth in these sectors in the future (Lynn & Oye, 2014). In addition, natural resource management and revenue collection has long been a contentious issue in the country's numerous ethnic conflicts and needs to be considered in the political dialogue (Lynn & Oye, 2014). However, there is evidence that tropics, germs and crops affect development through institutions (Easterly & Levine 2003). The institutions, persist to the present time and contribute to a negative impact on per capita income (Acemoglu et al., 2001). Other researchers did not find evidence that

tropics, germs and crops affect country incomes directly other than through institutions, nor did they find any effect of policies on development once there is control for institutions (Doolot & Heathershaw, 2015; Mawowa, 2013; Merkel & Schipek, 2012; Zwane et al., 2006; Easterly & Levine, 2003). Acemoglu et al., (2001) concludes that once the effect of institutions is controlled for, countries in Africa or those closer to the Equator do not have lower incomes.

Based on the scholarly debates of the above authors, natural resources are deemed to be the wealth of the country if they are appropriately managed, and the possible consequences of environmental scarcity as discussed above are properly governed to avoid the problem of illegal mining.

2.4 Natural resources as a source of wealth and environmental issues

Past studies have shown that natural resources are the critical source of wealth for many countries (Umukoro, 2013; Lujala, 2010). Countries are described as developed once their natural resources are managed effectively and efficiently (Porter & Allen, 2016, Ross 2002). The management of these resources calls for sound leadership and good governance, which should be a pre-condition to addressing any recurrent problem that may arise in the mining sector. Such resources are equally the source of many problems, such as those identified in this study related to improper governance resulting from lack of commitment and coordination by government institutions (Curwin, 2015; Voges, 2012).

Murombo (2013) explains the challenges faced by local indigenous communities, noting that most of them remain dispossessed and marginalized. Often, they cannot point to the actors responsible for their condition given the flux and change in the *dramatis personae* from the pre-colonial to the post-colonial state. Barberton is no exception to this context. Legal regulation of mining in South Africa and Zimbabwe (which reflects the situation in many African developing countries) shows that the focus of the laws and policies was, and remains to facilitate extraction with little regard for the impact of mining on the environment, communities and local development (Murombo, 2013; Mtisi, Dhliwayo & Makore 2011). This reflects a lack of commitment from decision-makers that is partly due to lack of capacity to manage and develop

strategies that can benefit these indigenous communities in need of better living conditions.

Based on the academic debates of the abovementioned scholars, Barberton has gold reserves in place, and the related gold mining activities affect the environment in different ways as illustrated in Figure 11 below.
Homer-Dixons's (1994) depictions of environmental scarcity can be used to explain some of the situations of natural resource-rich states. An example of the Congo where there was a weakened state hence the ethnic conflicts, coup d'etat and deprivation wars. On the other side of the framework is an example of Nigeria, where is a serious environmental scarcity in the Niger Delta region, hence, environmental degradation and pollution, unequal resource access and unplanned population growth.

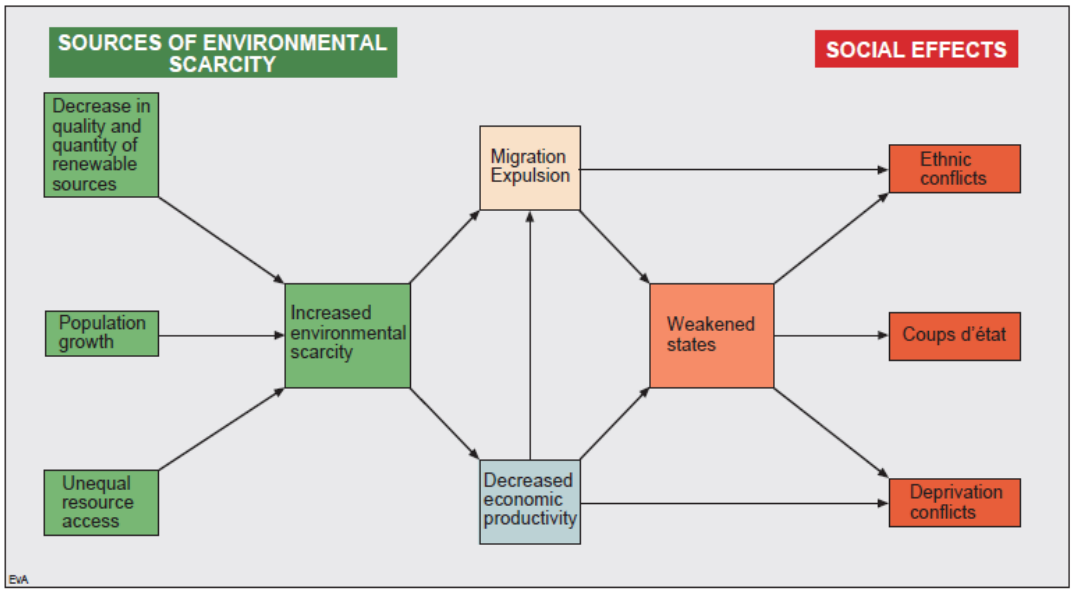


Figure 11: Sources and consequences of environmental scarcity

Source: Adapted from Homer-Dixon, (1994), p. 3.

The environment as noted by Homer-Dixon (1994) is directly affected by mining as Figure 12 illustrates. The direct effect of gold mining results in sources and consequences of environmental scarcity (Homer-Dixon, 1994). Deprivation conflicts, ethnic conflicts weaken the power of the states to maintain order and govern, and possible *coups d'état*. Progressive gold mining like that of the Barberton gold mines encourages economic migration and results in population growth that causes

migration expulsion especially through deportations (Merkel and Schipek, 2012). Some of the remaining people encounter unequal resource access and these results in illegal mining and possible conflict, also because with the population growth there is a decrease in the quality and quantity of renewable resources. It is known that policies have effect on many aspects of the life of citizens. Conceptualising this, Figure 12 shows there is a direct link between policy and the environment, society, politics, economy and the legislature.

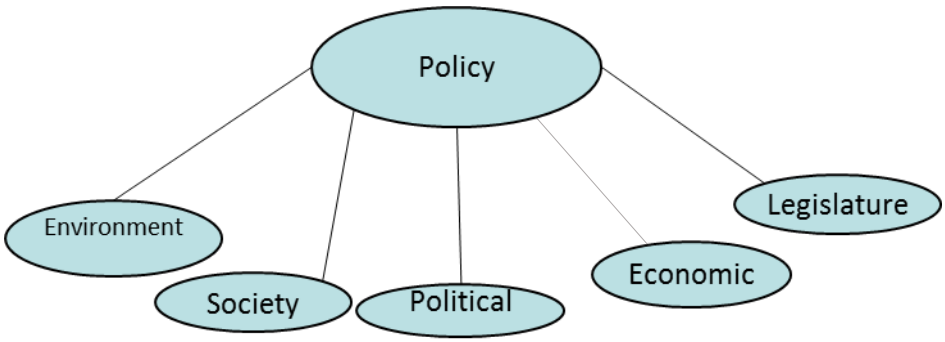


Figure 12: The relationship between Policy and the Environment

Source: Own, 2015

The above literature on natural resources as a curse points, to potential economic as well as political problems connected to natural resources. Even if some issues remain contested, it is clear that many of the economic problems are manageable with appropriate management of proper regulatory framework measures, and that in general, natural resources can have positive effects on economic development in the right institutional setting and proper governance structures (Paltseva and Roine 2011).

2.5 Natural resources as a driver to Socio-Economic factors

2.5.1 Corporate social responsibility

The evolution of the modern concept of corporate social responsibility has been mapped by (Carroll, 1999) who explains that in the 1950s, the formal literature on the subject began to develop. During the 1960s and 1970s, definitions of corporate social responsibility were expanded and proliferated. A focus on empirical research and alternative themes such as corporate social performance and stakeholder theory

marked the 1980s (Fisher, 2004). Davidson and Griffin (2000) believe that individuals within organisations have ethics but organisations themselves do not and they define as “... an individual’s personal beliefs regarding what is right and wrong or good or bad”.

Formalising the mining sector may fuel illegal immigration or exacerbate uncontrolled and opportunistic mining with a concomitant increase in the number of deaths, or enhance cartel business opportunism in direct competition with legitimate or customary business, or exacerbate the consequences of environmental scarcity (Doolot & Heathershaw, 2015; Merkel & Schipek, 2012; Zwane et al., 2006). Presumably, this is because organisations cannot have "personal beliefs" about anything (Fisher, 2004). Davidson and Griffin (2000) observe that organisations do relate to their environment in ways that often involve ethical dilemmas and decisions. The way they respond, however, must relate to social responsibility and not ethics. Fisher (2000) reported that the level of social responsibility started by an organisation is represented on a continuum that identifies social obstruction, social obligation, social response, and social contribution. It is only organizations whose actions and decisions fall above social obligation on the continuum that more than comply with the law. Organizations that adopt a social response approach meet their basic legal and ethical obligations and do more in selected cases, while organizations that adopt a social contribution approach are proactive in promoting the good of society generally.

Corporate social responsibility is better when it is grounded in education as it will benefit both the student and the sponsor (Barberton mines) and ultimately decrease employment rates. Some scholars observed that in aggregate, both systems decrease the unemployment rate of participants although the learnership system appears to have a more significant impact, hence equipping young people for the workplace or employability is both relative and absolute (Brown, 2013). This is because Pillay et al., (2012) identifies a link between employment outcomes and the successful completion of a learnership or apprenticeship qualification. Contrary to the context of global recession and economic downturn in South Africa by 2010, Pillay et al. (2012) demonstrates that it also stands in stark contrast to low formal employment rates (48%) recorded in 2009 for individuals completing a qualification in the Further Education and Training (FET) College sector as Gewer (2010) explains.

Drawing on the assumptions of these writers, the study assumes social variables to be concerned with how to examine and evaluate the commitments, values, and choices of any given society or culture, both in relation to itself and in relation to other societies and cultures. This suggests that what the society does must be morally acceptable and morally right.

2.5.2 Social degeneration

For the purpose of this study, the researcher will outline the following aspects identified as central to the societal degeneration, which might link to illegal gold mining such as early school dropouts, crime, gangsterism, alcoholism, drug abuse, human trafficking, and taking hostages, as they contribute to social exclusion or social inclusion in relation to illegal gold mining. These aspects of social degeneration might also be as a result of poverty (DSD, SASSA & UNICEF, 2012). It is important to note that early policy commitments are made to inclusionary and redistributive policies, and the reform of the social security system becomes part of the commitment (Lund, 2011). Early in the process of policy development, the climate shifted towards a more conservative approach, both in macroeconomic policy and in social policy regarding health, education and social services (Eisner, 1991).

Evaluation studies of the government social grant programmes according to Patel, Knijn and Van Wel (2015) and Molyneux (2007) recorded different types of outcomes and varying degrees within each type. The evidence indicates that the grant is reaching children living in households in deep poverty and has positive, measurable impacts on, among other things, child nutrition and school attendance (Leibbrandt et al., 2010). The outcomes of the grants include declines in poverty levels, improvements in the nutrition of children, improved school enrolments, lower school dropout rates and a lowered incidence of child labour (Patel et al., 2015; Molyneux & Thomson, 2011; DSD, SASSA & UNICEF, 2012).

Patel and Hochfeld (2011) suggest that the government social grant supports women's ability to control and allocate resources and that this has a positive impact on household food security. Patel and Hochfeld (2011) demonstrate that to ensure an

impact on gender transformation, they need to work in concert with other public policies that are specifically designed to support changes towards gender equality. According to Patel and Hochfeld (2011), this derives from the notion that historically, social benefits in South Africa have been paid to the woman in a family if she is seen as suffering the results of a loss of income-earning capacity of the male breadwinner resulting from illness, disability, death or disappearance.

2.5.2.1 Early school dropouts

Illegal mining in Barberton appears to contribute to early school dropouts. The luxurious life that is characterized by big-spending patterns encourages young people who envy the illegal gold miners and drop out of school to pursue illegal gold mining as a rapid interim career.

Barberton lacks extracurricular activities, and this leaves room for school children being vulnerable to gangsterism and school dropout. Because of their limited potential for earnings, young men who do not complete high school is likely to become involved with the juvenile and criminal justice systems, further damaging their long-term prospects (Bloom, Gardenhire-Crooks, & Mandsager, 2009). One study found that young people who drop out of high school are 2.5 times more likely to be arrested (Hurst, Kelly and Princiotta, 2004).

American development psychologists and academics Mahoney and Cairns (1997) define early school dropout as failure to complete the 11th grade (equivalent to grade 12 in the South African system). Their findings indicate that the school dropout rate among at-risk students was markedly lower for students who had earlier participated in extracurricular activities as compared with those who did not participate. However, extracurricular involvement was only modestly related to early school dropout among students who had been judged to be competent or highly competent during middle school.

This indicates that adolescents of both sexes may be vulnerable to prostitution and gangsterism. This is also evident in referral studies on illegal mining from Ghana. For

example, a study by Owusu & Dwomoh (2012) reveals that the school dropout rate in Ghana varies between 42.28% and 52.27%.

Zaharia (2009) points out that dysfunctional families are faced with material needs. Tribulations like divorce, alcoholism and domestic violence can often presage school dropout. Zaharia (2009) reported that the edge-of-law activities like prostitution, membership of street gangs or beggars' networks almost always leads to children dropping out of school. These demotivating factors can be because of peer pressure as they mainly apply when a child is moving from low secondary to senior high school or at the beginning of senior high school, which might also be applicable in Barberton.

One positive option for youth employment is when students are equipped with special apprentice training which is more practical and as such makes the apprentice more employable. The study by Pillay et al., (2012) concluded amongst other issues that the majority of apprenticeship participants who completed the qualification experienced a smooth transition directly into employment (70%) with an overall 76% finding employment after slightly more complex trajectories.

2.5.2.2 Crime

Although crime has existed for as long as humankind, where there is an abundance or excess money in circulation, crime tends to increase. (Hilson, 2002) mentioned that gold is mined on a small scale but very widely because of its propensity to generate quick income. According to Gastrow (2011), the International Organization for Migration (IOM) estimates that up to 20,000 Somali and Ethiopian male migrants are smuggled from the Horn of Africa to South Africa every year to engage in illegal mining activities, especially with gold. The theft of precious metals from South African mines and refineries is growing (Coetzee & Horn, 2007). The formal mining houses reported 69,053.205 kg to the value of R6, 842,966.83 of recovered gold-bearing material (GBM) to the police and recovered 3,112,352.365 kg to the value of R16, 028,536.50 of GBM material internally during the period January 2000–December 2004. The police and participating mines recovered a total of R22, 871,503 – or an average of R4,574,300 a year – during the period 2000–2004 (Gastrow, 2011). This data shows that a lot is lost to illegal gold mining.

The researcher believes that as a result of a quick generation of money, different kinds of crime result, including crime which in this context can be defined as unethical and morally unjustifiable acts, including gangsterism, alcoholism, drug abuse, human trafficking, hostage-taking, and environmental crime.

2.5.2.3 Gangsterism

To be lawful is not merely to conform to the norms written down in the law code; to be lawful is to be right, proper, moral and just (Balagopal, 1989). Based on this assumption, the researcher believes that any individual belonging to, or having a mutually beneficial relationship with organized groups of criminals can be deemed to be a gangster. The definition extends to include antisocial individuals or delinquents. In the case of gold mining, gangsters use force to gain access to possession or ownership of gold illegally. They go to the extent of creating an empire of recruiting and/or forcefully creating a situation only conducive to their miners or people affiliated to them (Hazlehurst, 2018). The stronger or more powerful the gang is, the more it will generate or create chances of accumulating more produce (gold) illegally.

Although Xie, Hu, Hafner, Tokinaga, Du, Huang, and Sampe (2009), Zhang, Xie, Liu, Yang, Wang and Ren (2009) and Zao (2007) wrote extensively on criminology and law, they do not mention the origins of gangsterism started. Hebenton and Jou (2008) provide an overview of the development of China's criminology over three historical periods (1880 to 1949, 1949 to 1989 and 1990 and beyond). Based on this, an assumption can be made that gangsterism existed before 1880, especially in China.

Based on the views of (Balagopal, 1989) it seems likely that gangsterism is a social habit in Barberton where illegal mining is flourishing. Thornton (2014) argued that gangsterism is part of the social security within illegal mining though necessary violence. The more powerful or violent the gang is, the more it can operate peacefully and manipulate illegal gold mining wells or shafts.

2.5.2.4 Alcoholism

The term 'alcoholism' is a widely used term, first known as dipsomania, and was first used in 1849 by Magnus Huss and then replaced by alcohol abuse and later alcohol dependence in the 1980s. In 1979 a World Health Organisation expert panel discouraged the use of the term "alcoholism' as a diagnostic entity, preferring the category of "alcohol dependence syndrome" (http://pubs.niaaa.nih.gov). Adolescent youth tend to be victims of alcoholism resulting from an overflow of cash available to the mines (Zeng, Du, Xie and Wang, 2009).

2.5.2.5 Drug abuse

Substance or drug abuse refers to a maladaptive pattern of use of a substance that is not considered dependent, while not excluding dependency, but is otherwise used similarly in non-medical contexts. McCabe, Boyd, and Teter (2009) specified that the use of narcotic drugs might lead to criminal penalties in addition to possible physical, social and psychological harm, depending on local jurisdiction.

Depending on the actual compound, drug misuse including alcohol may lead to health problems, social problems, morbidity, injuries, unprotected sex, violence, motor vehicle accidents, homicides, suicides, physical dependence or psychological addiction. In this context, drug abuse results because illegal miners work under strenuous and dangerous situations, which require consistent strength and concentration without fear (Burke, O'sullivan, & Vaughan, 2005).

2.5.2.6 Human trafficking

Human trafficking has occurred throughout human history for various reasons. In South Africa, women and children make up the majority of human trafficking victims whether for sexual exploitation or other forms of forced labour (UNESCO, 2007). Human trafficking is the practice of people being tricked, lured, coerced or otherwise removed from their home or country and then forced to work with no or low payment or on terms which are highly exploitative (Van Dijk, van Kesteren & Smit, 2008; Reda, 2018; Smith, 2018).

Van Kesteren (2007) believes that human trafficking differs from people smuggling. In people smuggling, people voluntarily request the smuggler's service for a fee, and there may be no deception involved in the illegal agreement. On arrival at the destination, the smuggled person has freedom of movement (Smith, 2018). NRM (2005-2005) states that the trafficking victim, on the other hand, is controlled and is required to work or provide services of some kind on an exploitative basis to the trafficker or others. The arrangement may be structured as a work contract but with no or low payment or on terms which are highly exploitative (Reda, 2018; Smith, 2018). Sometimes the arrangement is structured as debt bondage, with the victim not being permitted or able to pay off the debt.

2.5.2.7 Hostage keeping

At first, the process of hostage keeping was done in good faith with the aim of achieving the required results. Froude (1879: 67) asserts that the practice of taking hostages is ancient and has been used in negotiations with conquered nations and in cases such as surrenders and armistices where the two belligerents depended for its proper implementation on each other's good faith.

In the 1970s this term developed into what we call kidnapping today because of increased political motivation and intention to raise ransom money. However, as the legal gold miners have the recent technological equipment to mine productively with ease, the illegal gold miners in the form of gangsters kidnap them and forcefully take their equipment and product. This is noted in the South African Report of the Portfolio Committee on Mineral Resources of 18 November 2009 as noted by DME (2010). This is a dangerous habit as hostage victims are often killed if instructions are not followed, or objectives are not met.

Social variables are thus problems that affect communities in and around Barberton because of gold as a natural resource being present in abundance and not adequately governed.

2.6 Natural resources as a social epidemic

De Soysa & Gizelis (2013) discuss the relationship between natural resources and HIV but do not address two questions: “What impact have natural resources had on the spread of the HIV epidemic so far?” and “What role can natural resource rents play in order to finance the long-term response to HIV/AIDS?” Sterck (2016) answers these questions using a panel dataset covering 137 countries from 1990 until 2008. Scholars such as Marais, Sharp, Pappin, Rani, Skinner, Lenka, & Serekoane (2014) , Sterck (2016) and Alexeev & Conrad (2009) criticize the usual approach to testing the presence of the oil curse in certain countries, which consists of regressing GDP growth rates over a period of time on a measure of the economy’s reliance on oil and on other control variables. Countries with mining of natural resources and inadequate governance are vulnerable to prostitution and HIV and AIDS (Kaleeba, 1991).

Rodrik, Subramanian, and Trebbi (2004) and Hall and Jones (1999) document that the differences in capital accumulation, productivity and therefore output per worker are driven by differences in institutions and government policies which they call social infrastructure. Hall and Jones (1999) treat social infrastructure as endogenous, determined historically by location and other factors captured in part by language.

Countries with high per capita GDP must have been growing fast at some point in time (Easterly & Levine, 2003; Hall & Jones, 1999). The levels of GDP per capita rather than growth rates and note that more reliable GDP data is only available from 1970 onwards (Rodrik et al., 2004). Sterck (2016) shows that this method does not consider the fact that resource-rich countries may have grown on average more than their resource-poor counterparts, but that this higher growth rate occurred before 1970.

Natural resource-rich countries (in this case oil-rich countries) are more deeply affected by HIV and TB epidemics De Soysa & Gizelis (2013), and governments of resource-rich countries fail to implement effective public policies for dealing with the epidemics (Caverley, Cunningham, & MacGregor, 2007). De Soysa and Gizelis (2013) reported that there is a relationship between HIV and natural resources, which was disproved by Sterck (2016) who found no robust relationship between resource rents and the spread of HIV and TB.

In light of the study by (Alexeev & Conrad, 2009), in Barberton, the migration of people from neighbouring areas and countries increases the chances of HIV-infected people moving into Barberton as a result of illegal gold mining.

2.7 Natural resources as a driver of environmental factors

The negative environmental effects of illegal gold mining in several regions worldwide show damage as a result of transient small-scale gold mining activity (Hilson, 2002; Agyapong, 1998; Amponsah-Tawiah & Dartey-Baah, 2011; Buadee, 2016; Iddirisu & Tsikata, 1998). The process of illegal mining results in large pits being left uncovered, which render land unsuitable for any other purpose. Many have filled with water and now serve as breeding grounds for malaria-infected mosquitoes.

From the same kind of study in India, the Lok Ayukta Report (2010) records that there have been severe ecological changes due to illegal mining. Certain species of animals have disappeared. Medicinal plants from the area do not grow anymore. The entire system of rain has changed in certain districts (French, 2018). It is reported that the entire area surrounding the mining area is denuded of greenery and has no agricultural activity. This indicates that deforestation will occur as a result of illegal mining.

Illegal miners in Barberton use mercury to process gold into finished products. Mercury is harmful to humans and contaminates drinking water. Explosives used to create ways for illegal miners are often used not compliant with the Explosives ACT (1956), and that result in socio-ecological issues (Filitz, 2011). Where ventilation pits are ignored, and new holes are dug those holes leave the soil eroded, and possible gullies can result which might disturb the normal flow of rainwater into the rivers or dams, thereby carrying mine wastage into the rivers and dams and causing contamination.

2.8 Natural resources as a commodity relative to extraction

Regulatory frameworks developed during the colonial era were oriented towards promoting maximum extraction of resources without giving undue attention to the local population that remained marginalized and poor (Leon 2012; (Murombo, 2013). This

is illustrated in countries like Zimbabwe and South Africa where local communities lack information related to profits made by mining companies and the proportion that goes to the state (Mtisi et al., 2011).

The mining share that goes to the state is supposed to be effectively managed in such a manner that local communities can benefit (Morse, Hupcey, Penrod, Spiers, Pooler & Mitcham, 2002). The lack of effective management in South African mines is strongly raised by (Murombo, 2013) and Kearney (2012.) who posits that in South Africa a major problem is the absence of effective legislative provisions in mining and fiscal laws to ensure transparency and accountability in how governments decide on and collect taxes, royalties and other revenue from mining companies. This is why the researcher asserts like Hope (2003) that the lack of governance has weakened public administration in the South African mining sector as a result of a lack of appropriate leadership, accountability, and transparency.

Hilson (2002) identified a number of challenges resulting from the deficiencies of mining laws, (Murombo, 2013) point out that the responsibility lies with the state to develop good laws and effectively implementing them in order to empower the communities. In demonstrating that mining can contribute to economic growth and development, (Murombo, 2013) argues that mining overall must be appropriately and effectively regulated in order to benefit the state and surrounding communities.

Other researchers suggest that gold mining in Africa is slowly changing direction towards environmental and social sustainability because of increasing pressure from the public that advocates for good governance in order to address decades of environmental destruction and social injustice in the mining sector (Makuluma 2011; Maponga & Mutemererwa 1995; Munnik 2005; Karumbidza 2005). There is a need to consider different contextual issues to achieve clean governance through the use of measuring tool of quality government, especially in the resource-rich countries. (Fukuyama, 2013; Pritchard, 2013).

However, Rothstein (2011) makes a number of persuasive arguments such as impartiality, which according to Fukuyama (2013), ought to be the core measure of the quality of government. This is because the existing measures of state quality or

capacity have limitations because of an inherent weakness in expert surveys, especially when trying to create time-series data (Fukuyama, 2013).

2.9 Large Scale and Artisanal Small-Scale Mining (ASM) in South Africa

2.9.1 Large Scale Gold Mining in South Africa (Geological History)

Large Scale Mining is an activity that encompasses medium, large, formal and legal miners who use efficient and sophisticated methods and processes to extract mineral resources (www.projectsiq.co.za). Mining in South Africa directly contributed to the establishment of the Johannesburg Stock Exchange in the late 19th century and today it still accounts for a third of its market capitalization (www.projectsiq.co.za). Barberton mines have deposits of the best quality gold in the world due to its manifestations of lode deposits mainly from Archaean greenstone belts surrounded by hard granite stones which made it difficult to mine using nineteenth-century mining technology (Goldfarb, Gardoll & Groves, 2001). Lode gold deposits are an important type of gold mineralization in orogenic settings around the world and through time (Munyai, Dirks & Charlesworth 2011; Goldfarb et al., 2001). Lode deposits are still considered cheaper to mine even though some authors believe that they are structurally controlled and commonly associated with second-order structures near major brittle-ductile shear zones developed in Archaean greenstone belts (Robb 2014; Groves, Goldfarb, Gabre-Mariam, Haggemann & Robert 1998; Condie, 1982).

Some researchers believe that the formation of lode gold deposits is linked to tectonically active plate boundary zones with controlling thrusts and strike-slip faults formed in accretionary settings (Goldfarb et al., 2001; Groves et al., 1998; De Ronde, De Wit, & Spooner 1994). Mineralized shear zones are reactivated repeatedly to give rise to complex mineralization patterns (Sibson, 2003). These complex mineralization patterns gave rise to the Barberton gold mines. Further to that De Ronde et al., (1994) observe that the Barberton Greenstone Belt (BGB) in the Kaapvaal Craton of South Africa is an Archaean greenstone terrain, and it is hosting numerous gold deposits (Anhaeusser, Mason, Viljoen, & Viljoen, 1969; Anhaeusser, 1976). Since 1885 this belt has produced more than 345 tonnes of gold, leaving behind many old workings, pits, and shafts that provide access for detailed studies on mineralization controls

(Lewicki & Zaheer, 2009). The access promotes the current illegal gold mining in Barberton (Mabuza, 2012; IDP, 2009 &10).

Some authors argued in the early 1880s; it was difficult to mine gold in Barberton due to the hard granite rock, that forced miners to dig deeper through hard rock to access the lone deposits and the green belts (Ward, 2000; Anhaeusser, 1976). The hard rocks were formed millions of years ago. Gold in the BGB has been linked to large accretionary thrust zones that were reactivated as brittle-ductile during the rise of large granite plutons (Harris et al., 1996; De Ronde et al., 1994; De Ronde, De Wit & Spooner 1994; Anhaeusser, 1976).

Dirks et al. (2009) indicate that mineralization in the Sheba area, including the world-class Sheba and Fairview deposits, was "controlled by a network of normal brittle-ductile shear zones, fractures and faults that formed in an intracratonic, post-orogenic, extensional environment, which they suggest was unrelated to accretion of the greenstone sequence".

Mining in South Africa contributes an average of 20% to South Africa's GDP, of which about 50% is contributed directly. Mining in South Africa provides an annual income of nearly R550 billion (Fine, 2006). The mining industry is one of the country's major employers with more than one million people in mining-related employment. It is also the most significant contributor by value to black economic empowerment in the economy (www.projectsiq.co.za). The City of Johannesburg was founded on gold, and the gold rush of 1886 was stimulated by the discovery of gold by George Harrison on Langlaagte Farm (McCarthy, 2006).
On the other hand, Robb (2014) explains that the earliest discoveries were made in Roodepoort in the 1880s. Within five years a small city had begun to formalize, initially as an informal tent-hut settlement which, by 1890, had grown into a well laid-out semi-permanent entity. Within a decade, according to Nhlengetwa and Hein (2014), Johannesburg's mining industry had grown from a panning (artisanal) and bonanza findings economy to the world's largest producer of gold, where commercial extraction and artisanal mining from multiple gold-bearing conglomerate reefs were worked side-by-side across large sections of the Witwatersrand basin.

2.10.2. Artisanal small-scale mining (ASM)

2.10.2.1 Definition of ASM

The definition of artisanal small-scale mining (ASM) varies from country to country (Musingwini & Sibanda, 1999). Some authors define ASM as an activity that encompasses small, medium, informal, legal and illegal miners who use rudimentary methods and processes to extract mineral resources (Ncube-Phiri, Ncube, Mucherera & Ncube, 2015, Meech, Veiga & Troman, 1998). Furthermore, ASM depends on variables such as investment costs, mine output, labour productivity, size of concessions, the extent of resources, annual sales and levels of technology used (Meech, Veiga & Troman; 1998).

Thornton (2014) notes that contrary to the views of South African government officials and the media, illegal gold miners in South Africa are described as ‘artisanal' miners and entrepreneurs who create significant numbers of jobs and economic value for many local communities. The Zama-zamas or illegal miners are widespread, and their presence poses severe challenges to the government and the gold mining industry (Nhlengetwa & Hein, 2015).

It is further stated that for the most part, the illegal miners are not violent, ignorant desperados (Thornton, 2014). They have unusual non-standard mining skills and knowledge that is distinctly different from industrial miners. Thornton (2014) further reiterates that ASM exploits gold resources that major mines cannot access and interact directly with global markets. With better legislation and, possibly training they could be economic assets and elements of the national heritage. Further to that, the Chamber of Mines (2016a) expressed that not all artisanal mining has detrimental effects on the economy and surrounding communities. Some artisanal mining, even where unlawful in current circumstances, has the potential to become beneficial to communities if properly regulated, particularly where it takes place on abandoned mining sites, as it is done for sustenance (Chamber of Mines, 2016b). The artisanal miners might sell their gold into crime syndicates, but they do not willingly participate in violent or gang-related crimes, as occurs with some large-scale illegal mining (Chamber of Mines, 2016a).

The study by Thornton (2014) addressed the issue of zama-zamas in-depth and recent research in Ghana has reached similar conclusions (Nyame & Grant, 2009; Nyame, 1999). The Ghana scenario will also be used as a reference, even though this study focuses on illegal gold mining in Barberton.

According to the Chamber of Mines (2016a), artisanal mining presents a challenge for lawmakers. It is unlikely that the artisanal miners can be absorbed into the workforce but; they could create small-scale businesses, which could, in turn, generate employment and benefit communities (Forli, 2006). ASM could also be regulated for safety, environmental standards and incorporation into the formal economy (Chamber of Mines, 2016b). The International Council for Mining and Metals, to which the Chamber and many of its members are affiliated, has produced a topical document on the subject (Chamber of Mines, 2016a).

Other perspectives that counter the views about ASM are that miners involved in ASM are unskilled, poorly equipped, not very knowledgeable and have little appreciation of the environment (Ncube-Phiri et al., 2015, Veiga & Hinton 2002). This normally leads to mining without considering the impact and future implications of whatever action they will undertake. This results in comprising the environment and can lead to deforestation and pollution.

2.10.2.2 Dangers associated with artisanal small-scale mining (ASM)

Ncube-Phiri et al. (2015) focused on the lack of skill in most artisanal miners, land degradation that results in the loss of aesthetic value of the landscape; and open pits and mounds of sand due to. Shoko (2002), reported on problems caused by the clearing of land including soil erosion, siltation, soil compaction, destruction of ecosystems and loss of biodiversity. (Ncube-Phiri et al., 2015).

Most artisanal miners operate next to the river banks as it is easier because the soil is wet and mostly sandy, it becomes easier for sand miners to excavate after working and leads to even more uncontrollable soil erosion (Shoko, 2002). This often leaves the soil vulnerable and may contribute to the destruction of the original direction of river flows and makes it harmful for water species if all the gullies created were also

used as dumping areas (Ncube-Phiri et al., 2015; Shoko, 2002; Dreschler, 2001). An example of land degradation is shown by the Umzingwane and Insiza rivers where there is siltation of the associated dams, thereby affecting storage capacity, water quality of these dams and supply of water in Bulawayo Metropolitan. Water pollution causes the destruction of the aquatic ecosystems, plant life and depletion of fresh water resources. In the case of Barberton, the gullies created by illegal mining present dangers to animals falling into them and dying of injury or hunger if left unattended (Ncube-Phiri et al., 2015). Furthermore, ASM activities could lead to the extinction of plant and animal species, resulting in the disruption of the ecosystem and causing an imbalance in beneficial macro-and microorganisms (Ncube-Phiri et al., 2015; Babut et al., 2003).

Similar findings were noted by Hinton, Veiga and Veiga (2003a), stating that the effect of artisanal small-scale gold mining on the ecology includes the fragmentation of ecosystems and habitats, obstructing migratory routes to breeding and feeding grounds used by wildlife, and depletion of fisheries.

Mithapala (2008) argues that land degradation leads to loss of livelihoods and reduced food security. Shoko (2002) also lists problems caused by air pollution, such as ozone depletion and global warming, in which greenhouse gases trap long-wave radiation, thereby increasing the temperature on the earth's surface. Noise pollution from stamp mills, pan dishes and blasting also contributes to ill health, loss of hearing and migration of wildlife and birds (M Babut et al., 2003; MP Babut et al., 2005; Hinton et al., 2003).

The Chamber of Mines (2016b) suggests that no single stakeholder can address the challenge of illegal artisanal mining on its own – collaboration is key. The industry individually and through the Chamber of Mines, remains committed to working with other stakeholders to address this serious challenge (Chamber of Mines, 2016a).

Based on the scholarly debates from the above authors, the environment is heavily compromised by the ASM. Given the context of Barberton and the fact that it is one of the preferred tourist destinations in South Africa, necessary care and skill must be

exercised when dealing with ASM considering that most of ASM are illegal gold miners.

2.11 Gold mining industry in South Africa

South Africa dominated the international gold mining industry for much of the past 120 years, rising to peak production of 1,000t (67% of international mine supply) in 1970 (www.goldinsouthafrica.com). The industry is presently in a mature phase with production having declined to 342t in 2004 (www.goldinsouthafrica.com).

South Africa holds 35% of global gold resources and exports 99% of its gold output. However, Motala (2014) elaborates that South African mines are unsafe with a high fatality level. This is partly due to older mining methods that have not changed over the last 150 years. After years of watching its dominance over the gold industry shrink dramatically, South Africa has emerged as the world capital of illegal gold mining, in part because it has not been opening new mines but instead resuscitated old ones (Kantor, 2014).

With the end of the official apartheid legislation in the early 1990s, South Africa was heralded as a non-racial country (Cruise, 2011). Gold mining was historically carried out by semi-literate and illiterate miners who use explosives to blast rocks into smaller pieces that are then carried to the surface where the gold is extracted (Motala, 2014). The competitive advantage of a new mine depends on it being both efficient and cost-effective (M. Budeba, Joubert, & Webber-Youngman, 2015). Small groups of ‘zama-zama’ miners use the same technique with very little safety or communication technology at their disposal. Despite the huge financial investments involved, various studies have revealed mixed outcomes on whether or not mergers and acquisitions do create value (Osae, Fauconnier and Webber-Youngman, 2011).

Their level of danger, as expressed by Motala (2014), is considerably higher in an already dangerous system. For mining companies in South Africa to remain significant and competitive, mergers and acquisitions are bound to occur in order to comply with legislation and create benefits through financial and operational synergy and

diversification (Osae et al., 2011). Mining as a whole experiences cycles and at present is in a down cycle (Kantor, 1972). Gold mining in particular, is challenged by inconsistent exchange prices and labour instability, which result in retrenchments as an option for maintaining mining sustainability.

2.11.1 Mining and policy

Mining policy has focused on industrial mining, carried out by international companies and has largely neglected problems related to artisanal mining, including child labour (Kippenberg, 2011). Meanwhile, local government officials and traditional authorities such as local chiefs, as further elaborated by Kippenberg (2011), have benefitted financially from artisanal mining.

Prior to the enactment of the Minerals Act, 1991 (Act 50 of 1991), mining companies used irresponsible mining methods with no regard for protecting the environment and had often avoided meeting their responsibility towards environmental rehabilitation by leaving an area unrehabiltated prior to them being liquidated or leaving the country (Swart, 2002).

The study by Kyeremateng-Amoah and Clarke (2015) shows that although varied degrees of injuries occur among miners, the potential for a serious injury is substantial. Further to that, measures to reduce the incidence of injuries and fatalities should include education and training on the use of safe working tools and means of creating a safe working environment. Mining does, in general, have a substantial impact on the environment and has unfortunately left South Africa with a negative economic, social and environmental legacy (Swart, 2002).

Government policies on crucial areas such as health, education and artisanal mining are sometimes undermined by the *laissez-faire* attitude of local government officials, who carry considerable weight in the decentralized governance structure (Kippenberg, 2011). Circumstances and scenarios need to be considered when drafting policies. It is also important to note that there are limited resources at the disposal of law enforcement agencies to stem illegal artisanal mining, including the police, immigration, border controls and prosecuting authorities (Chamber of Mines, 2016a).

However the desirable economic impact of artisanal and small-scale mining (ASM), several governance and regulatory challenges such as soil erosion, smuggling, child labour, public health risks, and sporadic episodes of violence must be considered (Hilson, 2010; Grant, 2009; Banchirigah, 2006; Hilson, 2002; Werthmann, 2000). Based on the abovementioned scholarly debates, it can be concluded that proper governance may be realized if the following environmental scanning mechanisms.

The other issue of concern is when the relevant policies do not address the environment (political, environmental, societal, economic and legislative). This causes unnecessary conflicts and makes governance difficult to implement properly. For example, Zwane et al., (2006) criticises those who approach ASM only through debates over grassroots informal survivalism and also suggests ways in which elite accumulation has provided not only lucrative opportunities for a broad network of lower-ranking party or state agents but also work for locals and itinerant panners who would otherwise be jobless. If policy issues are considered in Barberton the total environmental scanning needs to be done so that people in communities are included as some are dependent on ASM and illegal mining for survival as discussed by scholars such as (Zwane et al., 2006).

2.11.2 Government Activities at Curbing Illegal Mining

The dangers of illegal mining activities are quite obvious. Kambani (1995) noted that one of the main problems is that the high unit value attracts illegal miners and low barriers to entry in terms of capital requirements, technology, infrastructure, minimum reserves and implementation time, the artisanal and small-scale mining of high unit value minerals, such as gemstones, diamonds, and gold, has grown to significant proportions in developing countries. In the Ghana case, Andrews (2015) showed that the case of galamsey operators (artisanal and small-scale mining (ASM) activity operators) helps advance the idea of "digging for survival" and "digging for justice. These people are often referred to as ‘illegal' because, and no direct revenue accrues to the government, and hence they receive no support from the government.

There is growing consensus that a combination of laissez-faire policies, ad hoc regulation, and debilitating support services has perpetuated socio-economic and environmental deterioration in the artisanal and small-scale mining (ASM) industry (Hilson and Maponga, 2004). McGregor (2009) described the Congo has being 'cursed' with some of the most precious natural resource concessions in the world. With so many lives lost due to wars and conflicts, researchers are pushing for high-level criminal justice interventions to curb the pillaging of these zones as most of the proceeds of illegal mining here goes to fund wars.

However, in a place like South Africa where there are no wars, illegal mining reduction is mainly a duty of the state. As stated in section 2.5, the leading causes of illegal mining are less about governance, but more about socio-economic problems. To this light, it has been suggested by many authors (see Techner, 2012; Spiegel 2012 Nopriadi 2016) that states can use a combination of both social services and police and other law enforcement powers to arrest the causes of illegal mining.

2.12 Mining and Economy in South Africa

Scholars such as (Hoogeveen, 2015; Huber & Emel, 2009; McClure & Schneider, 2001) argued that the General Mining Act of 1872 had left a legacy of riches and ruin. Illegal mining resembles any excavation of the soil in contravention of the applicable laws of the country (Pathak, 2014; Ugwuegbu, 2013; Hartman & Britton, 1992). Mining in South Africa dates back thousands of years as the gold trade created a link to the Persian Gulf and Arabian Peninsula (BBC World Service, 2013). The second half of the nineteenth century was the great era of gold discoveries, and this contributed to the growth of the economy due to mining (Reeves, Frost, & Fahey, 2010; Richardson & Helten, 1984; Ramazan & Dimitrakopoulos, 2018)

Researchers mentioned that the discovery of both gold and diamonds in the late 19th century led to the rapid development of infrastructure and overall industrialization of the country, making South Africa the most developed country in Sub-Saharan Africa (Rambiyana, 2014; Donovan & Lukhele, 2013). This was followed by the discovery and evolution of the platinum industry in the 1920s and 1930s (Donovan & Lukhele, 2013). The economic consequences of these discoveries were dramatic, such that the

increase in gold production paved the way for a currency revolution of international dimensions (Reeves et al., 2010; Richardson & Helten, 1984).

The discovery in 1886 of the Witwatersrand gold fields in the South African Republic was arguably the most important of the nineteenth-century discoveries, and the gold mines of South Africa have supplied an increasingly large proportion of the world's newly mined gold (Munslow, 2011).

In the 1880s Southern Africa became the magnet for the diggers, first in the eastern Transvaal at Barberton, then on the Witwatersrand in 1886. Based on the mining history that is older than a century (Mollan & Kelse, 2012; Richardson & Helten, 1984). The researchers believe that the mining industry workers gained more knowledge and experience in mining through inter-generational sharing to date.

However, many countries that export metals and minerals engage in the first stage of manufacturing near the mines to cut transport costs (Subira, 2011). This approach increases the security of that first stage of gold production activities. These activities are better seen as the final stages in the extraction process, rather than an early stage of manufacturing (Freund, 2010). There is also a need to understand intervention by the state, where mining institutions fail, which is often the reality that is ignored (Hodgson, 2017; Eberlein, Abbott, Black, Meidinger, & Wood, 2014). Amongst the economic and political scholars, (Freund, 2010) demonstrates the approach of separating the economic school, which identifies why and how the state must intervene and the political school which studies the conditions under which the state can intervene appropriately. For the political school, there has been a concentration on the nature and capacity of the state (Fine, 2006).

Presently South Africa holds some of the richest mining reserves in the world, with a total value of approximately US$ 2.5 trillion, creating the world's fifth largest mining sector regarding GDP value (Donovan & Lukhele, 2013; Kearney, 2012;). There are also several areas within South Africa that remain unexplored, increasing the potential for overall wealth (Kearney, 2012; Zwane et al., 2006). According to the South African Chamber of Mines (2007), the industry creates over one million jobs both directly and indirectly and accounts for 20% of investment in the country.

2.13. Mining, Politics and Battle Fields in Africa

Zwane et al. (2006) situate the exchange of the development of Artisanal Small-Scale Mining (ASM) with regards to the political economy of Zimbabwe's emergency decade and consequent time of force sharing. It uncovers both likenesses and contrasts with the political economy of diamond mining in Zimbabwe, which has pulled in more noteworthy consideration from researchers and the human rights group (Zwane et al., 2006).

The discovery of solid and liquid minerals has brought about a worldwide mineral boom that has additionally prompted remarkable mine advancements in greenfield zones within the endowed countries of the world (Merkel & Schipek, 2012). The majority of these greenfields lay interlocked inside the area of indigenous groups – a conjunction that has activated legislative issues and war. Greenfield advancement and the following riches circulation includes cooperation between indigenous individuals and non-neighborhood on-screen characters that use differed premiums and impact on social and ecological relations with the general (Berman, Couttenier, Rohner, & Thoenig, 2017). The center player between the indigenous individuals and the non-neighbourhood players is the political substances (Doolot & Heathershaw, 2015). Universal research demonstrates that the political substances or the state have been seen in favour of one of the profit-led non-local actors (the company).

The resultant lamentable occasions from state enthusiasm for such corporates are obvious in challenged greenfields of the world, for example, in the Niger Delta and Marikana (Donovan & Lukhele, 2013). Likewise, the related contestations between the indigenous individuals, the enterprises and the state about the negative effects of mining as well as the advantages are offering a path to a digressive discussion that considers the trio (Kearney, 2012). Over and above that, the riches instigated strength of the corporate realm has engaged corporates to the level of evident state catch in many mining nations (Power, Newell, Baker, Bulkeley, Kirshner & Smith, 2016). Subsequently, the voice of the mining groups has been stifled by political forces for benefitting the corporates; the instance of the execution of natural activists in the Niger Delta of Nigeria and the Marikana slaughter of striking mining labourers in South Africa

embodies the resolute impact of political dominion in the mining fields (Power et al., 2016).

The feared state capture has in this way choked out the voices of mining groups to propagate social and economic disparity and natural debasement or environmental degradation that goes with mining operations (Spiegel, Keane, Metcalf & Veiga, 2015). Political oppression of mining communities has swelled mining clashes in greenfields, instead of bringing expected predominance over the communities and labourers (Jabareen, 2008 a & b). For instance, after the shootings in Marikana, a nationwide AMCU strike conveyed the country's economy to a halt. The economy of South Africa shrunk by 0.6% in the main quarter of 2014 (Grootes, 2014). The resulting enhancement of AMCU and NUM taking after the Marikana slaughter focuses to the rise of more on-screen characters in mining legislative issues past the state control. This authenticates past research which shows that mining clashes result in the development of establishments that tend to direct state influence to cultivate a more comprehensive social request and riches appropriation, and that the rise of such foundations in politically charged and strife-ridden greenfields are utilitarian to block future rise of mining clashes (Porter & Allen, 2016). The execution of environmental activists who opposed environmental pollution or natural contamination from mining operations in the midst of the rising neediness of oil groups prompted to the rise of the Niger Delta Youth as performing artists in governmental mining issues. Albeit natural contamination has proceeded with the rise of Niger Delta Youth prompted to a progression of arrangements and political settlements that conveyed relative peace to the Niger Delta greenfields (Watts, 2005).

Mining contestations are not unique or special to Africa, and global evidence focuses on the way that large-scale mining politics can excite savage battles or violent struggles. For example, the Soloman Islands' mining legislative issues offered to ascend to over four years of ethnic tension that conveyed the little island country to a halt during of 1998 and 2003 (Porter & Allen, 2016). Diverse literature has highlighted that mining clashes the world over are frequently socially and politically instigated (World Bank, 2015; Porter & Watts, 2016). Scientists have inferred shallow and biased agreements between the state control and the corporate realms induce the inspiration for government officials to take part in here and now and thin mining strategy that is

frequently negative for the usage of intelligible mining approach arranged toward reinforcing the social and economic equity of the mining communities (Slater, 2011).

The political meddling or intruding in natural resources has prompted to what researchers depict as legislative issues of scale with rough potential (Watts, 2005) as experienced in South Africa and Nigeria. Artisanal gold mining in Totororo, Zimbabwe, for instance, plainly gives huge survivalist occupation openings (Zwane et al., 2006). However, the site was additionally profoundly politicized and challenged, and the legislative issues of controlling extraction and exchange were a piece of a more significant story of tip-top amassing and support (Zwane et al., 2006).

Although the study by Matondi (2001) argued about the struggle for access to land and water resources in the Zimbabwean context, the scale that hatches mining politicking. Porter and Allen (2016) discussed customary land ownership, indigeneity, and nationalism. Despite differed commissions of inquiries, research recommends that while development in characteristic assets proceeds, potentially savage conflicts will undoubtedly proceed where there are parochial pacts between the legislators and mining organizations (Porter & Allen, 2016). This proposes an evident failure of the state to handle future spatial mining contestations that may result if an unequal political economy of mining remains (Porter & Allen, 2016). This gives researchers, corporates, and lawmakers another focal point to comprehend why governance challenges in the mining fields need to change from current political dominion to social and community comprehensive methodologies that may cultivate even-handed conveyance of riches and furthermore guarantee environmental protection (Grant, Compaoré, Mitchell & Shaw, 2015).

Research on the resource curse in Africa has centred on natural resource wealth flight and the associated developmental elusiveness (Owusu, D'Alessandro & Hanson, 2014). The expansion in resource prompted struggle or potential brutality may demonstrate that researchers and policymakers ought to start to question why the natural resource destinations of Africa and beyond ought to constitute a combat zone and retrogress social and economic development.

The negative relationship amongst administration and mineral wealth relates to the absence of straightforwardness or transparency in the division or apportionment and utilization of state income (Bebbington, Hinojosa, Bebbington, Burneo, & Warnaars, 2008). There is adequate documentation of political debasement or corruption including the distribution of advantages for favoured constituents who consequently bolster the politicians in power (Bebbington et al., 2008; Ramazan, & Dimitrakopoulos, 2018). This undermines the point of straightforward, open approach or transparent public policy that influences mining communities and workers alike. The result is that when workers and mining communities see a political imbalance that supports the mining corporate and political stalwarts' mining advantages, workers and communities may then depend on savage or violent protestations.

Savage protestations that have happened in Barberton as an illicit gold mining focus are an indication of the previously mentioned angles. Hence, due thought of the above level-headed discussions that concentrate on public polity ought not to be marked down.

2.14 Unrest in the mining sector in South Africa

Labour economy was historically based on cheap migrant labour (Pillay, 1987) which became more expensive as the locals were employed (Freund, 2010). Wildcat strikes occurred amid controversy concerning poor and dangerous working conditions and low workers' wages. The economically vital mining industry of South Africa became increasingly volatile (Donovan & Lukhele, 2013). The industry is a strong indicator of social unrest. The then Minister for Economic Development, Mr. Ebrahim Patel, noted that South Africa's mining sector is in trouble as it struggles to recover from 23,000 job losses since April 2015 and falling commodity prices from crucial markets like China (Evans, 2015; Mail & Guardian, 5 August 2015).

Following the recent unrest in the mining sector, and the number of unrests in the South African mining sector, a peace accord was proposed as one possible option. Donovan and Lukhele (2013) and Grootes (2014) concur that the accord calls for parties to desist from provocation, violence, and intimidation, while the government acts decisively to enforce the rule of law, maintain peace during strikes and other

protests relating to labour disputes, ensure the protection of life, property and the advancement of the rights of all.

The new mining charter is aimed at addressing various shortcomings in the implementation of the Mining Charter of 2002 (Twala, 2012). The 2002 Charter is believed to have failed to consider the rights of communities with regard to community consultation; community input into planning for mining developments; and direct community control of shares in mining companies as indicated by Tapula (2012). This was unacceptable to workers in that workers complained about the government's ineffectiveness in implementing the Mining Charter, which among others requires companies to provide housing for all, further to that they claimed that there was no serious attempt to enforce the industry's legal obligations, let alone transform it (Twala, 2012).

Donovan and Lukhele (2013) observe that the South African Government has thus far struggled with indecision about mining regulation, leaving the future of the industry in doubt about its role in the national economy. Strikes increased as workers complained about low salaries, as depicted in Figure 13 below. Munnik (2005) also mentioned that senior government executives who have interests in the mining sector and compromise the policy and decision-making on mining-related issues. On the other hand Msomi (2012) and Twala (2012) noted that all the gains over the years were undone overnight by the labour movement by failing to represent the workers effectively in the bargaining chambers. Twala (2012) further reported that many workers belonging to the labour movement claimed that they were expelled from trade unions if they expressed discontent with the leadership. Numerous authors agree that management often does not escalate the workers' problems in rightful representation (Twala, 2012; Msomi, 2012; Ndebele, 2013; Ndebele, 2012).



Figure 13: The relationship between Policy and the Environment

Source: Donovan and Lukhele (2013)

There has been a consensus in reports from authors with regard to mining issues (Baily, Pekka & Veikko; 2011; Cavalcanti et al., 2011). On the other hand, Kearney (2012), Munslow (2011), Donovan and Lukhele (2013) have demonstrated, the challenges identified in South African mines. According to these authors, the mining issues and challenges include:

- The worker strikes that have repeatedly slowed production across the mining industry are only one factor that has left the future viability of mining in South Africa in question.
- With output down, mining companies claim that the mines are unable to sustain profits.
- Due to South Africa's irregular and expensive electricity supply, the operating costs for mining operations have increased substantially, making the mines less profitable.

Further to the issues explained by Donovan and Lukhele (2013), scholars like Twala (2012) mentioned how government ineffectiveness in implementing the Mining Charter has been unsuccessful. In 2010, South Africa launched a new mining charter to facilitate the sustainable transformation and development of its mining industry with

the emphasis on a target of 26 percent black ownership of the country's mining assets by 2014 (Twala, 2012; Gupta, 1992).

2.15 The possible factors or pressures that marginalized the labour force in Barberton

The persistence and pervasiveness of under-employment is a fundamental problem for both economic and social reasons. In the long term, under-employment is a human rights concern, as its results are the low life expectancy and the high incidence of health and social maladies when ordinary people cannot engage in productive economic activities and improve their living standards (Mhone, 2000).

MacMaster (2009) and North (1990) believe that social institutions are the humanly devised constraints that shape human interaction or the rules of the game in society. Some academics like Mhone (2000) believe that the paradigm of enclavity links the problem of low labour absorptive capacity of African economies to the structural legacy of economic dualism that is in part self-perpetuating, even within the ideal market context of current structural adjustment programmes, and in part policy-induced, even if inadvertent.

Barberton can be viewed as an externally-oriented island, not connected to local social and economic dynamics in ways that will produce a ‘virtuous cycle’ (Patrick Bond, 2002; Mhone 2000). The enclave was an enclave primarily to the extent to which it was structured to respond to an external logic and not a domestic logic (Patrick Bond, 2007).

MacMaster (2009) and Herbst (2000) suggests that Eurocentric comprehension of the evolution of state formation in Africa is not helpful and clarifies the reasons for “failing, failed or weak states” in Africa. In this instance, it may be argued that that unemployment problem in Barberton does not warrant a Eurocentric approach but a more native approach that is embodied by the role, nature, and repercussions of gold mining (Baker & Pedersen, 1992). This might be possible if there is a clear way of rethinking social imperatives within a more multidisciplinary social scientific approach (Mkandawire, 2001).

Considering the arguments of academics like Mhone (2000), it may be considered that Barberton is an enclave since unemployment or low labour absorptive capacity of Barberton economy is linked to the structural legacy of economic dualism that is in part self-perpetuating, as explained by MacMaster (2009). Considering that mining in Barberton existed prior to 1886, it may be deliberated that the socio-economic state of Barberton has historical factors attached to it, which were more capitalistic in nature because of the apartheid system based on the systematic exploitation of native Africans (Butler, 1998). The exploitation, was based on techniques and procedures for directing human behaviour to strategies of power networks, mechanisms and techniques as well as the accompanying rationalities which normalise acts of power so that there is a sense that a particular decision 'could not but be taken in the way it was (Christie, 2006; Foucault,1988). It has been argued that there are historical structural factors that contribute to the exclusion and marginalization of the majority of the labour force from engaging in productive activities that will result in sustainable increases in living standards (Mhone, 2000).

Mhone (2000) maintains that countries that had been colonized inherited a special type of social formation in which the capitalist sector of the economy was grafted onto pre-capitalist forms of production in a manner that was distorted (Baran, 1957). Based on the deliberations of (Baran, 1957), amongst other factors, Lewis (1954) advances his approach to what he refers to as enclave development and growth based on the exploitation of underemployed labour.

The above approach demonstrates the requirements for a capitalist growth process that can lead to the transformation of non-productive labour processes into productive ones driven by capitalist imperatives (Mhone, 2000; Toye, 1995; Lewis, 1954). Under certain conditions, the majority of the labour force may be relegated to a self-reproducing and self-reinforcing destiny of underemployment in the context of an enclave and dynamic capitalist economy.

The dominant capitalist mode of production tends to dissolve the pre-capitalist mode thus threatening the conditions of reproduction of cheap migrant labour power and generating intense conflict against the system of segregation (Wolpe, 2007). In these

conditions, segregation gives way to apartheid which provides the specific mechanism for maintaining labour power cheaply through the elaboration of the entire system of domination and control and the transformation of the function of the pre-capitalist societies (Wolpe, 2007; Dunham & Pierce, 1989).

2.16 Consequences of mining for historically disadvantaged citizens in South Africa (The reality)

Scholars of economic issues of housing such as Marais & Botes (2006) consider income generation, local economic development and community development as one of the driving force of migration of labour albeit such labourers are often paying the price for lacking business skills as described by Marais & Botes (2006) and Marais & Venter (2006) by dwindling into illegal mining given the hardships of lacking food and proper accommodation in a foreign land thereby forced into living in shacks and informal settlements (Marais & Ntema, 2013). Some migrant labourers are hopping from one mining area to the other following closure of mines (Marais & Cloete, 2013). This results in multiple relationships and chances of acquiring HIV and Aids and possibly leaving a community of orphans and vulnerable children (Marais, Sharp, Pappin, Rani, Skinner, Lenka, & Serekoane, 2014). In countries like South Africa, mining areas are sometimes transforming rural areas into urban spaces and often results in reform, restitution, and restructuring of the land (Marais & Donaldson, 2002; Marais & Skip, 1997).

It can be argued that in any society there are many determinants to the generation and adoption of ideas (Mkandawire, 2011) even though previously, economists like Onimode and Institute for African Alternatives were focused on the national economy, regardless of their ideological positions (Olofin, 2007; Okigbo, 1981; Kofi, 1974; Onitiri, 1967 & 1969). Although it is argued that the economic issues of mining have been less studied or researched, academics demonstrate how illegal miners can contribute to the economy in South Africa such as (Thornton, 2014). The strategy for propagating new ideas involve discrediting those who still challenged the old development economics or opposed the new neoliberal dilemma (Mkandawire, 2011).

During the last decade, many countries in Africa have undertaken political, economic and social reforms with far-reaching implications for the long-term development of the

continent (Marais& Cloete, 2013; Shivji, 2000). What seems to be ignored is that think tanks continually remodel, expand, advance, renovate, cultivate and develop large economies even when their models are doing well (Marais & Donaldson, 2002; Hilson & Laing, 2017). This is important in the context of neo-liberal discourse, which reduces democracy of its social and historical dimensions (Shivji, 2003).

The Mining Charter is meant to promote genuine empowerment, especially in the historically disadvantaged areas, such as Barberton and many other areas in South Africa (Tapula (2012). Historically disadvantaged citizens in South Africa are faced with the problem of corruption, and that deprives them of what can be argued to be rightfully theirs. The OECD (2016) argues that when the fund is administered by local communities, there is political interference and undue pressure from influential local elite. This can be due to the lack of accounting systems and proper managerial accountability and governance, which often make tracking and monitoring difficult (NRGI & RELUFA, 2014)

As Jewett (2016b) describes, the structure of mineral rights in South Africa was designed to prevent private landowners from blocking mining development that has the potential to benefit the country as a whole. Even though certain stakeholders that provided a guide on resource revenue transparency and promote accountability (IMF, 2007), Jewett (2016b) argues that the Mineral and Petroleum Resources Development Act ("MPRDA") eliminated private ownership of mineral rights and vested ownership of minerals and petroleum among the people of South Africa. The mineral right under the custodianship of the state can be argued to promote corruption by state officials in a form of "booty futures" story, which predisposes the government official to corruption (Cavalcanti et al., 2011; Van der Ploeg, 2011; Ross, 2002; Sachs & Warner, 2001; R. M. Auty, 1990).

For the purposes of the OECD (2016) report, corruption is understood and described as the abuse of public or private office for personal gain. This covers a broad range of activities and behaviours such as trading in influence, political capture and interference, conflicts of interest, bribery of both domestic public and foreign public officials, facilitation payments, extortion, fraud, embezzlement, misappropriation or other diversion of property, abuse of function, illicit enrichment, bribery in the private

sector, embezzlement of property in the private sector, concealment of property resulting from corruption, and obstruction of justice (ECA, 2011).

Jewett (2016c) highlights the problems in South Africa's current legislative framework around mining that compels some citizens to bear a disproportionately large burden of the related costs of the benefits created by mineral extraction (Standing & Hilson, 2013). Weak laws create more governance problems, which are counter to the aims of the legislation (Deacon (2011). Moreover, the current framework falls short of benefiting all South Africans and addressing historical inequalities in the pre-1994 mineral law framework (Jewett (2016c).

In a series of three briefs, Jewett (2016d) provides an overview of how issues relating to mineral and land rights and community governance undermine individuals and communities in their interactions with mining companies. Despite the deliberations of Standing and Hilson (2013) which were more on distributing mining wealth to communities, Jewett (2016d) argues that future hardship is preventable by keeping the fundamental principle that mining must benefit South Africans while changing the structure and, most importantly, the application of some of the law.

According to Jewett (2016c), it is important to protect the rights and dignity of South Africans, particularly those living in traditional communities, by addressing: problematic discrepancies in the negotiating position of surface rights holders and mineral rights holders; and governance issues and proper nuanced understandings of customary law in traditional communities. Good practices for integrity in public procurement can be argued to be beneficial to governance of these discrepancies to avoid what Transparency International (2012) observes about the corruption in the mining sector in Zimbabwe (OECD, 2014a). Jewett (2016c) suggests that it is also in the self-interest of the mining industry to ensure that these problems are addressed, putting in mind the respect for surface rights holders as it undermines mining projects as well as communities. This approach could help in fighting corruption and promoting competition (OECD, 2014b).

2.17 Two economies as a result of marginalization (Enclavity: The reality)

Mkandawire (2011) examines the relationship between economic ideas and policymaking in Africa over the last half-century, which reveals that the weight of the teaching of economics and the choice of research themes followed the changes in donor preoccupations. Mkandawire (2011) continues to argue that each of these matters is contingent upon many factors which include: the constellation of power and alignment of interests; the nature of the economic crisis; the prevalent domestic ideational atmosphere; and the international context.

South African democratization coincided with it is increasing economic, social and political engagement with the rest of the world (Ballard, Habib, Valodia, & Zuern, 2005). One of the key effects of the increasing economy and global competition is massive job losses and increases in poverty and inequality. These kinds of engagements result in social movements, which are caused by globalization, mass job losses and increased poverty and inequality (Ballard et al., 2005). These social movements are likely the organized expression of various interests and values operating in the triangular space between the family, state, and the market (Habib, 2003; Habib & Kotze, 2002). This phenomenon has attracted the interest of some scholars like P Bond (2000) and Marais & Pelser (2006) and remains a key factor in the movements into the Barberton mines. These movements, according to (Ballard et al., 2005), are driven by worsening poverty, with struggles addressing both labour issues and consumption issues despite some of the movements confronting questions of social exclusion in terms of gender, sexuality, and citizenship which are at the intersection of recognition and redistribution as also alluded by Bhalla (2018).

Through the exercising of ideas and the employment of power, South Africans working in the state and in the private sector attempt to influence the making and implementation of monetary policy under changing political and economic circumstances (Gelb, 1988; Kantor, 1972).

Development of capitalism as a contradictory set of historical processes linked to the understanding of class and power constitutes an essential space for engagement in a world of injustice and material inequality (Hart, 2001). However, Padayachee (2006)

believes that managing the balance of macroeconomic and microeconomic policies became a challenge in the first ten years of South Africa's democracy.

Mhone (2000) argues that historical structural factors result in the exclusion and marginalization of the majority of the labour force due to the dualistic legacy of African economies. This is because the formal sector was linked to external factors and reduced the need for an internal accumulation process to emerge in order to include the majority in capitalist processes of accumulation (Slater, 1987; Baran, 1957; Bhalla, 2018). The problem persists because of the acceptance of the formal enclave sector as the engine of growth, and the belief that trickle-down effects from the growth of the formal sector growth will absorb the labour productively (Mhone, 2000).

One of the first scholars to argue on the theory of enclavity is Boeke (1953) and Baran (1957), then followed by Clarkson (1978) and Slater (1987). The scholars argue that developing countries that had been colonized had inherited a special type of social formation in which the capitalist sector of the economy was grafted onto pre-capitalist forms of production in a distorted manner. Mhone (2000) continues that proactive measures by the state are necessary to restructure the productive base of the economy by making it more inclusive of the majority of the labour force.

This could be achieved through interventions that broaden the asset and income entitlements of the majority of the labour force, in particular through policies that are biased toward those activities that absorb more people (Mhone, 2000). Although growth in Barberton was transformed by capitalism and the market since the 1880s, Lewis (1954) talks about the implications for growth and development of an underdeveloped country being transformed by capitalism and the market and refers to enclave development and growth based on the exploitation of underemployed labour. Mhone (2000) takes this further, noting that what is required is a paradigm shift from the trickle-down assumptions of current conventional economic policy regimes to one informed by the structural limits of the enclave model of growth and guided by the need to promote inclusive development.

The organization of agrarian labour depends on the stage in the family life cycle as well as the family and community networks that support a household, an approach that is similar to that of gold mining organizations (Makungu et al., 2007; Worby, 2001).

Matondi and Dekker (201) mentioned that land tenure and land rights remain the most important questions when dealing with agrarian issues around the world. On the other hand, Shivji, Moyo, Gunby and Ncube (1998) suggested that land tenure is defined as the sum of rules recognized in law underlying land ownership, allocation of land rights, the substantive content of those rights, their protection in law, their disposal and/or extinction as well as their regulation. Considering the case of Barberton as a mining area and given its historical background based on the apartheid system which gave preference of natural resources and land benefits to those of European origin, Matondi and Dekker (2011) maintains that land tenure is the relationship, whether legally or customarily defined, among people, as individuals or groups, with respect to land. In short, rules of tenure define how access is granted to rights to use, control and transfer land as well as associated responsibilities and restraints. A colonial settler heritage that mapped land and tenure forms into unequal zones according to race is giving way to a more complex and spatially diversified configuration of agrarian property forms and production strategies (Worby, 2001).

Apartheid left many problems of inequality and excluded Africans from the half of the country that contained the best farmland (Matondi & Dekker, 2011; Nemarundwe & Mutamba 2008). This was like the Zimbabwean Land Apportionment Act of 1930 that, effectively handed the fertile high rainfall areas to white farmers and pushing Africans into less agriculturally productive lands (Matondi, 2012). Resettlement in Barberton is thus an old problem for the state, and similarly in Zimbabwe is one that the Zimbabwean government inherited considerable expertise in dealing with from its colonial predecessors (Alexander, 1994; Moyo 1986). The issue of land reform should be addressed cautiously in the context of the current socio-political, economic environment of Barberton. Land reform examines how processes such as land acquisition, allocation, transitional production outcomes, social life, gender, and tenure have influenced and been influenced by the forces driving the programme (Matondi & Dekker, 2011). In some instances, noting the reflections by Matondi (2012), it can be argued (Okoth-Ogendo, 2007) that the most difficult question is whether the reforms

represent the final resolution of the colonial question or not. The recent land invasions in Zimbabwe represent a revolution in the agrarian social order with broader implications for the region (Worby, 2001).

Significant social differentiation, according to (Cousins, Weiner, & Amin, 1992) is influenced by the obligations of kinship and the absence of a land market in the communal areas. The issues of illegal gold mining in Barberton can thus be considered as the outcome of social, economic and political factors shaped by historical factors.

These features of labour recruitment contribute to workers' isolation, insecurity and internal division, which then lead to the kind of exploitation and dependence that characterizes life on farms and in rural communities (Worby, 2001; Rutherford, 1996 & 1997). The core issue, according to some researchers like Filitz (2011), concerns the removal of social costs related to mining, including mine closure, from the historical, socio-political and socio-ecological context. Although Matondi (2012) argues about the land grabs and land reforms which affect ordinary citizens of Zimbabwe, it is important to note that similar issues have resulted from illegal gold mining in Barberton that encompass the social, economic and political factors of exclusion with women and children being the primary victims.

The literature indicates that there are possible issues of marginalization in Barberton, which will be explored in the research, analyzed and discussed.

2.18 Summary

Natural resources can contribute negatively or positively towards the economy of the country. As noted by Ndebele (2012); Twala (2012) and Msomi (2012), the people governing the natural resources can fail to implement a fiduciary relationship and agreement concluded collectively with the workers or terms of the law.
It has been proposed that while theoretical approaches disagree on the definitive determining factors for a monopoly on predatory behaviour and sovereignty over land to monopolize resources, cross-empirical evidence supports two propositions. The first, being the onset of civil conflict, which is strongly associated with weak states in which oil represents the wealth of the nation, that bothers heavily on the law and

enforcement modalities in the state i.e. governance. The second proposition is the economic factors that are decisive in determining the duration of conflicts (David & Gagné 2007). The focus of this research gears more towards to socio-economic factors responsible for illegal mining whilst not dismissing the importance of governance. This research however among others, aims to demonstrate how governance measures can contribute to addressing the challenge of illegal mining in Barberton. These measures will contribute to ensuring good governance through improved coordination, commitment and capacity of responsible parties, to reduce illegal mining activities within the Barberton gold mines. This is in relation to Acemoglu et al., (2001) assertion that natural resources are deemed to be the wealth of the country, and if they are to be appropriately managed, there would be a need for proper governance to avoid illegal mining.

This chapter discussed the important relationship between natural resources and socio-economic situations of a state, its impact of social degeneration and related issues such as crime, alcoholism and drug abuse among others. The concept of ASM and its corresponding danger was discussed and the theory of enclavity was presented in the context of the reality of the history of disadvantaged citizens in SA.

Based on the claims made by Moore (1985), Homans and Wilens (1997), Deacon (2011) and Duncan (1996), the study also examines arguments related to this study's focus. These arguments are captured in theories in the next chapter. These theories include: Public Value Theory, Open Access Resource Theory and Common Access Theory; and Resource Curse or Blessing Theory and Rent-Seeking Theory, followed by the Theory of Governance, which informs this research.

CHAPTER THREE - THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1 Overview

The theoretical framework is the structure that can hold or support a theory of a research study. It is usually a collection of integrated concepts and constructs that guide a researcher in the search for new knowledge.
The use of a theoretical framework as a guide in research plays a vital role in guiding the entire process of the research study because it guides the researcher in conceptualizing existing theories (Mehta, 2013). On the other hand, the purposes of the Conceptual Framework are to clarify concepts and propose relationships among the concepts in a study. It serves a researcher by helping to provide a context for interpreting the study findings, explain observations and ultimately to aid theory development (Nalzaro, 2012).

Based on the nature of the phenomenon under consideration that deals with how relevant institutions are expected to engage with illegal gold mining in Barberton, the following theories inform the study: Public Value Theory, Open Access Resource Theory and Common Access Theory, Resource Curse or Blessing Theory and Rent-seeking Theory, New Public Management Theory (NPM), and Governance Theory. While some will be dealt with individually, others will be combined because of the associated linkages. These are Open Access Resource Theory and Common Access Theory, and Resource Curse or Blessing Theory and Rent-seeking Theory.

Theoretical frameworks provide a particular perspective or lens through which to examine a topic (http://www.trentu.ca). Reflecting on the relevance of these theories, two theoretical perspectives were chosen out of seven theories. The implication is that the conceptual framework will be associated with these theories, which are the NPM and governance theories. NPM was chosen as a window because it creates a platform for the governance theory, which will be the focus of the study.

3.1.1 GOVERNANCE THEORY AND GOVERNANCE THEORIES

The notion of governance theory is something that is perceived by some scholars such as Rhodes (1996), as being 'the changed state of requested or new procedure of administering or governing'. Governance is not specific to a political system, a historical era, or a policy field. It is a research framework that can be applied to any policy-making session or context and that could incorporate different competing theories or models including hypotheses on the importance of public and private actors (Toikka, 2011).

The theories of governance draw attention to the procedures and collaborations through which a wide range of social interests and performing artists join to deliver the arrangements, practices, and impacts that characterize current examples of representing, (Bevir, 2010). Other authors mentioned that governance comprises unexpected practices that emerge out of the contending activities and convictions of various individuals reacting to different situations against the foundation of clashing customs (Kiggundu, 2008, Kaufmann, Kraay & Mastruzzi, 2010; Aguilera, Judge & Terjesen, 2018).

It is on this basis that this research employs the governance theory to guide the arguments of the study. The theory will be used in understanding the problems associated with how the management of illegal mining, should be understood. The theory of governance is meant to give new ideas to deal with how illegal mining can be curbed.

There might be other views or perspectives by other scholars, but the main issue is that governance theories are theories within governance. Governance and improvement of research establishments in creating nations which consolidates a vital governance measurement concerned with the administration of the organization's inside and outer environments and their interrelationships, measurement of synergistic institutional courses of action; governance and supervision measurement; and 'research operations' measurement (Kiggundu, 1994; Aguilera, Judge & Terjesen, 2018).

Governance scholars are to some degree turning out to be mindful of the significant contrasts, which exist and have dependably existed, between countries in these regards. It is also important to note that (Blunt & Collins, 1994). The principles or standards of organization or association upheld by most western governance textbooks or course readings are from Weberian beliefs which would discover moderately little sensitivity.

Given the academic debates of the abovementioned scholars, the abovementioned theories are Governance Theories which are discussed below under 3.2.

3.2 Theories

The following are amongst the theories that are found to be relevant to the study.

3.2.1 Public Value Theory

Moore (1995) argues that public value implies the support or involvement that an institution makes to communities concerning value. Although Moore developed the concept and theory, Bozeman (2007) emphasizes that public value is value for the public. Institutions must have influential and beneficial relationships with the public, and the relationships should yield tangible resources like availability of basic needs of individuals, groups and the society as a whole (Bozeman, 2007).

Substantiation portrayed by Diefenbach (2007), Moore (1995) and Meynhardt (2009) articulates that the notion of public value roots the value creation of an organization in how it influences the experience and perceptions of the community and society. This applies only to the organizational side although Meynhardt and Bartholomes (2011) emphasize the importance of how individuals evaluate an organization's public value. Domegan, Haase, Kim, Van den Heuvel, Kelleher, Maglio, Meynhardt, Ordanini, and Penaloza (2012) explain that value creation is both a social and market activity.

Public value can, therefore, be defined as any value an institution can commit to the community. Barberton gold mines can commit to providing bursaries to the Barberton community. Schools, health centers and libraries can be built by the Barberton mines

thereby adding value to the social well-being of Barberton. Such commitments can contribute to reducing illegal mining by contributions being made to the society that might be of economic gain. Generally, there is a widely held view that any successful organization or profit-making businesses or governmental agencies must have articulation in capacities, propositions, sources of support and legitimacy (Moore & Khagram, 2004).

Even though Public Value Theory as described above has linkages to the administration of public institutions it was not chosen as a theory to drive the research as it does not provide alignment with the broad changing world of governance (Diefenbach, 2010; Bozeman, 2007; Moore & Khagram, 2004).

3.2.2 Open Access Resource Theory and Common Access Theory

Open Access Resource Theory drives us to consider that it can be considered in different fields or environments. For example, there is Open Access Resource Theory in the Agricultural industry, publishing industry, gas industry, mining industry, and fishery industry. Below there are scholarly deliberations of different academics engaging in discussions of this regard.

Open Access theory definition had been used interchangeably. It is however important according to the researcher to note or take heed like that the convenience of a theory through its important substance and precision, is in respect to a specific point of view, which may be valuable for some specific individual or gathering (Cox, 2008). Researchers define open access as the facility to published scientific papers online, without any charges and reducing restrictions of copyright and licensing (Suber, 2016; Wild, 2013) This is not, however, the context in which this notion or theory of open access is referred to within this research.

According to some authors such as Caputo & Lueck (2000) renewable natural resources, for instance, groundwater, fields, and fisheries are frequently managed by common property rights, in which people from an assembling case the specific use of the benefit. However, Ostrom (1990) describes better common property as group-owned property. Despite the notion mentioned above held by Ostrom (1990 &1992),

there are still other scholars such as Caputo and Lueck (2000) who have modeled common ownership as an agreement among clients of the characteristic asset or natural resources. Germany, a country ordinarily believed to be where open access theory started academics such as Libecap & Wiggins (1984), into consideration, it had sometimes been important to opt for contracting for resource ownership the same way it has been for some oil and gas reservoirs as explained by Libecap and Wiggins (1984) and groundwater basins as narrated by Ostrom (1990).

An example of the practice of open access is in the fisheries industry where people have permission to fish free, but they have to observe the management agency rules. Anglers are expected to have the appropriate gear; areas have stipulated fishing times and specified season length (Homans & Wilens, 1997; Wilen, 1985). This manner of control by relevant agencies and management bodies are also used in other types of industries (Twerefou & Tutu, 2017; Rode et al., 2015; Mutanga, 2002; Baland & Platteau, 1997). These authors further explain that besides the rule, the comparison between the price of entry and the expected income is considered. On the other hand, Twerefou & Tutu (2017) and Mutanga, (2002) explained that due to sharing common property a formal framework must be employed to allow for inclusiveness. Unlike in open access, the right of exclusion is assigned to a well-defined user group.

With Common Access Theory as suggested by Schlager & Ostrom (1987), when property rights exist it is necessary for the property rights regime controls the balance of cost allocating and governance of a particular resource. In addition, Schlager & Ostrom (1987) explains that property rights are a necessary but not sufficient for avoiding overexploitation of a resource. In the case of Ghana where small-scale miners sell to the sole supplier, which regulates them, but this would not be possible in South Africa in the context of existing regulations (Ostrom, 2007; Schlager & Ostrom, 1987).

Other arguments show that the concept common property is farfetched because often resources over which no property rights have been recognized are casually referred to as common property resources rather than as open access resources (Bromley & Cernea, 1989; Main & Baird 2018). To this light, this theory would not be used in this research. It was however only highlighted to clarify possible connectivity of common

property to neglected old ventilation pits for used illegal mining, but cannot be considered as a theory to drive the study because of the mining laws that apply in South Africa (Ciriacy-Wantrup & Bishop, 1975). The literature review demonstrates that the open-mining ventilation pits and neglected old gold mine shafts can promote illegal gold mining.

3.2.3 Resource Curse or Blessing Theory and Rent-Seeking Theory

The phenomenon of natural resource curse has been in existence for a while in the economics and policy discussions (Hausman & Rigobon, 2003). The curse due to possession of natural resources is due to political competition for access over rent-seeking (Deacon, 2011; Sala-i-Martin & Subramanian, 2003; Lane & Tornell, 1996; Etzioni, 2018).

Deacon (2011) defines Rent-Seeking Theory as the process whereby competing political interests expend economically valuable resources to obtain government favours. There are a lot of empirical findings which highlight causal links of rent-seeking and favours which arise from interactions with political institutions (Van der Ploeg, 2011; Alexeev & Conrad, 2009; Brunnschweiler & Bulte, 2008); Rosser, 2006; World Bank; 2006; Stevens, 2003; Etzioni, 2018).

Scholars such as Deacon (2011) and Gelb (1988) also reported that abundance of resource or an economic boom emerges as a curse when there is no rule or where there is no governance. Deacon (2011) explains that a curse has a negative impact in densely concentrated resource areas. Other authors oppose this notion and they suggest that control is effective in the form of the rule of law (Deacon, 2011; Van der Ploeg, 2011; Sachs & Warner, 2001).

From these academic arguments, the researcher believes that proper governance of these natural resources can prevent a resource curse and as such natural resources can be a blessing to the country (MP Babut et al., 2005; Boston, 1996). In addition, the model of regime transition posits that the likelihood of regime shift from democracy to a rent-seeking equilibrium is linked to an increase in natural resource rents to an (Aslaksen & Torvik; 2006; Duncan, 1996).

Apart from the suggestions of Dirks et al., (2009), Munslow (2011), Mollan & Kelsey (2012), Richardson & Helten (1984) and Merkel & Schipek (2012), there is an abundance of gold in South Africa, particularly in Barberton, due to the greenfield zones. Fukuyama (2013) is one of the authors suggests that there has been extensive literature that outline arguments of economics, management, the administration under the umbrella of governance. This is because a country is labeled as having a resource curse if it cannot govern the abundance of those resources and where civil unrest or violence results or resource blessed if the natural resources are governed properly and the country grows economically. Where government officials demand bribes in exchange for mineral rights or other access they are termed rent-seeking (Downs & Larkey, 1986).

Rothstein (2011) argues that the quality of government is measured by its impartiality when it comes to managing resources. This is because the existing measures of state quality or capacity an inherent weakness in expert surveys, to create time-series data for measuring the quality of governance over time (Fukuyama, 2013).

Pollitt and Bouckaert (2004), Schick (1998), World Bank (2004) and Fukuyama (2013) concur that many of the techniques of New Public Management are an outgrowth of impartiality in governance, but its applicability to developing world contexts is a challenge (Grindle, 2004; Griffin, 1999; Heady, 1991). Fukuyama (2013) concludes that it is clear that in evaluating the quality of governance in large complex countries like China or the United States, the existing quantitative measures are inadequate. This is not an exception to South Africa where public institutions are evaluated through the Auditor-General's report and lack consistent measuring tools on operations internally to detect inefficient bureaucracies, maladministration and poor-quality performances (Grenhalgh, Robert, Marcfalane, Bate, Kyriakidou, 2004).

The New Public Management (NPM) was brought in to address bureaucratic ineffectiveness including inefficient bureaucracies, corruption, poor decision-making and lack of quality performance (McLennan & Ngoma, 2004). Although the literature review reflects seven theories related to this study, the researcher's focus will be on the Governance Theory. New Public Management (NPM) theory will also be

generically considered based on the emerging need resulting from the academic debates (Van der Ploeg, 2011; Uhlaner; 2008; Stoker, 1998).

3.2.4 New Public Management (NPM)

This research will use the New Public Management (NPM) as an entry point to reflect on how governance operates and its implication on service delivery. The NPM is a public management tool that can help institutions to be more accountable, effective and efficient (Fraser, Tan, Lagarde & Mays, 2018)

Stoker (1998) explains that the rationale of using the NPM is to achieve efficiency, effectiveness and quality of service by transforming the public sector through organizational reforms. This approach is aligned with the larger political theory of governance. Furthermore, Eagle (2005) argues that NPM changes have been pervasive but have not followed a strictly consistent path across nations.

Bevir (2010) demonstrates that NPM thus contributed greatly to the broad shift from direct service provision by the government to more complex patterns of governance incorporating markets, networks, and private and voluntary sector actors. The increase of bureaucracy under public management that led to corruption pushed scholars and other public sector experts to start thinking of a new paradigm shift in order to experiment with new concepts within the public sector. As a result, the NPM theory emerged as the link with Governance theory, which is selected for this research report because it is a neo-liberal public management doctrine based on the market view (Bevir, 2010; Stoker, 1998). Instead of direct political control and hierarchies, organisations should rely on the indirect control that is market-based coordination in the interaction between organisations and their environments.

NPM emphasizes the effectiveness and efficacy of a public organisation customer focus in the provision of public services based on a framework of privatization, competition and contracting out (Pekka & Veikko, 2011; Fraser et al., 2018). Malmosse (2012) on the other hand argues that NPM methods are closely related to management accounting methods and tools, especially performance measures and the focus on management control while the Economic Commission for Africa (ECA,

2005) describes NPM as a management culture that emphasizes the centrality of the citizen or customer, as well as accountability for results. In support of this (Bevir, 2010) states that the NPM encourages new practices of governance and contributes to shifting the public sector culture towards that of private companies by changing structures, incentives and norms (Bevir, 2010).

Tamekou (2008) suggests that in developing countries and in Africa in particular, NPM is introduced through National Governance Programmes (NGP). The NPM is an instrument, which sets standards by guiding and defining the social and economic strategy of the country. The NPM also defines how the country, civil society and the private sector should manage relations.

There have also been serious administrative reforms in centralized governments like France and Sweden (Peters, 1997) that ensure universality as defined by Downs & Larkey (1986) and Kapucu (2006). Hood (1991) argues that the NPM is not appropriate for all context as it can only be relevant for a number of countries. The NPM has benefits for the public service but can contribute to an environment of turmoil (Hood, 1995). The turmoil can be due to disillusioned and cynical public service and the tensions between competing values and goals (Aucoin, 1990).

Once the leadership and management adopt a strategy to reform by decentralization, privatization and devolution of services, it means its core objective is to achieve efficiency of service delivery (Costantinos, 2014; Kapucu, 2006). Peters (1997) and Aucion (1990) suggest that managerialism relies on an essentially private sector set of techniques and practices, while Flynn (1999) argues that these techniques and practices are raised by public choice and market theories.

Emanating from the above views, the NPM and its reforms are conceived as deliberate policies and actions to alter organizational structures, process and behaviour to improve administrative capacity for efficient and effective public sector performance (Costantinos, 2014; Kapucu, 2006). Figure 14 below depicts the relationship between the NPM and conceptual frameworks.

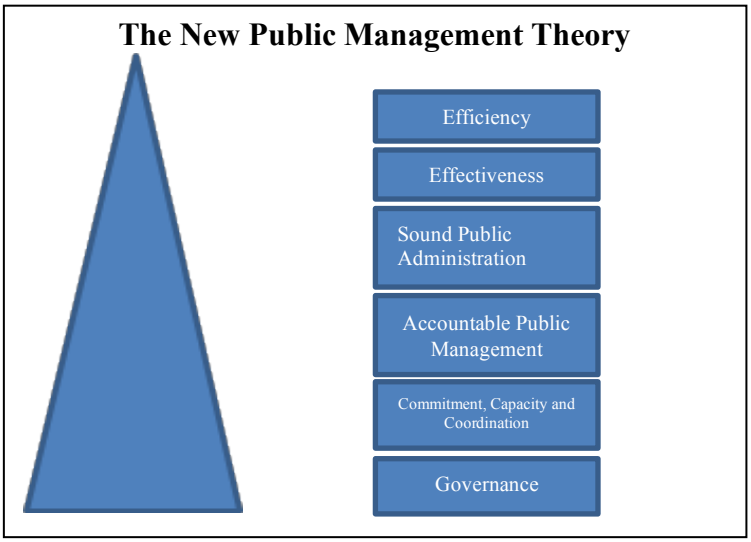


Figure 14: The relationship between the NPM and Conceptual Framework

Source: Own, 2015

African reform projects adopted the NPM because of its innovative nature and the intrinsic values of effectiveness, efficiency and economy (Costantinos, 2014; Tamekou, 2008). Recognising what scholars like Costantinos (2014) and Bevir (2010) it becomes prime to understand that Figure 14 above shows that there is more governance at the bottom. The issue is that once commitment, capacity and coordination are added, one starts to realise public management that is more accountable, with a sound public administration that is more effective and efficient. It was presented as the solution to the crisis faced by public administrations in Africa and also as an instrument of modernization. The ECA (2005) suggests that the NPM shifts the emphasis from traditional public administration to public management, thereby promoting state managerialism. The traditional model of organization and delivery of public services, based on the principles of bureaucratic hierarchy, planning and centralization, direct control and self-sufficiency, which have been the case in the Barberton gold mines, was replaced by market-based public service management. This makes planning for service delivery improvement easier (Nel, 2006). ECA (2005) argues that the NPM has provided for a future of smaller competitive service delivery organizations and that must be user-responsive and outcome-oriented to survive. These organisations are expected to develop flatter internal structures (fewer layers) and devolve operational authority to front-line managers. With a downsized number of

staffs, many services will be contracted out instead of in-house provision. ECA (2005) further argues that improved efficiency is now the main aim of public sector reforms in most African countries. The State‘s capability – its ability to promote and undertake collective action efficiently – is viewed as being overextended and a refocusing of the State’s activities are needed to improve macroeconomic stability as well as the implementation of stronger incentives for performance.

Furthermore, increased competition in service provision in all sectors is required to raise efficiency. Ewalt (2011) argues that NPM implies specific types of management tools, which operate within the propositions of governance. Governance Theory is considered as the focus of this study because it promotes issues of efficiency and effectiveness and provides the most consistent theory to guide this research.

3.2.5 Governance Theory

Bevir (2010) and Stoker (1998) reported that where there is strong governance the realized results will be more effective and efficient. Stoker (1998) subscribes to governance being concerned with creating the conditions for an ordered rule and collective action. Authors cited that governance is about a reinvented form of government, which is better managed (Ewalt, 2011; Milward & Provan, 2000; Stoker, 1998, Peters & Pierre, 1998; Osborne & Rhodes, 1996; Gaebler, 1992). Despite this, the notion of governance encompasses the traditions and institutions by which authority is exercised (Kaufmann, Kraay & Mastruzzi, 2010).

Stoker (1998) argues that the contribution of the governance perspective to theory providing a framework for organizing but it is not at the level of causal analysis. The organizing frameworks facilitate debates and foundations to stimulate theoretical arguments on what works during the implementation of programmes (Judge, Stoker & Wolman, 1995).

Bevir (2010) explains that governance consists of contingent practices that emerge from the competing actions and beliefs of different people responding to various dilemmas against the background of conflicting traditions. Governance is also about

more than achieving greater efficiency in the production of public services (Stoker, 1998).

Hilson & Laing (2017) emphasized that although some scholars like Hood (1991) use the concepts NPM and Governance interchangeably, governance is used in the context of political while NPM is used in organizational context (Peters and Pierre, 1998). Politics are used by the government to ensure control and enforcement of collective decisions within the society (Heywood & Wright, 1997). Governance on the other hand identifies relationships between institutions that are undertaking some kind of collective action (Hilson & Laing, 2017). Organizations are dependent upon each other for the achievement of collective action and thus must exchange resources and negotiate shared understandings of programme goals.

While governance is about the process, the NPM is about outcomes (Peters and Pierre, 1998: 232). Governance and government outputs are aligned but the processes to achieve the outcome are different (Hilson & Laing, 2017; Newig, Kochskämper, Challies, & Jager, 2016; Torfing & Sørensen, 2014).

The situation in the Barberton gold mines calls for adequate governance. This should involve both the political justification of decisions and actions and managerial accountability for implementation of tasks according to agreed criteria of performance (Coy, Fischer, & Gordon, 2001; Görg, 2007) . Political accountability implies that the office bearers must be answerable for their actions, while managerial accountability is about ensuring that delegated authority is accountable for carrying out tasks as stipulated in the objectives and standards (Bezes et al., 2012; Putansu, 2015). The aim of this approach is to ensure that the staffs are more accountable for their decisions and actions.

3.3 CONCEPTUAL FRAMEWORK

3.3.1 Concept of Governance

Hilson & Laing (2017), Costantinos (2014) and Stoker (1998 & 2008) describes governance as more than a new set of managerial tools, but a deliberate move to manage by governments in order to enhance the effectiveness of political authority. McLennan (2000) notes that the concept of governance has existed for a long time and is the prerequisite for economic and social development.

Addressing governance requires attending to social partners and to gather ideas that promote action (O'Toole (2000). Governance theory embraces many implementation themes (Ewalt, 2011). Contrary to the above notion, Hjern & Porter (1981) talks about governance as being programmes that are interconnected clusters of firms, governments and associations which come together within a widely accepted implementation framework.

Fukuyama (2013) gives another perspective that governance is a systemic process put in place to control corruption and maladministration in order to promote transparency and accountability. Governance recognizes the capacity to get things done which does not rest on the power of government to command or use its authority. It sees government as able to use new tools and techniques to steer and guide.

These propositions were identified to reflect a better understanding of what the rationale for governance is. Stoker (1998) considers these propositions be complementary rather than contradictory or in competition because each of the governance propositions complements the other.

For governance to exist, there must be coordination, right capacity and commitment by government institutions to deliver services to the public, in an effective and efficient manner. Although many academics argues that governance depends on the actors (in this context government stakeholder departments) who will ensure implementation, authors such as Khan (2004) and Jaramillo, Mulki & Marshall (2005) state that the concept of "good governance" often emerges as a model to compare ineffective

economies or political bodies with viable economies and political bodies. Good governance requires fair legal frameworks are enforced.

Based on the above, governance is considered in this research as a strategy to support transparency and accountability in the South African mining sector and specifically in the Barberton gold mines (http://www.unescap.org) with a view to promoting values of effectiveness, efficiency, and economy promoted by proper coordination, commitment and capacity. ECA (2011) states that good governance implies participation and transparent, accountable, effective and equitable management of public affairs where rules guide the actions of public officials. Good governance also requires that public resources and authority be used to benefit the entire community. Schneider (1999) and Punyaratabandhu (2004) explain broadly conceived governance as the exercise of authority and control in a society in relation to the management of its resources for social and economic development.

Al-Rodhan (2009) outlines how sustainable history is propelled by good governance, which balances the tension between the attributes of human nature and human dignity needs. On the other hand, scholars like Bailey, Valkama, & Anttiroiko (2011) and Poluha & Rosendahl (2002) contests the application of western democracy as measures of “goodness” in government. While governments believe they apply concepts of good governance, cultural differences can cause conflict with the heterogeneous standards of the international community (Den Besten, Arts & Verkooijen, 2014).

These issues are depicted in Figure 15 below by Landman, Pettet & Newgreen (2003), showing the key aspects of governance through economic and political dimensions. The researcher believes that an institution will be practicing good governance by considering all the issues mentioned in the graphic. This can be achieved if there is coordination of institutions of government through proper commitment and capacity.

3.3.2 Good governance

Donor agencies, of which most are of western origin, regard good public management and administration as accountability and responsiveness to customer needs

(Economic Commission for Africa (ECA) 2005; Landman, Pettet & Newgreen, 2003) The World Bank (1989 & 1992) on the other hand argues that good governance consists of a public service that is efficient, a judicial system that is reliable, and an administration that is accountable to the public.

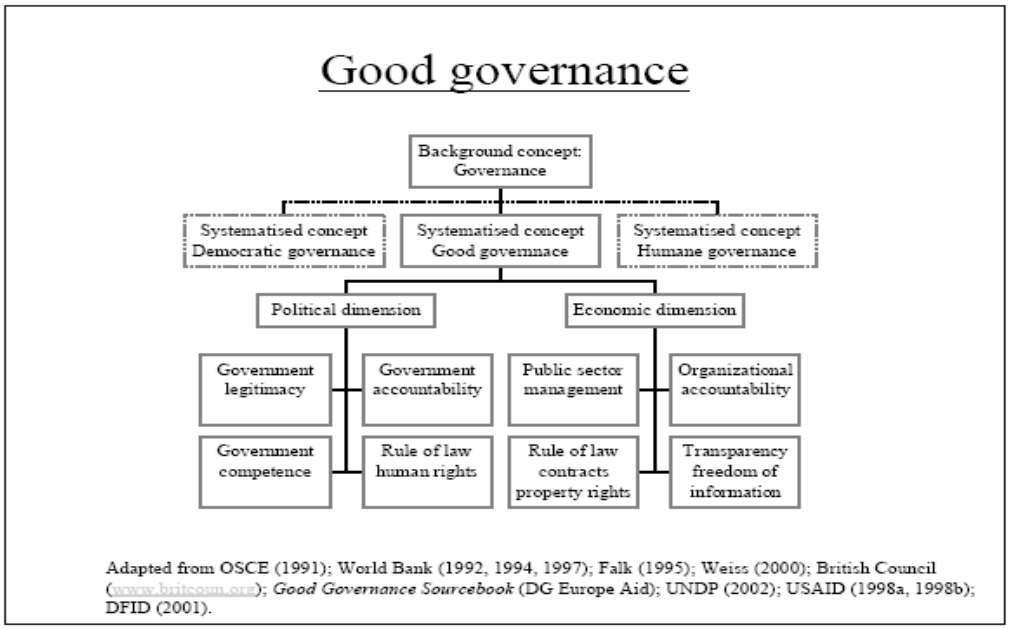


Figure 15: Graphical representation of good governance

Source: Landman et al., (2003: 92)

This suggests (as also shown above in Figure 15), that for governance to prevail, there must be the rule of law. Based on the above and the framework below, the current study posits that the lack of governance in the form of commitment, capacity and coordination by government institutions may be at the centre of illegal gold mining in the Barberton gold mines.

3.3.3 Governance versus management

Kiggundu (1989) in discussing the issue of governance versus management argues that the local population does not identify with government organizations because these do not seem to relate to local problems or experiences. This shows clearly, he argues, that there must be government stakeholder forums undertaken locally to execute duties that will take time to be addressed in terms of policies. Local

governance has little or no effective control or input into the policymaking process (Kiggundu, 1989).

Good governance adds value by improving the performance of the programme through more efficient management, strategic and equitable resource allocation and service provision (UKACA, 2003). It also ensures the ethical and effective implementation of its core functions, especially when determining management efficiency and deciding whether to retain highest-ranking managers or letting them exit (Cannella & Shen, 2001; Chandler, 1960; Chandler Jr, 1962).

Transactional and transformational issues may give rise to shared norms and values of the institution (Reeves, Lewin, Espin, & Zwarenstein, 2011; Bass, 1995; Bass & Stogdill, 1990;). In dealing with issues that were raised by scholars like (Hilson & Laing, 2017), this study suggests that it is imperative to consider issues of talent management.

Talent management is described by (Berger, 2004) as the impact of human resource and operational management practices on organisational productivity as outlined by (Birdi et al., 2008) in line with governance issues addressed by the debates attributed by political economics and development scholars such as (Patrick Bond, 2002) on local economic development in South Africa, although from municipal perspective. In addressing such governance issues as articulated by (Patrick Bond, 2002), other scholars such (Brockner & Rubin, 2012) mentioned ways of entrapment in escalating conflicts, which this study suggests to be considered when dealing with governance issues especially in terms of governance of public institutions that are advancing women's careers (R. Burke & Vinnicombe, 2005) with gender differences and work experiences and satisfaction (R. J. Burke, Berge Matthiesen, Einarsen, Fiskenbaum, & Soiland, 2008). This will be ideal when fostering knowledge sharing through people management practices (Cabrera & Cabrera, 2005).

ICSAI (2011) shares these views with leading academics on corporate governance such as Tricker (1998 & 2009) who defines the role of management as being to run the enterprise, while the role of the board is to see that it is being run well and in the right straight manner. Uhlaner, Wright & Huse (2007b), Sharma & Irving (2005) and

La Porta, Lopez de Silanes, Heifer & Vishny (1999) argue that poor governance is exacerbated by corruption and lack of the following factors: commitment, transparency, the rule of law, capacity, coordination and accountability. For the purpose of this study, the researcher identifies problems of governance in three aspects: commitment, capacity and coordination.

The following sections will elaborate on different aspects of governance associated with commitment, capacity and coordination, which underpin the core dimensions of the conceptual framework of this study.

In light of the above insightful impressions of the governance theory also incorporating scholarly deliberations in the concept of governance and governance versus management, it could be noticed that the theoretical system depended on the chosen theory Morse, Hupcey, Penrod, Spiers, Pooler & Mitcham (2002). It was built on this idea that the applied conceptual dimensions were checked against the exploration inquiries or research questions as they inform the methodology as also explained by (Boyne, 2009). This section will conceptualize the framework that informs the research. Miles & Huberman (1994) describes conceptual framework as a written or visual presentation that explains either graphically or in narrative form the main things to be studied, and the key factors, concepts or variables and the presumed relationship among them. Although Vaughn & Uttley (2008) holds the same Guba & Lincoln (1994) view this notion was shared by scholars of the 1990s such as (Strauss & Corbin, 1990), Mishler (1990), Deleuze & Guattari (1991) and Finney & Corbett (2007), Myers (2009) and Morse et al., (2002) on the other hand agree with Jabareen (2009) that conceptual frameworks are products of qualitative processes of theorization. A conceptual framework is usually examined in the literature review (C. Badenhorst, 2007). For this reason, the researcher has discussed the related concepts that are linked to the topic of this study.

Governance as expressed by the beliefs of abovementioned scholars, amongst others Jabareen (2009) and Myers (2009), seems to have taken centre stage in addressing the problem of illegal mining in the Barberton Gold Mines. The conceptual framework of the current study is based on governance and its aspects associated with

commitment, capacity, and coordination which underpin the core dimension for the conceptual framework of the study, as illustrated below in Figure 15.

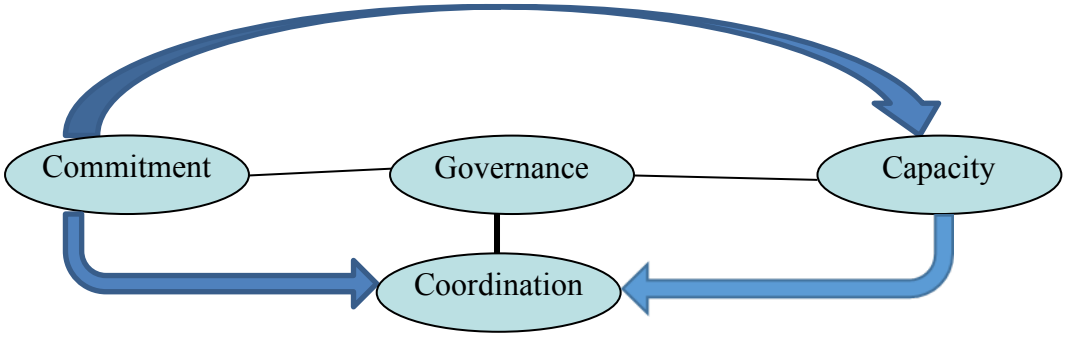


Figure 16: Proposed framework to reflect or understand and explain illegal gold mining in Barberton

Source: Own, 2014

3.3.4 Governance and commitment

Uhlaner, Floren & Geerlings (2007a) notes that published research to date examines the relationship between owner commitment and firm performance. Further to that, Sharma & Irving (2005) demonstrate in line with Uhlaner, Wright & Huse (2007b) that virtually all-extant published research on commitment relates to employee and management attitudes.

Most academics argues that the success of organizations depends on owners' and employees' commitment that is affectionate (Uhlaner et al. 2007a&b). To justify this Rashid et al. (2003) states that affective commitment of employees and management is positively linked with both individual job performance and firm performance in a broad range of settings. In addition, employee commitment refers to the psychological attachment and the resulting loyalty of an employee to the organisation (Setati & Mafunisa, 2015; N. J. Allen & Meyer, 1996; DeCotiis & Summer, 1987; Jaramillo et al., 2005; Sharma & Irving, ;2005; Meyer et al., 1989).

Mizruchi (2004) and (Daily, Dalton, & Cannella, 2003) demonstrated critiques of agency theory and governance. According to agency theory, the need to monitor governance activities arises in such firms under the assumption that managers (as agents) will only maximize the interests of their owners (as principals) if they are carefully watched or are given appropriate financial incentives tied to the performance of the firm (Dyer, 2006; Uhlaner, 2008; Shleifer & Vishny, 1997). However, if there can be an affective commitment of employees and management, the stakeholder departments will increase their performance in a more transparent and accountable manner (Jaramillo et al., 2005; Punyaratabandhu, 2004; Staw, 1974; 1976; 1980 & 1981; Knack & Keefer, 1997). The authors argue that measures of trust and civic cooperation are linked to economic growth. There is a relationship between trust and efficiency of the judiciary, corruption, bureaucratic quality, tax compliance and civic participation (La Porta, Lopez de Silanes, Heifer and Vishny, 1999). In the same view as elaborated by Jaramillo et al., (2005) and Punyaratabandhu (2004), institutions of government can address issues of illegal gold mining in Barberton effectively and efficiently if they are adequately committed to service delivery.

Lack of commitment and demotivation can sometimes be attributed to a lack of job satisfaction (Staw, & Fox, 1977). Some researchers such as Staw & Ross (1978) and Essays UK (2013) argue that job satisfaction does not essentially involve a high level of motivation or productivity. Saari and Judge (2004) argue that the nature of employees' work accounts for the most situational influence in workplace satisfaction even though Johnson (2008) asserts that micromanaging and dictating to employees instead of motivating them can cause a decrease in employee productivity. Employees are expected to respond to this in different ways, such as being demotivated, reduced effort, becoming disgruntled or become disruptive.

3.3.5 Governance and capacity

Kiggundu (1989) notes that real centralization-decentralization; struggle seems to be between the senior managers and administrators on the one hand and the specialists or analysts on the other. In the context of this study, the concept of governance and capacity means the lack of political management, lack of proper management of gold mining institutions regarding knowledge and skills and capacity regarding resources

(Stein, 1983). To make optimal use of the available economic, cultural and human resources requires the efficient use of resources, a level of public infrastructure and services corresponding to a country's level of development, and effective anti-corruption policies (Barma et al., 2012; Torvik, 2009; Brusis, 2003; Gavin, 1993). The desired approach is for governments to invest in projects with high prestige or political pay-off, but with little economic rationale.

Contrary to Uhlaner (2008) and Jabareen (2009), scholars such as (Brusis, 2003) elaborates that high transaction costs imply a loss of resources and may lead a government to select less effective but more easily enforceable policies. A growing body of social science experts has identified the abundance of natural resources as a curse because these are the cause of many conflicts and internal strife (Ross, 2012; Torvik, 2009; Van der Ploeg, 2008).

Poor governance of natural resources results in bad management and manipulation and gives rise to greed and corruption by state officials (Torvik, 2009; Ascher, 1999). The abovementioned academics view countries that have invested in natural resources as having a natural curse (Reid & Sluis-Cremer, 1996). Poor governance and corrupt management of natural resources often result in conflicts (Ross & Staw, 1986).

Natural resources are the source of wealth for many countries (Salai- Martin & Subramanian, 2003; Ross, 2002; Rook, 1987). Research indicates that these countries became economically sound and developed once their natural resources are managed effectively and efficiently (Lujala, 2010). The management of these resources calls for sound leadership and good governance as crucial conditions for solving any recurrent problem that may arise in the mining sector because these resources are equally the source of many problems if there is lack of governance and capacity. Some of these problems are identified in this study.

3.3.6 Governance and coordination

Good governance is epitomized by predictable, open and enlightened policy-making, a bureaucracy imbued with a professional ethos, an executive arm of government accountable for its actions, a strong civil society participating in public affairs, and proper citizen conduct under the rule of law (Brusis, 2003; Bank (1994). Prevailing ways of modeling governance alternatives, and advocates the opportunity and feasibility of a reconceptualization of governance forms as mixes or configurations of simpler and potentially disaggregated components (Grandori (1997a).

Mc Lennan (2004) advocates a shift away from a concept of universal service delivery, achieved through a bureaucratic administration, to demand-driven delivery achieved through managerialism (Grandori, 1997b; Bazerman & Lewicki, 1983). This argument is contrary to Grandori (1997a). Coordination through the institutionalization of rules and norms is the final class of governance mechanisms that should be considered (Grandori, 1997a & Grandori, 1997b). Given that conflicting interests and complex information may be the rule in modern economies, negotiation is likely to be a mainly diffused mechanism at present, alone or in combination with and support of other mechanisms (Galinsky, 2012; Galuszka, 2008). These proposed stakeholder forums provide stakeholders with a platform to address ways of reducing illegal mining most effectively and efficiently.

The notion argued of decision-making and authority is that the centralization of decision and control rights over the actions to be taken by many actors has been widely considered as a cost-efficient coordination mechanism (Grandori, 1997a & Grandori, 1997b; Williamson, 1975; Coase, 1937). This calls for the administration or coordination of authority relations in the form of accepted assignments of the decision by a central agent.

The study, therefore, introduces the relationship between the Governance Theory and Conceptual Framework as depicted in Figure 17 below, which explains how organizations should be governed effectively and efficiently. This is a complex web relationship which, when described from the bottom up, means that for public administration to be effective, efficient and accountable, it must have public

management that is committed, and that can coordinate issues with proper capacity through good management and governance.

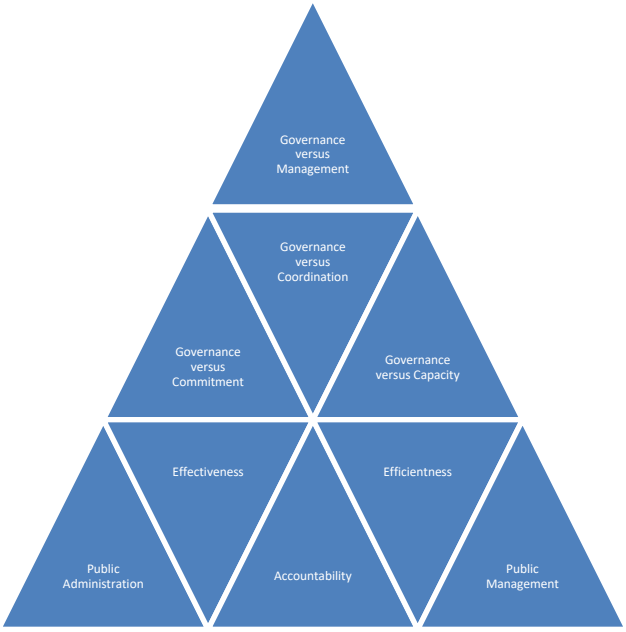


Figure 17: The relationship between the Governance Theory and Conceptual Framework

Source: Own, 2015

Figure 17 illustrates that where governance versus management and governance is supported by coordination, commitment, and capacity, the public administration concerned may be more efficient and effective and its public management will be more accountable.

Although the above variables are interlinked as a complex web, the study will also determine if the variables are appropriate individually or communally (Pascale & Athos, 1981). Initial indications suggest that lack of leadership and good governance contributed to illegal mining activities within the Barberton gold mines. Poor governance of natural resources can result in manipulation and illegal intentions and actions from state officials (Vincent, Ward, & Denson, 2015; Pritchard, 2013; Torvik, 2009; Ascher, 1999). This research, therefore, relies on the Governance theory to link with the Public Management perspective to understand the problems experienced in

the Barberton gold mines. Public Management is the process through which a number of policies are formulated and where resources are allocated in accordance with implementing programmes (Stoker, 1998).

Despite the complex web of variables, the increase of bureaucracy under public management that led to corruption has pushed scholars and other public sector experts to start thinking of a paradigm shift within the public sector (Pelto & Pelto, 1997). Governance theory is used to inform this research report. This is because it emphasizes the effectiveness and efficacy of public organization customer focus in the provision of public services and market-based conditioning frameworks such as privatization, competition and contracting out (Bailey et al., 2011). Malmosse (2012) argues that NPM and Governance methods are closely related to management accounting methods and tools, especially performance measures and the focus on management control. Maponga and Mutemererwa (1995) shares the view of Munnik (2005) that gold mining in Africa is slowly changing direction towards environmental and social sustainability because of increasing pressure from the public that advocates for good governance to address decades of environmental destruction and social injustice in the mining sector, as further noted by Makuluma (2012).

3.4 Summary

The arguments reflect the notion that when public institutions are well capacitated and coordinated with committed staff, their governance has the potential to yield effective and efficient services and output. The general summary will be addressed by the reflections and consolidation of literature, as discussed below.

3.4.1 Reflections and consolidation of literature

Although there are many incorrect perceptions created by the media and some scholars about illegal gold miners, according to Thornton (2014), this stereotype is not borne out by current research. The work of Thornton (2014) appears to be the first in-depth interdisciplinary research done on artisanal or ‘illegal’ mining in South Africa, notwithstanding that work in Ghana has reached similar conclusions (Nyame and Grant, 2012).

Furthermore, there are related post-graduate studies on illegal mining as the research listed below.

Scholars:

Buitrago & Roberson (2014), provides evidence that several aspects affect collaboration processes for the establishment of livelihood options for mining communities. The principal challenges include, but are not limited to, contextual factors (conflict between illegal miners, legitimate small-scale miners and large exploration and mining companies), poor accountability and poor governance.

Musa and Jiya (2011) assessed Mining Activities Impact on Vegetation in Bukuru Jos Plateau State Nigeria Using Normalized Differential Vegetation Index (NDVI). The study assessed the impact of mining activities on vegetation in Nigeria using techniques adopted to Maps effect of tin mining on the vegetation for the period between 1975 and 2007 using LandSat satellite data. The result of the differential vegetation index analysis reveals a decline in vegetated surfaces in 1986 ranging from 0.04 to 0.58 indicating 0.05 and consecutive loss in vegetation over the study area in 2007 (vegetated surface decrease by 0.08 between 1986 and 2007). The decrease in the vegetated surface is due to intensive mining and cultivation.

Ph.D. degrees

Scholarly theses are reviewed to inform this study. This is because of their richness in broader issues related to the field under consideration when compared to the journal article which may focus attention to specific limited issues. Although South African Ph.D. thesis in the mining-related field is limited there are quite a number of them in Africa and Internationally. The following are amongst the others and are acknowledged because they are closely associated with this research study.

Zwane et al. (2006) dealt with the crisis, state, and accumulation in Zimbabwe. This study was for the Ph.D. with the University of Kwa-Zulu Natal in Durban. This research study contends that illegal gold panning shows a unique example from claiming aggregation. Characterizing post-2000 Zimbabwe. Four viewpoints from claiming this example are distinguished namely; i) the link between coercion, bedlam.

What's more, jumble Also riches amassing and political energy. Retention, ii) those part of that state in this imbroglio, clinched alongside particular, its pervasiveness What's more. Centrality, iii) that this example might have been molded by, what's more need remodeled those greedy senses from claiming. Zimbabwe's controlling world class and iv) a society for ‘strategic contradictions’ inside decision making or ruling elites abets this design of aggregation.

Sam (2014) dealt with the assessment of potential impacts of open cast gold mining on the regional groundwater flow system in hard rock environments: with special reference to Ghana for a Ph.D. thesis in Water Sciences (Hydrogeology) at the University of Birmingham in the United Kingdom. The aim of this research has been to determine under what circumstances gold mines in Ghana are likely to have adverse effect on water levels and volumes in surrounding villages or farms and in particular to try and come up with heuristic rules that would indicate under what circumstances there may be derogation problems in the regional groundwater flow system.

(M. D. Budeba, 2016) A thesis while studying for Ph.D. at the University of Pretoria. The topic for the study was the competitiveness and performance prediction of surface coal Mining Engineering. The purpose of this research is to figure scientific models for helping the management of either new or operating surface coal mine to survey its intensity in respect to other coal producers for a given market of thermal coal.

Munakamwe (2013) examined the Zama zama livelihood strategies in an abandoned Johannesburg gold mine: transitioning from the informal to the formal economy. As part of her Ph.D. project on cross-border migration, she has researched the working lives and career aspirations of women and men who are finding a livelihood by working informally in abandoned and closed mines, engaging illegal gold miners. Her preliminary findings demonstrate that illegal mining is a central source of livelihood strategies for needy families.

Nhlengetwa (2016) is currently doing a Ph.D. focusing on a comparative study of Artisanal and Small-Scale Mining (ASM) in Ghana, Tanzania, and South Africa that

examined the critical aspects of Livelihood, Geological, Environmental and Policy Analysis.

Also, many Masters Theses have been considered for both South African environment and internationally. Some of the research theses that were acknowledged for this study are the following:

Masters degrees

Kwateng's (2012) Master's Thesis addresses Environmental Communication and Management. The topic is the Environmental Impact of Mining and the Well-Being of the People in Akwatia: A Case Study in Akwatia Town, Ghana. His study assessed the environmental impact of mining and the well-being of the people where illegal mining activities increased after the collapse of Ghana Consolidated Diamonds Limited (GCD), which was the company responsible for diamond mining in Ghana.

Agyapong (1998) studied cleaner mining production for an MSc thesis at Lund University in Sweden titled Streamlining artisanal gold mining activities and the promotion of cleaner production in the mining sector in sub-Saharan Africa: Ghana as a case study. Apart from the mining sector contributing to the economic growth of Ghana, mining activities have their corresponding challenges such as political, social and environmental as well as health-related issues in Ghana. The study reveals that the community is aware of the environmental impact of illegal mining activities.

Maiter (2015) studied the significance of mining in Africa and evaluated African countries for investment purposes from a tax perspective while pursuing the dissertation (MCom) University of Pretoria. The study discusses the taxes applicable to mining organizations that work for every of the chosen nations; in addition, the study argues that tax incentives are conceded to facilitate investment in these nations.

Grobler (2014) researched on the Mineral and Petroleum Resources Royalty Act: the impact on the fiscal and mining industry in South Africa while studying for MCom with the University of Pretoria. The study examines the genuine effect of the Mineral and Petroleum Resources Royalty Act. Review on the country's fiscal and mining industry

was evaluated to decide exactly what conditions changed in South African mining, assuming any. The research study has found that even though there has been an effect, it was not as huge as expected.

Naidoo (2016) explored the considerations for stope gully stability in gold and platinum mines in South Africa while attempting the dissertation for MSc (Mine Strata Control) with the University of Pretoria. The study discusses the gullies have been viewed as the "artery" in mining since they give the main get to course to the material, individuals and mineral in stopes. It along these lines ends up fundamental to give the business reasonable rules for ravine designs, geometry and the bolster required at all profundities to keep the gorge safe at all circumstances. The research has demonstrated that prescribed procedures for gorge designs were perceived, yet inadequately connected. To address the issue of best gully or ravine rehearses, research depended on a survey of past practices, underground visits, mine norms, codes of practice and the utilization of numerical displaying as an instrument to back-dissect the underground conditions observed. The suggestions given do not endeavor to build up any new strategies or techniques for gully security.

Van der Westhuizen (2014)'s dissertation for Magister Commercii in Business Management at the Potchefstroom Campus of the North-West The study outlines challenges in South African gold mines and investigates the fit of the strategy implementation with the theory of implementing strategy on through the combined organisational design approach of looking at organisational structure, strategic and management control systems and organisational culture as well as corporate governance and strategic leadership.

Previous studies and those listed above indicate the existence of a knowledge gap on governance perspectives in curbing of illegal gold mining in South Africa with specific reference to Barberton gold mines.

This study provides the theoretical foundation that informs the narrative to examine or reflect on the governance of state institutions (multi-agency departments) to reduce illegal mining at Barberton gold mines.

Based on the information below, it can be understood that although there is extensive research, there are still lacunae, most notably the relationship between the elements of governance which in the context of this study are commitment, coordination, and capacity.

Table 4: Major sources and main arguments

Approach used	Major sources	Major arguments or trends
Literature Review	R. M. Auty, 1990; Cavalcanti et al., 2011; Hilson, 2002; Ntibrey, 2001; Makuluma, 2012. Anhaeusser, 1976; Ward, 2000. Dirks et al., 2009; Berman et al., 2017; Zwane et al., 2006; Slater, 2011. Donovan & Lukhele, 2013. Thornton, 2013; Thornton, 2014; Pillay et al., 2012.	Natural resource as a curse. Natural resources as a driver to Environmental factors The Relationship between Large Scale Mining and Artisanal Small-Scale Mining (ASM) Mining, Politics and Battle Field in Africa Unrest in the mining sector in South Africa understanding the local and global politics of gold mining in Kyrgyzstan Importance of education (apprentice) in creating employment
Theoretical Framework	Stoker (1998), Eagle (2005). Peters & Pierre, (1998).	Governance perspective to theory NPM versus effectiveness and efficiency Governance is a political theory while NPM is an organizational theory.
Conceptual Framework	Kiggundu, (1989), Miles & Huberman,1994 Tricker, 1998 & 2009 World Bank, 2004.	Good governance is epitomized by predictable, open and enlightened policy-making, a Bureaucracy imbued with a professional ethos; an executive arm of government accountable for its actions; a strong civil society participating in public affairs; and all behaving under the rule of law. Governance versus management

Source: Own, 2015

Seven theories were reviewed as follows; the Public Value Theory, Open Access Resource Theory and Common Access Theory, Resource Curse or Blessing Theory and Rent-seeking Theory, New Public Management Theory (NPM), and Governance Theory Even though the study findings are more aligned with the Theory of Governance, other theories inform the arguments embedded in this thesis. All seven theories were presented in the light of their focus, applicability and limitations. Governance theory was the preferred theory for this research as governance is about a reinvented form of government, which is better managed. Giving Stoker's (1998) belief that the contribution of the governance perspective to theory providing a framework for organizing but it is not at the level of causal analysis, this work explores the intricate nature of good governance and as it differs from management. The conceptual framework of the current study hence was based on governance and its aspects associated with commitment, capacity, and coordination which underpin the core dimension for the conceptual framework of the study. Other aspects of the relational values of governance were discussed and finally a meta-analysis of some past academic works at PhD and MSc levels were presented for comparison.

In conclusion, the literature, theories and conceptual frameworks that are presented in this chapter were also used to inform data collection tools for the study. Even though the study findings are more aligned with the Theory of Governance, other theories inform the arguments embedded in this thesis. For this reason, the literature review seeks to acknowledge the body of knowledge of all the related sources.

CHAPTER FOUR - RESEARCH METHODOLOGY

4.1 Introduction

This chapter provides the research methodology that was used in this study. Saunders, Lewis & Thornhill (2003) suggests that methodology consists of two parts, namely the research design and data collection. This chapter begins by providing the research approach followed by the research design and then the target population. Other areas to be covered include data collection and analysis, sampling, validity and reliability of the research, and administration of the questionnaire.

The data collection techniques including in-depth interviews and document analysis are explained. The data collected for this research is placed in an operational framework to derive the meaning more clearly (Leedy, 1997). To gather evidence on illegal mining activities in the community of Barberton, interviews were used to collect data.

4.2 Research approach

The research follows a qualitative research approach. Ambert, Adler, Adler, & Detzner (1995) explained that qualitative research frequently falls within the context of discovery rather than verification. Qualitative researchers are interested in understanding the meaning people have constructed, that is, how they make sense of their world and the experiences they have in the world (Merriam, 1998). Despite this, qualitative methods in general, in contrast to quantitative methods are shaped by different sets of orientations and theoretical traditions (Denzin, 1999).

Patton (1985) refers to the qualitative method as being an effort to understand situations in their uniqueness as part of a particular context and the interactions. Merriam (2002) suggests that the qualitative approach attempts to understand and make sense of the phenomenon from the participant's perception. The researcher is of the opinion that the qualitative method will help to understand the reasons, effects and processes leading to illegal mining at Barberton mines.

4.3 Research design

Some of the scholars such as Marshall and Rossman (1995) wrote about designing qualitative research. The research design for this study is a case study. As stated by Sekaran, Gnanamani and Yogesh (2004), research design provides the blueprint for researching the objectives of the research and answering the questions originating from the management problem. Cooper and Schindler (2006) point out that research design is a strategy for the study and the plan by which the strategy is to be carried out. This implies that methods and procedures for the collection, measurement and analysis of data are specified. To avoid unnecessary misunderstandings with scholars like Neuman (2006) the guidance by Flyvbjerg (2006) were noted, in line with (Bogopane, 2012). It is in this context that the research uses explanatory design as suggested by Neuman (2006) which implies the primary research purpose is to explain why events occur and to build, elaborate and extend.

This is a single case study, based on multiple layers of analysis. There are multiple layers of data that provide multiple layers of evidence, which constitute the basis for multiple layers of analysis. It is this scenario that suggests the richness of data and provides a complex scenario within a single case study.

The researcher is aware that a single case study can suggest a simplistic analysis. Nevertheless, the context of a single case study with multiple layers of analysis provides evidence for a more complex analysis, which is strong enough to display robust data, and which elevates the intrinsic nature of the phenomenon under consideration. The complexity within the single case study based on multiple layers of analysis can be at the same level or more of a multi-case study.

The research design for this is a qualitative explanatory study using participant interviews and mining document or records analysis to explain the problem of illegal mining and devising ways to curb illegal mining.

4.4 study population and Sampling

4.4.1 Description of the Study Population and Sample

This is an exploratory research, based on both document reviews and interviews. The document review bit as described in section 5.5 present a list of some of the purposively selected reports and literature reviewed. The interview part of the data used is described in this section.

The target population for this study was all the Barberton stakeholder management members. As mentioned, Barberton is in Mpumalanga Province and Barberton mines are situated in Umjindi Local Municipality and consists of three mines, namely Fairview, Consort and Sheba, which form the focus of the study.

Zikmund (2003) describes the process of sampling as one that involves any procedure using a small number of items or parts of the whole population, to make a conclusion regarding the whole population. Since this study is qualitative in nature, random sampling was not used, even though it gives everyone an equal chance of being selected to participate (Sekaran & Bougie, 2003). This is because random sampling is appropriate for the quantitative research approach.

The sample of the study was 30 participants, as illustrated in Table 5 below. However, researchers purposively select a sample from the population since it is impossible to include the whole population in a single study (Strydom, 2002).

Choosing a study sample is an important step in any research project since it is unlikely to be practical, efficient or ethical to study whole populations (Marshall, 1996). For the interview part of data collection, the study considered the use of snowball sampling. This is because in snowball sampling, subjects may be able to recommend useful potential candidates for study (Marshall, 1996). Further to that convenient sampling was not considered because as elaborated by Balyan (2011), Zikmund (2003), Creswell & Miller (2000), Marshall (1996) and Denzin (1999), the researcher actively selects the most productive sample to answer the research question. As

previously stated, the goal of the research is to examine the factors influencing illegal mining in Barberton.

Although Zikmund (2003) shared the same sentiments with Patton (1980, 1985, 2002) by stressing that in purposeful sampling especially snowball or chain sampling. The chain of recommended informants would typically diverge initially as many possible sources are recommended, then converge as a few key names get mentioned over and over", since "snowball or chain sampling involves seeking information from key informants about details of other 'information-rich cases' in the field. Despite that the researcher assumed the expression by Suri (2011), to be more understandable as it depicts that purposeful sampling requires access to key informants in the field who can help in identifying information-rich cases, even though "snowball sampling can introduce an 'expert bias" as argued by Light and Pillemer (1986). The sample was purposefully selected from the above population. A purposive sample was deemed relevant since it ensures that the researcher selects the participants that are suitable to inform the research question as they are immersed in the phenomenon under investigation. In addition, a snowballing approach was employed to identify relevant participants further to inform the study.

The sample size comprised 30 participants; although three (the CEOs) were not reachable, thus reducing the number to 27. This low return might seem problematic but is not necessarily a serious problem since the three participants interviewed from Barberton mines are employees on supervisory / management levels. Only 27 participants were interviewed, of which three were from Barberton mine employees, 16 from Barberton local government employees, and eight from the Barberton local community. It should be noted that the sample mostly consisted of the Barberton local community and Barberton local government employees. After noticing that only 27 participants arrived, an additional four interviews were conducted as illustrated in Table 6 below, bringing the sample to 31. The participants were males and females of different ages and marital status. The participants had different academic qualifications. The participants were all interviewed face-to-face and telephonically. Data were collected in October 2015 according to the schedule as set out in the previous chapter. The researcher had to remind the participants about the interviews and the low response resulted.

When using snowballing the researcher discovered that the participants had good referrals with more knowledge on illegal gold mining in Barberton and these participants were used for additional interviews (participants DV1 to 4) as illustrated in Table 6 below.

4.4 Data collection

Data collection procedures were in the form of in-depth interviews, and document analysis i.e. desktop reviews. An observation was also generically noted during the process of interviews, although it was not planned as an approach to this study.

4.4.1 Primary data

Gummesson (2000) states that primary data are generally information gathered or generated by the researcher for the purpose of the project immediately at hand. Interviews are regarded as the best way to collect primary data. Some authors like Mahoney (2010), Kvale (2008), Frechtling & Sharp (1997) and Shadish (1993), outlined the following as advantages and disadvantages of interviews as the data collection method.

4.4.1.1 Advantages of collecting primary data

Interviews give direct feedback from participants in the sense that one is assured that the responses are from the person intended. The researcher will also get the opportunity to probe as a researcher, hence verbal or non-verbal prompts to encourage more complete, better-explained responses. While doing interviews, the researcher can use observation as another evaluation method. This can be done by recording what is physically observed during the interview and which provides additional information for the overall assessment as both the affective and cognitive aspects of the responses are experienced.

Given the views of these scholars Mertens (2014), Kvale (2008), Frechtling (1997), and Shades (1993), it is also important to note that the reality is that interviews yield rich data, details and new insights because they allow participants to describe what is

meaningful or important to them using their own words. In addition, interviews may be able to obtain information that is “sensitive” due to the conversational tone an interview can have and may also be able to provide quotations as an effective testimonial or to further illustrate a statistic.

Interviews help the researcher to have personal interaction with participants and as a result rapport can be developed with the interviewee (Boateng, 2014; Cherian & Harris, 1990). The participant may feel more relaxed and open. In interviews, topics can be explored in depth using probing questions (Frankel, 2012; Humphreys, Sachs & Stieglitz, 2007). Interviews can shed light on the details of a particular response (Ramzan et al., 2012; Holbrook & O'shaughnessy, 1988). There is also flexibility in interviews. This means that they can be conducted in a variety of locations and times, can be adapted to particular individuals and circumstances, and interviewers can utilize their knowledge, expertise and interpersonal skills to explore further unintended ideas or themes raised by the participant that relates to the purpose (Ramzan et al., 2012; I. R. Black & Cherrier, 2010). Lastly, interviews provide the opportunity to explain or clarify questions which increases the accuracy of the data collected (Mahoney, 2010; Kvale, 2008; Frechtling & Sharp, 1997; Shadish, 1993).

4.4.1.2 Disadvantages:

Interviews are time-consuming because scheduling the interview, conducting the interview, and transcribing notes for analysis takes time. It is also important to note that interviewers need to be prepared. In this case, Martens (2014), Mahoney (2010), Kale (2008), Frechtling & Sharp (1997), and Shadish (1993) further suggest that training interviewers may be necessary and ensuring that the interviewer has knowledge of the subject matter, feels confident in his/her ability to conduct the interview. Recording of participants responses are examples of where additional technical assistance or training can improve the overall interviewing process. Interviewers can commit errors or be biased. Factors such as tone of voice, the way a question may be rephrased, voicing an opinion, inadequate note-taking, even the gender and appearance of the interviewer may lead to errors and bias.

Although there is flexibility, too much flexibility can result in inconsistencies across interviews. Variation in interview settings decreases control over the environment. The analysis may be difficult in interviews because interviews can produce many data in a short amount of time. It is critical to have an "analysis plan" before conducting interviews to improve the data entry and analysis so that results may be more objective. Interviews are costly and expensive in the amount of time required to train, schedule, conduct, input data and analyze (Mertens, 2014; Mahoney, 2010; Kvale, 2008; Frechtling & Sharp, 1997; Shadish, 1993).

The following section introduces in-depth participant interviews followed by document analysis.

4.4.2 Interviews as a method of data collection

An interview is a classic method of collecting data and processing information for the qualitative study (Creswell, Plano Clark, Gutmann, & Hanson, 2003; Zikmund, 2003). The researcher argues that this is possible as Creswell & Miller (2000), Denzin & Lincoln (2008, 2011), and Denzin (1978) state that reliability and validity are conceptualized as trustworthiness, rigor, and quality in a qualitative paradigm. This means that bias is not entertained (Guba & Lincoln, 1994). In this study, as explained by Bless & Higson-Smith (1995), supported by (Bogopane, 2012), this is possible because the approach to be used in the study consists of primary data.

Data were collected by using interviews. The interviews were conducted personally and telephonically. A letter of approval to conduct the study and a covering letter explaining the research was given to the participants personally and per fax including multi-media message services (MMS) were necessary to telephonic participants, to substantiate the need for interviews.

4.4.2.1 In-depth interviews

Lofland and Lofland (1984) define the interview guide or "schedule" as a list of questions or general topics that the interviewer wants to explore during each interview. According to Lofland and Lofland (1984), in keeping with the flexible nature of

qualitative research design, interview guides can be modified over time to focus attention on areas of particular importance, or to exclude questions the researcher has found to be unproductive for the goals of the research (Vandermause, 2012). It is in this context that the research adopted in-depth interviews to gather rich and in-depth information from the participants around issues of illegal mining in Barberton. As with participant observation, the researcher will spend time interviewing potential participants in their working environment (Bogopane, 2012). All the interviews were interactional. The researcher engaged in this mode of data collection knowing that interviewing participants will involve a description of experiences as well as reflection on the description.

Three interview guides were developed with open-ended questions, namely Annexure E for the members from Barberton local mine employees, Annexure F for members from Barberton local government offices, and Annexure G for members from Barberton mines local settlements. To maintain the anonymity of the participants each was codified as illustrated in Table 3 below under ethical consideration. Cit means Citizens; EM means Executive Manager and Sup means Supervisor. Using the interview guide (Annexure E), the researcher met the participants (members from Barberton mines) outside their offices in restaurants.

The interviews took place in the afternoons and evenings. Eleven one-on-one interviews were conducted over three weeks. This means that for the first two days, the researcher interviewed 1 participant per day and after that 2 participants per day. The interviews lasted for between 27 and 40 minutes. The interview for Barberton mine employees lasted for the first three days.

After the first interviews, the researcher then used a second interview guide (Annexure F) to conduct further interviews with members from Barberton government offices. The researcher met them in their offices in the afternoons. The interviews lasted on average 30 minutes. Due to the closure time of offices and that most members did not wish to stay after closing time, the researcher interviewed two officials per day. The interviews were conducted in English. To ensure that no data is lost, the researcher wrote down the interviews immediately as no-one felt comfortable having the discussions recorded and as such permission could not be obtained from the

participants. The participants explained that they had signed an oath of secrecy with their employers and the interviews might be considered compromising to them.

Additional four participants were interviewed to ascertain the truthfulness of the data. The prime reason for interviewing the four participants was that all 27 participants were directly relevant to issues of illegal gold mining in Barberton. The four participants were all not directly involved in illegal mining as reported. The purpose of this was to verify the data collected to ensure conformability.

Although the participants were afraid to be recorded, including the three members from Barberton mines, they were all aware that the researcher was going to use their responses in compiling the findings of the study. They understood that for ethical reasons their names would not be disclosed. The handwritten interviews were transcribed for inductive content analysis (Niewenhuis, 2007).

Table 5: The sample of the study

Source: Own, 2015.

Respondents	Fairview mine	New consort mine	Sheba mine	SAPS	Dept. of Home Affairs	Dept. of Justice	Dept. of Correctional Services	National Prosecution Authority	Dept. of Defence (SANDF)	Dept. of Minerals and Energy	Dept. of Cooperative Governance and Traditional Affairs Cogta	Barberton Township	Emjindini Trust	Sheba Siding	Louwscreek	Total
CEO	1	1	1													3
Executive Manager				1	1	1	1	1	1	1	1					8
Supervisors	1	1	1	1	1	1	1	1	1	1	1					11
Citizens												2	2	2	2	8
Total	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	30

Table 6: Additional interview sample of the study (Data Verification)

Participants	Place of employment	Position
DV 1	Can't be disclosed for safety reasons	Geologist
DV 2	Can't be disclosed for safety reasons	Banker
DV 3	Can't be disclosed for safety reasons	Acting Director
DV 4	Can't be disclosed for safety reasons	Senior Officer

Source: Own, 2016

4.5 Data analysis

Adèr (2008) notes that analysis of data is a process of inspecting, cleaning, transforming and modeling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision-making. According to Verma & Verma (2006) analysis of data is one of the most critical aspects of research. It demands a deep and intensive knowledge on the part of the researcher about the data to be analyzed. This can be noted in tandem with McMillan & Schumacher (2006) that qualitative data analysis is primarily an inductive process of organizing data into categories and identifying patterns among categories.

In the analysis, the researcher works from the premise that a factual statement claims what the case is (Bogopane, 2012; De Vos, 1998). Subsequently, there are various kinds of descriptive statements that enabled the researcher to distinguish between types of statements according to the following dimensions: the number of cases covered by the description, the number of variables in a description, and the level of measurement in this study (Bogopane, 2012; BABBIE, 1995). Consequently, the researcher examined illegal gold mining cases lodged with the South African Police Service (SAPS) to analyze successes, failures, and challenges.

4.5.1 Method of Data analysis using in-depth interviews

An initial code list was developed after many readings of the transcript. The researcher coded a few scripts to develop a code list according to the themes that emerged from the data. Several additional readings of transcripts took place in order to finalize the themes (Creswell et al., 2003).

Transcripts were then organized and coded. Data were clustered into themes drawn from the research questions. During interpretation of the data subjects who supported emerging explanations and subjects who disagreed (confirming and disconfirming samples) were grouped accordingly to quickly distinguish and separate their meaning (Marshall, 1996; Zikmund, 2003).

4.5.2 Document analysis

According to Caulley (1983), document analysis is a superior way to find out retrospective information about a performance problem and may be the only way that some types of data may be obtainable. Documents or archived sources are excellent sources for gathering needs analysis data (Caulley, 1983). The research will use the official documents from the Barberton mines as well as a variety of non-personal documents such as newspapers, magazines, and government legislation and policy documentation, with the knowledge that these documents may be studied and analyzed for scientific research inquiry. Some documents illustrate the trends in illegal mining based on periods under observation. Such documents have statistical information and graphs including data that the researcher can use to illustrate the trends and performance or occurrences. Like (Bogopane, 2012), the researcher also went to government printers, Barberton mines, government institutions, and municipal offices, university and local libraries as well as electronic media to obtain valuable sources of information.

In order to be precise in extracting data fruitfully, the researcher must have a clear understanding of how documents were produced, circulated and used for different purposes as the analysis of the documents involves the detailed examination of documented evidence covering a wide range of forms from written articles to visual

images (BABBIE, 1995) McMillan & Schumacher, 1993; Silverman, 2004; Tobin & Begley, 2004). It has also been noted that generally, in generic terms, observation was realized when collecting data by conducting interviews, although no parameters were set as this observation was in generic terms and therefore was not deemed as a data collection method.

Documents analysis is generally modest and inexpensive while it gives a very good wellspring of foundation data or background information (Pope & Mays, 2000). This kind of method was deemed "to be unobtrusive and provides an off-camera take a gander at a program that may not be straightforwardly detectable and may raise issues not noted by different means (Bowen, 2009; Popay & Williams, 1998). Although Hoepfl (1997) maintains that documents give supplementary research information where data and bits of knowledge got from archives can be significant increases to the knowledge base, it is also important to note that scholars like (Connell, Lynch, & Waring, 2001).

Some researchers such as Petre & Rugg (2010) and Hansen (1995) used document analysis to generate new information to augment interviews. Nevertheless, despite that also some scholars like Goldstein & Reiboldt (2004) had to change interview questions because of documents analyzed. Scholars like Bowen (2009) argue that "to contextualize data collected during interviews, researchers can use data drawn from documents." In this sense, the documents analyzed for this study include public speeches by influential persons (Ministers and Deputy Ministers of the Parliament of South Africa, premiers of provinces), policy documents, training manuals, Investigative Hearing and Reports. These documents have been presented according to the same themes as in the interviews above. Extracts from different documents have been included accordingly in relation to specified themes.

Several documents were used to reflect on the problem discussed. The nature of the records used included speeches, seminars, training manuals, policy and legislation, annual performance plans and investigative hearings. All these documents are reflected in the list of references and documents studied are as follows: newspapers, training manuals, seminars and speeches by influential persons (ministers and deputy ministers of the parliament of South Africa), which are listed in Appendix B: research instruments below. These documents have been presented according to the same

themes as in the interviews above. Extracts from different documents have been included accordingly in relation to specified themes.

4.6 Data Triangulation

Denzin (1999), Denzin and Lincoln (2008) observes that triangulation is referred to as the use of multiple methods to partially overcome the deficiencies that flow from one investigation or one method. Triangulation also has been viewed as a qualitative research strategy to test validity through the convergence of information from different sources (Carter et al., 2014). This implies that triangulation is the combination of two or more (of either) methodological approaches, theoretical perspectives, data sources, investigators and analysis methods to study the same phenomenon (Hussien, 2009).

Reasons and explanations vary, but generally, triangulation is seen as a powerful means to an end (Glaser & Strauss, 2011; Cho & Trent, 2006; Patton, 1980 & 1985). Relying on the virtues of triangulation like member checking leads to a more consistent objective picture of reality (Cho & Trent, 2006; Mathieson, 1989).

Some of the criticisms of triangulation were pointed out by Seale (1999) who later asserted that triangulation, then, if used with due caution, can enhance the credibility of a research account by providing an additional way of generating evidence in support of crucial claims. However, the same view was also reflected by Cho & Trent (2006) who demonstrates theoretically the efforts to triangulate data, method, researcher, and theory. Hamersley & Atkinson (1995) suggests that to improve accuracy and reliability, these factors are all convergent with the inherent logic of transactional validity in qualitative research. For this research data triangulation also known as data source triangulation was adopted. Data triangulation depicts the use of multiple data sources in the same study for validation purposes (Hussein 2009). According to Olsen (2004), data triangulation helps in validating the claims that might arise from an initial pilot study; it can also validate observations. Three main sources of data were adopted for this research. These are data from interviews, data from literature and document reviews and observations.

4.7 Validity and reliability in qualitative research

According to Saunders, Lewis & Thornhill (2003), validity is concerned with whether the findings are really about what they appear to be about. Validity is defined as the procedure that measures what is intended to be measured. Validity upholds the conclusions. Neuman (2006) argues that validity means truthfulness. There is thus no gap between the real objects under study, the concepts representing them, their indicators and the generalizations. The reliability refers to the extent to which data collection techniques or analysis procedures will yield consistent results (Sekeran, 2003).

According to (Glaser & Strauss, 2011) on theoretical sampling and (Strauss & Corbin, 1990) on grounded theory, as the data collection advances the researcher will revise the data collection methods and reformulate the previous assumptions. Thus, in this study data collection and data analysis have been separated.

Although Neuman (2006) notes that validity is more difficult to achieve than reliability and that there cannot be absolute confidence about validity because some measures are more valid than others, in this study the researcher designed the questions in conformity with reliability and validity. The four stages outlined by Saundere et al., (2003) will be followed to achieve validity and reliability:

Stage 1: Researcher is clear about the data required and designs a question.
Stage 2: Participant decodes the question in the way the researcher intended.
Stage 3: Participant answers the questions.
Stage 4: Researcher decodes the answer in the way the participant intended.

Reliability and validity in qualitative research are replaced by the concept of trustworthiness.

4.8 Trustworthiness in qualitative research

Trustworthiness, according to Leedy and Ormrod (2005), relates to how reliable the gathered qualitative data are. The same notion is shared by Nieuwenhuis (2007) who argues like Neuman (2006) that trustworthiness just like validity means truthfulness. In this study, apart from what was considered above on validity and reliability which followed the initial traditions informed by qualitative research, the researcher ensured that trustworthiness exists by paying attention to the aspects of confirmability, dependability, credibility, and transferability as standards mentioned by Lincoln and Guba (2000). These standards may be inadequate to assess rigor in many qualitative studies (Toma, 2011) but rigor can be assessed in many ways and need not parallel quantitative studies (Ravitch & Carl, 2015). These aspects are clarified below to indicate their relevance in this study.

4.8.1 Confirmability

Confirmation is the process of comparing data gathered from multiple sources to explore the extent to which findings can be verified Casey and Murphy (2009) and compared to be similar Houghton et al. *(*2013). Further to that, Houghton et al. (2013) suggest that if data gathered through different methods are found to be consistent, this can increase confidence in the credibility of the findings (Knafl & Breitmayer, 1991). In considering conformity, Vandermause (2012) was considered and in drawing various scholars together, there was a confluence of traditions, and paradigmatic approaches brought to the study (Ravitch and Carl, 2015). Because these approaches were compatible yet distinct, all participants were drawn to ensure that they conform to the correctness of data.

Confirmability means that the data and their interpretation are verifiable (Mertens, 2015). Confirmability refers to data being member-checked by participants or other interested stakeholders (Niewenhuis, 2007). In this study, the researcher gave participants data in note form to check if their data had not been misunderstood or misinterpreted and misconstrued. The researcher also asked them to check whether their interview responses had been correctly interpreted. The researcher's supervisor also provided critical comments.

4.8.2 Dependability

Albeit numerous commentators or critics are hesitant to acknowledge the reliability or trustworthiness research, structures for guaranteeing meticulousness in this type of work have been in presence for a long time (Shenton, 2003). As per Vandermause (2012), the essential criteria of validity (credibility), authenticity or genuineness (thoughtfulness regarding the content), criticality (basic examination) and honesty (for this situation, declared by the creator that a procedure log was kept), were met and this makes steadfastness of information simpler (Mertens, 2015). Lincoln & Guba (1985) faces off regarding scholastically on what reliability is and infers that constancy implies demonstrating that the discoveries or findings are steady or consistent and could be rehashed or repeated. Trustworthiness identifies with how dependable the gathered information is (Merriam & Ntseane, 2008).

In opposition or contrary to a few perspectives, Anney (2014) and Bitsch (2005) trust that steadfastness alludes to the steadiness of discoveries or findings after some time. Cohen, Manion, & Morrison (2013) contends that steadfastness or dependability includes members assessing the discoveries or findings and the interpretation and recommendations of the review to guarantee that the information altogether bolsters them got from the sources of the review. Consequently, the researchers ought to depict the unique circumstances and conditions of the examination in detail, reflecting past research discoveries that were comparative or clarify contrasts (De Vos, 2005).

Additionally, the understanding was likewise exhibited in Dervin (1983, 1992; 1997). So as to address the steadfastness or dependability issue in detail, the procedures within the review or study ought to be accounted for in detail Belk, Wallendorf, & Sherry Jr (1989), in this way empowering a future researcher to rehash the work Lincoln & Guba (1985), if not really to get similar outcomes (Shenton, 2003).

Shenton (2004) clears up broadly what was already known and expounded on by others regarding constancy. Specialists like Pitts (1994) have endeavoured to react specifically to the issues of legitimacy and consistent quality in their particular subjective reviews while the work of Dervin et al., (1976) has demonstrated especially persuasive in such manner. The researcher portrays the information or data gathering

process in detail (Mertens, 2015) to guarantee that regardless of the possibility that another specialist or researcher rehashes similar research the discoveries would continue as before. In part six the likenesses or similarities and inconsistencies in the discoveries or findings are clarified.

4.8.3 Credibility

De Vos (2005) notes and emphasizes that data be viewed as believable or credible when the gathered discoveries (collected evidence) mirror an inside and out depiction (in-depth description) demonstrating the complexities of the exploration procedure and its setting (Trochim, Donnelly and Arora, 2015). The researcher trusts this is conceivable because believability, unwavering quality, and legitimacy are conceptualized as dependability, meticulousness, and quality in subjective worldview (Creswell & Miller, 2000; Denzin & Lincoln, 2011; Denzin (1978). Credibility is concerned with part checking, triangulation and associate survey (Bogdan & Biklen, 2003). Similar to peer reviewing, credibility prompts a more reliable target picture of reality (Cho & Trent 2006; Mathieson, 1989).

Even though the term credibility is utilized by Lincoln and Guba (2000) to portray legitimacy and consistent quality (validity and reliability), validity is likewise required in setting up that the results of the research are reliable and trustworthy. This is an excellent case of value and exactness. It depends more on the extravagance of the data accumulated as opposed to the measure of information assembled (data collected). As recommended by Maree & Van Der Westhuizen (2007), Strydom and Venter (2002), Greef (2007a) and Greef (2007b), there are numerous strategies to gauge the precision of the discoveries, for example, data triangulation, triangulation through various examiners or researchers and 'part checks.' This implies inclination or biases is not engaged in this study, as clarified by Bless and Higson-Smith (1995) and (Bogopane, 2012). So also, Houghton, Casey, Shaw & Murphy (2013) contends that it is vital to direct the exploration or study acceptably and have the capacity to exhibit validity. Reliability was cleared up with the participants as recommended by Vandermause (2012) because as a general rule the participants/readers are the main individuals who can sensibly judge the validity of the outcomes.

The researcher did this by cooperating and interacting with the participants to assemble information (gather data). Amid that collaboration, the researcher gave a nitty-gritty depiction of the participants and settings. The participant responses were written down, and when analyzed the researcher confirmed his interpretation with the participants (World Bank, 2015). The researcher likewise examined the collection of data and the conclusions thereof with the study supervisor, and this guided the credibility of the data from time to time.

4.8.4 Transferability

Lincoln & Guba (2005) alludes to transferability as discoveries which can be summed up to another circumstance. Transferability alludes to how much the consequences of subjective research can be summed up or exchanged to different settings or settings (Trochim et al., 2015). Transferability relies on upon the likeness between the first and consequent settings; in this manner, the analyst gathers adequately nitty gritty depictions of information in setting and reports them in incredible detail (Trochim et al., 2015). To take into consideration transferability, the researcher attempted to depict the research procedure and setting in detail and to pick cites precisely with the goal that information was not misconstrued (Nieuwenhuis, 2007). Equivalent with some research, to determine transferability, it is likewise vital to note that as indicated by Houghton et al., (2013), the original context of the exploration or research must be sufficiently depicted with the goal that judgments can be made (Koch, 1994).

In any case, a few researchers like Bogdan & Biklen (2003), Firestone (1993) and Stake (1995) contend that the obligation of the researcher lies in giving itemized depictions (detailed descriptions), as likewise noted by Houghton et al. (2013), for the reader to settle on informed decisions or choices about the transferability of the discoveries to their particular settings or context, as stressed by Lincoln and Guba (1985) and McKee (2004). Accentuation ought to be on giving far-reaching point by point portrayals (Stake, 1995; Popay et al., 1998; Dawson, 2009). They portray a similar issue yet on making "thick" depictions, including records of the specific circumstance, the exploration techniques and cases of crude information with the goal that readers can consider their understandings and interpretations (Houghton et al.,

2013). The reader will choose whether or not the discoveries are transferable to another specific circumstance (Graneheim & Lundman, 2004).

Houghton et al. (2013) contends that a rich and enthusiastic presentation of the findings, with proper citations, likewise improves transferability (Graneheim and Lundman, 2004), like the study of (Casey, 2007) where point by point and suitable portrayals were offered so readers could settle on informed decisions or choices about the appropriateness of the discoveries or findings to particular settings or context (Dawson, 2009). The important points of interest, as expounded by Houghton et al. (2013), incorporates records of the specific situation and cases of crude information so that option translations might be considered. For this reason, coordinate quotes from the members are given (Houghton et al., 2012). What's more, experts from the field noted and indicated the themes were developed from the data.

This suggests that the researcher considered the way toward applying the consequences or results of this study in one circumstance to other comparable circumstances. On the off chance that, for instance, another researcher follows the same process somewhere, it will still give similar outcomes.

4.9 Limitations of the study

Although the study was referred to as being modest in the purpose statement, it is limited to employees of gold mines, government institutions and surrounding community areas of Barberton District only. Other regions, districts or provinces like Gauteng that have similar problems were engaged, although at times similarities were also noted in other countries like Ghana and Zimbabwe. It is necessary to keep in mind that illegal gold mining issues are very sensitive, as noted in the literature review. As such all the participants wanted to remain anonymous because of the fear of being confronted or victimized. Noting that Barberton districts are adjoined by two countries, Swaziland and Mozambique, the researcher argues that it will have factors that will be unique when compared with the inland gold mining towns like Carletonville where cross-border pregnancies are not common because of the distance to the neighbouring countries. The study focuses on the period 2010 to 2015.

Also, a significant limitation was that not all the possible stakeholders were interviewed. The so-called illegal miners would have made important interviewees, however, due to the nature of their work and not to put the researcher in harm's way; the research excluded these people.
Furthermore, the researcher was aware that access to data could have been difficult to obtain because of the fears of the participants. The confidentiality clause overcame this as an assurance given by the researcher to the participants.

4.10 Significance of the study

The main problem of illegal mining in this study called for better governance, which appears to be lacking in the Barberton gold mines. The case study suggests that an abundance of natural resources is more likely to lead to weak political systems and consequent economic disadvantage, as suggested by Thompson (2005). The same notion was elaborated in the introduction, through the findings of (Pritchard, 2013; Torvik, 2009) (Ascher, 1999).

This study is relevant because it will improve the understanding of governance issues to assist the South African multi-agency departments, which amongst others include the Department of Home Affairs, Department of Minerals and Energy, SARS and SAPS. The findings of this study could be used to develop a strategic plan that will be aligned to service delivery and determine their current status of services delivery to the communities, with specific reference to the illegal miners who are largely affecting the society's well-being. This can be achieved by making the relevant authorities have an innate understanding of the contextual nature of the problem of illegal mining and the motivation for illegal miners. This research has shown that asides just governance-related issues, which is a political matter (Eagle, 2005) and the NPM, which is a which is an organization matter, public management tool can help institutions to be more accountable, effective and efficient (Fraser, Tan, Lagarde & Mays, 2018). However, this research has shown that one of the main reasons for partaking in illegal mining activities is due to the promise of material and economic gains. To curb this growing interest, this study will also help in the identification of areas that are not performing

well when providing services to the communities, especially illegal gold miners who are mostly illegal foreigners and to subsequently identify the causes of the problem.

4.11 Ethical considerations

As elaborated by Neuman (2006), it is hard to value the moral problems or ethical dilemmas that researcher confront until one is doing research, and holding up until the centre of doing a study is past the point of no return. In light of this, it is the researcher's view that one needs to consider all conceivable moral (possible ethical) issues that may emerge and manage them professionally as and after they emerged, preceding outlining a study. Sagarin (1973) and Neuman (2006) clarify that moral or ethical research relies upon the respectability of the individual researcher and his or her qualities and that the researcher needs to stick to all conceivable moral or ethical prerequisites.

Despite the above (S. Badenhorst, 2010) clarifies that all scholarly composition is sentiment composed as contention and sponsored by proof. The researcher is an employee of one of the multi-office offices, the Department of Home Affairs (DHA), and furthermore takes an interest in numerous DHA stakeholder meetings as a secretary. Resulting from this, classified data may go to the consideration of the researcher, which should be kept confidential. Where data is required for research purposes, it will be gathered without the identification information of the participants in order to guarantee the anonymity.

The researcher took a cognizant choice to work as an analyst and not an expert. This implies the scientist endeavored to keep away from inclination and was guided by the information gathered. The specialist additionally guaranteed that he is not impacted purposely by the result of the study.

In this study, human cooperation and participation were likewise contemplated, and accordingly prudent steps were seen to guarantee that participants were not harmed in any way (Leedy & Ormrod, 2005: 101). Maree & Van der Westhuizen (2007) recommends that it be additionally essential for the researcher to be acquainted with the morals arrangement and ethics policy of the applicable establishment. For this study, the researcher knew about the morals strategy and ethics policy of Wits

University. Strydom (20058) notices that prevention from harm, informed consent, privacy, capacity, competence and capability of the researcher, release of findings, benefactors, and questioning of the participants ought to be considered when managing human participants (Nkwi, Nyamongo & Ryan, 2001).

4.11.1 Prevention from harm

To protect the identity of the participants, they were all codified according to Table 7 below. This was to ensure that they remain anonymous in order to protect them from harm by the active role-players of illegal gold mining (Strydom, 2005:58).

Table 7: The coding of participant or participants to remain anonymous

CEO	Not disclosed for safety reasons
CEO 1	Not disclosed for safety reasons
CEO 2	Not disclosed for safety reasons
CEO 3	Not disclosed for safety reasons
Cit 1	Not disclosed for safety reasons
Cit 2	Not disclosed for safety reasons
EM	Not disclosed for safety reasons
EM 1	Not disclosed for safety reasons
EM 2	Not disclosed for safety reasons
EM 3	Not disclosed for safety reasons
EM 4	Not disclosed for safety reasons
EM 5	Not disclosed for safety reasons
EM 6	Not disclosed for safety reasons
EM 7	Not disclosed for safety reasons
EM 8	Not disclosed for safety reasons
Sup 1	Not disclosed for safety reasons
Sup 2	Not disclosed for safety reasons
Sup 3	Not disclosed for safety reasons
Sup 4	Not disclosed for safety reasons
Sup 5	Not disclosed for safety reasons
Sup 6	Not disclosed for safety reasons
Sup 7	Not disclosed for safety reasons
Sup 8	Not disclosed for safety reasons
Sup 9	Not disclosed for safety reasons
Sup 10	Not disclosed for safety reasons
Sup 11	Not disclosed for safety reasons
Cit 3	Not disclosed for safety reasons
Cit 4	Not disclosed for safety reasons
Cit 5	Not disclosed for safety reasons

Cit 6	Not disclosed for safety reasons
Cit 7	Not disclosed for safety reasons
Cit 8	Not disclosed for safety reasons
DV1	Data Verification Interview 1
DV2	Data Verification Interview 2
DV3	Data Verification Interview 3
DV4	Data Verification Interview 4

Source: Own, 2016

Strydom (2005) mentions that participants' physical, emotional and psychological well-being should not be compromised. The researcher respected the beliefs and well-being of the participants. If the participants experienced psychological or other discomforts, they should be made aware of this possibility beforehand, and debriefing should be done (Leedy & Ormrod, 2005). In this study participants were not exposed to any harm. The researcher was alert to signs from participants that might reflect discomfort as a result of the contents of the questions asked. Although most participants did not want to be known, necessary care was exercised to ensure that they remained anonymous as depicted in table 7 above.

4.11.2 Informed consent

The participants should be briefed about the nature of the study and be given a chance to choose to participate or not (*cf.* Annexure A) (Leedy & Ormrod, 2005; Strydom, 2005). The researcher explained the aim of the study in detail to the participants. They signed the consent form to confirm that they agreed to take part in the programme and that they were aware of the possible risks and benefits. Participants were informed that they could withdraw from the interviews at any time if they wished to do so (Leedy & Ormrod, 2005).

4.11.3 Privacy

The researcher respected the rights of the participants to confidentiality and considered these (Strydom, 2005). The participants were allocated different letters of the alphabet as their names so that their identity was protected. Furthermore, the comments of the participants were kept confidential by reporting anonymously (Y reported that...and X specified that ...) (Leedy & Ormrod, 2005).

4.12 Capability and competence of the researcher

Although the concentration in the study by Siguaw, Simpson, and Enz (2006) was on the elucidation of advancement introduction, a few shared characteristics are imparted to element abilities considers as suggested by Eisenhardt & Martin (2000) and bolstered by King & Tucci (2002). Winter (2003), notwithstanding, underscores that ability and competency relies on learning and expertise. The analyst's capacity to direct meetings was fortified by going to applicable workshops on research. Review classes were conducted to both Ph.D. and Masters by exposition understudies as a component of the peer review exercise. This was expanded by the short and long defense sessions with scholastics sitting as board individuals to review the quality of the exploration advance.

4.12.1 Release of findings

Released final reports on findings of the research should be accurate, objective, clear and contain all the important information that motivated the need for this study. Plagiarism and other offenses should be avoided (Strydom, 2005). In this study, necessary care was taken to report the findings honestly and to avoid plagiarism.

4.12.2 Donors

Strydom (2005: 64) mentions that contributors to the research should be acknowledged. For this study, there were no external donors but only the financial support of the employer and the personal funds of the researcher. The Ph.D. supervisor assisted by recommending that time be spent at the Wits Rural Facility in Acornhoek, Mpumalanga and that contribution and consistent motivation should be acknowledged.

4.12.3 Debriefing of the participants

To ensure that the participants are comfortable, debriefing after the study should be done to minimize the possibility of any harm or discomfort arising. During the debriefing, the participants had an opportunity to express their emotions. Questions were raised and any misunderstanding that occurred during the research were

rectified (Strydom, 2005). In this study, the debriefing was done at the end of each interview session to enable the participants to express their views regarding the challenges in dealing with issues of illegal mining in Barberton.

4.13 Summary

The qualitative research method was chosen as the relevant research approach for this study. The section will also provide the rationale and the pilot of the study. The next section focuses on presenting the data collected in this chapter using tables and graphs and explaining the research findings. The study has raised a number of problems that require serious research. The research, therefore, set out to investigate these problems in order to bring clarity regarding illegal gold mining in Barberton in Mpumalanga Province. The questions around good governance are put forward as conditions in addressing the problems that illegal mining has generated in Barberton Gold mines.

The focus of this chapter was on the research methodology used. The entire research plan was outlined. Furthermore, empirical research instruments, the population, and sampling procedures and the administrative procedures were discussed.

Chapter Five presents the findings which deal with the complexities related to illegal gold mining activities in Barberton drawing on the data collected and the findings.

CHAPTER FIVE - COMPLEXITIES OF ILLEGAL GOLD MINING ACTIVITIES IN BARBERTON

5.1 Introduction

The methodology described in the previous chapter provided the basis for data collection and gathering, which was largely informed by the adoption of in-depth interviews in order to gather rich information from the participants around issues of illegal mining in Barberton. The presentation of data in this chapter hence illustrates the systematic and holistic link to the self-developed interview question format.

The Barberton stakeholder management members consist of members from Barberton mines, government members from Barberton and members from the Barberton community. The representation from government members from Barberton was 16 members, members of the Barberton community were 8 and Barberton mines was represented by 6. This makes thirty (N = 30) participants.

As noted before in the methodology, this is a single case study (Willis, 2014 & Yin, 2009) displaying multiple layers of data which will provide evidence of findings through which data analysis is done. As also mentioned in the methodology, four participants who were not involved with issues of illegal gold mining were interviewed and the data gathered from them will be later presented.

5.2 Findings / Data collected

In presenting and analysing the research findings the focus was on answering the following research questions:

Main-question:

Why is illegal gold mining increasing in Barberton, South Africa?

Sub-questions:

- What commitment of government institutions and Barberton gold mines reduce illegal mining in Barberton, South Africa?

- How can capacity of government institutions and Barberton gold mines be a solution to illegal mining activities in the Barberton area?

- When coordination mechanisms may be found as relevant to curb the increase in illegal mining activities at Barberton gold mines in South Africa by government institutions and Barberton gold mines?

- Can coordination through commitment and capacity curb illegal gold mining in Barberton?

In addressing and responding to the first research question, the views and opinions of the participants were grouped into the following themes: team work, transparency and support. The following section presents the response to the second research question, which focuses on the commitment by relevant identified structures to reduce illegal gold mining in Barberton, and which were grouped into the following themes: employer patriotism, job satisfaction and effectiveness. Finally, to respond to the last question that sought to check the capacity given to identify relevant institutions that deal with illegal gold mining activities in Barberton the issues were grouped into the following themes: human capacity, transport and equipment. Table 6 below shows the demographic profile of interviewees who participated in the study.

5.2.1 Demographic profile of the participants

Table 6 shows the demographic profile of interviewees who participated in the study. The average monthly income of R40 000 a month was earned by only one person with eight people earning an average of less than R10 000.

Table 8: Demographic profile of interviewees who participated in the study

Sex	Male	23
	Female	4
Nationality	SA Citizen	24
	Non-SA Citizen	3
Age	<30 years	6
	30-40 years	17
	>40 years	4
Education Level	Grade 10	3
	Matric (Grade 12)	3
	Tertiary	21
Occupation Category	Unemployed	7
	Banking	1
	Business	3
	Government institutes	8
	Mining	6
	Municipality	2
Average monthly income	< R10 000	8
	R 10 000 – R 20 000	11
	R 20 000 – R 30 000	3
	R 30 000 – R 40 000	4
	>R 40 000	1

Source: Own, 2015

Three participants were female and 24 were male and all of the participants were literate. The literacy level at least ensured that the researcher was properly understood by the participants and when issues of clarity were raised, they were attended to with the confidence of being understood clearly.

5.3 Presentation of themes and main themes

After completion of the data analysis, which involved forming a code list from initial codes, revisiting the research questions to guide comprehensive analysis, and

grouping the codes into themes, the following themes emerged from the data: Teamwork factors; Transparency, Support given by the mine to the community, Employer patriotism, Job satisfaction, Police involvement in illegal mining activities, Effectiveness of work teams, Lack of human capacity, Lack of transport and high transport costs, and Poor communication and lack of Equipment and gadgets for communication.

The themes were grouped into three main themes of broad categories as presented in Table 7. The first broad category emerged as Coordination. This category is described as the lack of coordinated efforts, transparency and community development. The second category was Capacity which is described Importance of commitment to reduce illegal mining. The third and final theme was Capacity, which captures the lack of capacity and resources to support effective control of illegal activities.

Table 9: Relationship between themes and main themes

Sub themes	Main Themes or Categories
Teamwork factors.	**Coordination**
Transparency	"Lack of coordinated efforts, transparency and community development support
Support given by the mine to the community	
Employer patriotism	**Commitment**:
Job satisfaction	***"Importance of commitment to reduce illegal mining"***
Police involvement in illegal mining activities	
Effectiveness of work teams	
Lack of human capacity	**Capacity**
Lack of transport and high transport costs	Lack of capacity and resources to support effective control of illegal activities
Poor communication and lack of equipment and gadgets for communication	

Source: Own, 2015

5.3.1 Coordination

- ***5.3.1.1 Team work factors***

In an attempt to respond to the first question, participants raised the issue of seniority as a major challenge. Some of them opined there is team work. In this regard, one of the participants EM 4 who is an executive manager in a law enforcement agency said:

"I am confident there is teamwork. We have the stakeholder forum that helps us to work collectively." (EM 4, Interview, 5 October, 2015).

"Again, the violence by illegal miners was a disturbing issue that was overcome by teamwork amongst the stakeholders" (EM 4, Interview, 5 October, 2015).

Further to this, because of team building, some people understood issues related to illegal gold mining better. This is consistent with one participant who noted that there are situations that could only be better understood through the stakeholder forums. For example, illegal possession of gold as a precious metal is regarded as organized crime, which has a heavier sentence than previously. Participants responded that;

"This was through teamwork of well-coordinated stakeholder meetings." (EM 8, Interview, 9 October, 2015).

" Furthermore, another participant pointed out that, "Although we don't have time but we prioritize these kinds of meetings, the stakeholder meetings. A lot is being discussed. As part of team work we even facilitated that Barberton mines get an approval to operate on Sundays. This is considered important because the Mines and Works Act, 1956 (Act 27 of 1956) was repealed in 1991 and replaced by the Minerals Act (Act 50 of 1991), but Section 9 of the Mines and Works Act, 1956 (Act 27 of 1956) was not repealed and is still in force. Mines are therefore required to obtain approval. Such Sunday operations were collectively opined to reduce illegal gold mining as the mines will remain operational" (Sup 10, Interview, 5 October, 2015).

Other participants argued that there is teamwork when they realize the existence of the law enforcement officials as reported by the supervisors:

"For instance, one participant indicated that "the police are always responsive when we call them…." (Sup 1, Interview, 13 October, 2015).

"In addition, another participant said "there is teamwork, we even offer our traffic cops for unannounced immediate road blocks …" (Sup 11, Interview, 6 October, 2015).

This understanding was also noted by the following participant who said: "We are in the trust area that is rural on the Makonjwa Mountains where Barberton mines are. We see a lot of illegal gold miners getting arrested in these mountains ..." (Cit 2, Interview, 14 October, 2015).

Safety to these participants was ensured by the visibility of law enforcement officials. The existence of these law enforcement officials gave them the trust that indeed there is teamwork amongst the government institutions and the mines. This is supported by the participant who mentioned:

"We are situated right next to where the main entrances of the mines are. Every time there are unnecessary gunshots of police who are doing inspections will always be visible together with mine security guards. There is team work…." (Cit 7, Interview, 16 October, 2015).

Further to that, a participant also showed consistency with the previous one, explaining:

"Police are all over the show here. They sometimes drive around in convoy with mine securities. They are working together…' (Cit 8, Interview, 16 October, 2015).

The abovementioned participants agreed there is team work. However, participants opined that society is still divided whereby different heads of institutions are not at the same level of authority and salary. Social participation is still considered a space for senior personnel to give directives according to level of authority and respect. Participants EM 4, EM 8, Sup 1, Sup 10, Sup 11, Cit 1, Cit 2, Cit 7 and Cit 8 had a strong opinion about the existence of teamwork amongst the identified relevant institutions to be a result of proper coordination.

Contrary to this, participants EM1, EM2, EM3, Sup 2 and Sup 3 had a different perspective in terms of teamwork and proper coordination. In particular, participant EM 1 who was interviewed on 19 October 2015 had confidence in the police. The participant EM 1 resorted that police are working hard but the mine security guards

are deliberately letting the illegal miners operate at a certain fee or for an exchange of a certain amount of gold weighing a specific number of grams. Further to that participant EM 2, who is a DHA official and was interviewed on 19 October 2015, argues that mine security guards are members of the former 21 Battalion, who are mainly from Angola, Mozambique and Namibia, most of whom are not documented which makes them illegal in the country.

In addition, some of the participants like EM 3 who was interviewed on 22 October 2015, argued that there is no teamwork and as a result other laws of the country are not adhered to, for example the Immigration Act. Participant EM 3 further stressed that there is a weakness in how things are done in terms of governance. If the stakeholder meetings were fruitful and well-coordinated then the hiring of illegal immigrants would not be promoted.

Other participants like Sup2 who was interviewed on 22 October 2015 indicated that there is a problem of coordination because of lack of teamwork amongst the identified institutions and as a result there is lack of proper coordination. Lastly in support of Sup 2, participant Sup 3 who was interviewed on 30 October 2015 also mentioned that the teams are not supporting each other and there is no courtesy between their members.

Overall, the abovementioned participants admitted there is no teamwork and that raises the question of lack of proper coordination. In summary participants EM 1, EM 1, EM 2, EM 3, Sup 2 and Sup 3 argued the following "… You can see progress on the side police but the problem is the mine security guards..." (EM 1, EM 1, EM 2, EM 3, Sup 2 and Sup 3 Interview, October 2015).
Even with the few disagreeing voices, the above findings show that teamwork alongside governance and stakeholder support can help in the fight against illegal mining as this was coming out from each of the respondents.

- ***5.3.1.2 Transparency***

Some of the participants like Sup 1 and Sup 3 seemed to be more politically grounded and did not see the reason why they should consider everything political. In particular

participant Sup 1, who was interviewed on 23 October 2015 stressed that there is transparency. Contrary to that view, Sup 1 indicated that the only problem is that there are things that must not be discussed with everyone. In elaborating further, Sup 1 pointed out that one cannot discuss his/her 'dirty linen' in public.

Sup 3, who was interviewed on 30 October 2015 maintained that there is transparency. The point of view reflected by Sup 3 was that these people (the members of different government institutions) can't know everything. Further to that participant Sup 3 substantiated that some issues are not worth discussing with irrelevant people. In summary participants Sup 1 and Sup 3 had a consensus in the following:

"You must maintain a particular position in terms of reasoning and that position must not compromise what you believe is good for the country…' (Sup 1 and Sup 2 Interviews, October 2015).

In answering the first question, some of the participants like EM 2 and EM 3 had different perspectives in terms of transparency. Participant EM 2, who was interviewed on 19 October 2015 strongly suggested that political influence compromises effective decision-making and implementation thereof if decisions are already made prior to institutional meetings. Participant EM 2 further noted that when employment of such a nature occurs Home Affairs have to know because work permits must be issued. When illegal gold mining involves their relatives and friends from their country of origin, there will be conflict of interest.

It is interesting to note that participant EM 3 who was also interviewed on 19 October 2015 in support of EM 2 stated that there is lack of transparency in dealing with the issue of illegal gold mining. Participant EM 3 further indicated that the only problem is when members mix issues of politics and business.

In summary, participants EM 3 and EM 2 said that most of the key people in management were deployed to their current positions on political activism grounds.

"Decisions in stakeholders' meetings that compromise political loyalty are therefore disregarded without proper reason" (EM 3 and EM 2, Interview, October 2015).

Based on this it can be concluded that participants EM 3 and EM 2 suggest that there is no transparency in decision-making that will support coordination.

Barberton is on the borderline of South Africa and Swaziland and that makes inter-country and cross-country trespassing and sojourning a challenge. This is evidenced by participants Cit 1, Cit 2, Cit 5, Cit 7 and Cit 8 who said that participants Sup 1 and Sup 3 are of Swazi origin and that there was no transparency in hiring them. Some participants said there is no transparency and reported:

"…There are local people who are well educated for those jobs." (Cit 1, Interview, 30 October 2015).

"….There is no transparency. These people were employed here to make sure things are moving. To produce gold and make sure that Pan African Resources move forward. By the way Pan African Resources is part of Shanduka and Shanduka can't fail. It was founded by the Deputy President of South Africa." (Cit 2, Interview, 30 October 2015).

Participants also complained about lack of transparency. One participant indicated:

"… Two of the mine managers are Swazi citizens. How can there be transparency?" (Cit 5, Interview, 30 October 2015).

"… It's very unfortunate when you deal with people of power but lacking the interest of South Africans at heart…" (Cit. 7, Interview, 30 October 2015).

"There has never been transparency at all..." (Cit. 8, Interview, 30 October 2015).

This is a problematic theme as none of the respondents argue that there is transparency and openness on the part of the management of the mines. This is particularly ominous given the points raised in chapter 1 regarding the origin of the mining laws in South Africa where host communities are just seen as labourers in the mines at best. This reduces the level of participation available to these people.

5.3.1.3 Support given by the mine to the community

Participants Cit.1, Cit. 2, Cit. 3, Cit. 4, Cit. 5, Cit. 6, Cit. 7 and Cit. 8 do not think there is support at all. Some of the participants indicated that the mines do not plough back to the communities. Consistent with this one participant mentioned:

"…there is lack of local economic development on things that can benefit the local community now and also in future when the Barberton mines are no more…" (EM 1, Interview, 19 October 2015).

"… If youngsters can benefit from the social development plan of the mines, maybe they can avoid criminal activities because of social exclusion…" (EM 2, Interview, 19 October 2015).

None of the participants mentioned that there is support. In particular participants Cit. 1, Cit. 3, Cit. 4, Cit. 5 and Cit. 7 argued that the Barberton mines do not take communities at large seriously as they do not provide community development plans for youth to be involved in social activities, so as to keep them away from illegal activities. It was also mentioned that one of the mining executives has a soccer club, which in their view belongs to and was funded by the Barberton mines and was supposed to be benefiting the Barberton community at large. This is illustrated in the following quotation:

"The truth is that players are sourced from distant locations as far away as Swaziland (Cit. 3, Interview, 30 October 2015).

Participants Cit.1, Cit. 2 and Cit. 6 mentioned that the Barberton mines did not have a social labour plan, a community development plan and a social plan on procurement. In their view, it was also mentioned that:

"… There must be a fair social benefit community-based plans, which benefits all of the Barberton people…" (Cit. 4, Interview, 30 October 2015).

"… Support structures must be things that can be seen by everyone and are known to everyone…" (Cit. 5, Interview, 30 October 2015).

"…because Barberton mines are not employing locally, the social plan on procurement will help some of them to sustain themselves…" (Cit. 6, Interview, 30 October 2015).

Participant Cit. 6 made an example of local older citizens who recently retired and were given a lump sum of money and can sustain their money through participating in such programmes as a social plan on procurement. In this case they believe it will be better if tenders are offered with preference given to local communities.

Participant EM 4 and EM 8 believed that there are some local youth who are students and need bursaries. A common response from several participates was:

"It would make a difference if the Barberton mines can prioritize zooming into the local high schools and FET College (EM 4 and EM 8, Interview, 23 October 2015).

In light of the above some of the participants gave this argument:

"… What I'm concerned with is bursaries to students that are willing and able to study…" (Cit. 1, Interview, 30 October 2015)

"…the mines must be prepared to train local people on jobs that do not require specialized skill, like drilling, digging, etc., so that they become employable to them in future…" (Cit. 2, Interview, 30 October 2015).

The issue raised by participants Cit. 1 and Cit. 2 was that the Barberton gold mines must be able to prepare the locals through suitable training so that they become employable to them in future. This was also noted by the participant who said:

"…It is part of the requirements as recommended by the Mining Charter, for the mines to have an effective social development plan, of which here it is not the case…" (EM 3, Interview, 22 October 2015).

The issue of the Mine Work programme was also raised by EM 10 especially on lack of consideration of the environment. "

In this case the existing ventilation pits, left unattended, are commonly used as entrances by illegal miners so they support the illegal gold mining activities and also become dangerous to their animals: (EM 10, Interview, 30 October 2015).

This shows that community members were all tired of the usual CSI and CSR initiatives, rather, they would prefer entreprise development.

5.3.2 Commitment

- ***5.3.2.1 Importance of commitment to reduce illegal mining***

In addressing and responding to the second research question − How can in Barberton, South Africa? − The views and opinions of the participants were grouped into the following themes: employer patriotism, job satisfaction, police involvement in illegal mining activities and effectiveness to establish the truth since the terms are interrelated.

- ***5.3.2.2 Employer patriotism***

None of the participants mentioned the existence of employer patriotism. Participants EM 2, EM 3, EM 4, EM 5, EM6, EM 7 and EM 8 gave similar responses regarding employer patriotisms (only two responses are used to demonstrate what was said)

"…it was raised in the stakeholder forum meetings that there were members of SAPS that were in fact part of the syndicates of illegal gold mining (EM 2, Interview, 19 October 2015).

"This was consistent with what the following participant mentioned "… It is difficult to deal with people that are having interest on matters of conflict with issues of concern…" (EM 3, Interview, 19 October 2015).

Some were sad to be revealed after they confiscated both money and raw gold instead of taking either of the two. They were also supposed to submit and record everything confiscated during raids as part of evidence should there be any court proceedings. These are reports from the participants:

"…The reality is that there are certain illegal miners that complained about being harassed by police and their gold will be confiscated and taken illegally by police…" (EM 4, Interview, 22 October 2015).

"…Money changes people to be something else. This is why we get such behaviours, which are very much uncalled for…." (EM 5, Interview, 23 October 2015).

"There is no employer patriotism at all. In fact, law enforcement officers who engaged in this kind of activities must be charged for sabotage…" (EM 6, Interview, 30 October 2015).

"…Bribes are unethical and immoral. We are also exposed to this on daily basis. This can't be an excuse, they must be self-disciplined…" (EM 7, Interview, 30 October 2015).

It was also mentioned that

"… The salary they earn becomes so minimal when compared to the bribes they are exposed to and this compromises them…: (EM 8, Interview, 30 October 2015).

Participants believe that if workers were patriotic to their employers, there would be a more disciplined work force.

- ***5.3.2.3 Job satisfaction***

Participants EM2, EM3, EM4, EM5, EM6, EM7 and EM8 all mentioned that the members of the SAPS are creating doubt in their minds as to whether they are always acting in good faith to advance the expectations of their employer. Participants reported that

"…There are some of the members that still need to be pushed, of which is normal in every institution. Due to limited promotional posts we cannot promote everyone and that remains a challenge…" (EM1, Interview, 19 October 2015).

"… Yes some are not satisfied. I think greediness is the one that makes them not satisfied…" (EM2, Interview, 19 October 2015).

"They are confronted with a situation of choosing, whether to arrest illegal gold miners or accept money that is almost more than double their monthly incomes or confiscate gold or gold dust, that can sometimes worth more than their annual income…" (EM3, Interview, 22 October 2015).

In light of the above, it was explained that:

"…The problem is when we don't earn the same with our counterparts in other departments, whereas we are having same responsibilities. It's so unfair…" (EM4, Interview, 22 October 2015).

Participants EM2, EM3, and EM4 in particular, mentioned that sometimes the SAPS members are faced with a situation of temptation. It was further mentioned that:

"… The work is more than the money. People in the private sector work lesser than we do…" (EM5, Interview, 22 October 2015).

"… I don't even want to think about money I get. It's an insult but I've nowhere to run…" (EM6, Interview, 22 October 2015).

Another person stated that:

"…we are overloaded with work. Our peers in the mines are well to do. What can we say? If we can get the opportunity, of course most of us will leave…" (EM7, Interview, 22 October 2015).

"… We are stacked here and always bulldozed by politicians…" (EM8, Interview, 22 October 2015).

"…. It's hard to answer that for those people. They like money more than their work…" (Cit.5, Interview, 23 October 2015).

- ***5.3.2.4 Police involvement in illegal mining activities***

Linked to job dissatisfaction, some participants reported that they knew that the police are working with illegal miners or they benefit financially through bribes as shown in the following excerpts:

"…Money is the root of all evil. It changes everyone. That's why we feel that they are not satisfied by their salaries…" (Cit.6, Interview, 23 October 2015).

"… In the real sense, they are faced with difficulties, temptations makes them not to be satisfied…: (Cit.7, Interview, 23 October 2015).

Participants Cit.1, Cit.2, Cit.3, Cit.4, Cit.5, Cit.6, Cit.7 and Cit.8 also reported that members of SAPS belonging to the gold squad branch are now after money as shown in the following excerpts:

"…most of the government workers are not devoted and I believe that is a clear indication of lack job satisfaction…" (Cit.1, Interview, 23 October 2015).

"…the branch, members of SAPS gold squad are living a fancy life and driving flashy cars and as a result needed cash to sustain that kind of lifestyle…" (Cit.2, Interview, 23 October 2015).

"…illegal gold miners are known by everyone around. Even if they are arrested you will still see them around after two to three days. Is that effectiveness? No…" (Cit.3, Interview, 30 October 2015).

"… The godfathers of illegal mining are not touched by anyone. That means the system is not effective. Police are doing nothing…" (Cit.4, Interview, 23 October 2015).

Three supervisors shared common view as presented in the following statement:

"… in most cases the victims of crime related to illegal gold mining are illegal immigrants and as such two charges must be formulated: contravening the criminal procedure act (unauthorized possession or dealing in precious metal (gold) and contravening the immigration act (unlawful stay in the Republic of South Africa). In most cases, these kinds of cases just end up without trace and you are told the docket is lost…" (Sup.5, Sup.6 and Sup.8, Interview, 23 October 2015).

In addition, Sup 6 and Sup 8 said:

"…there are certain cases involving certain individuals who are untouchable but are regular contraveners of the law and their cases are always thrown out of the roll in court as a result of lack of evidence…" (Sup.6, Interview, 23 October 2015).

"…in most cases, cases involving certain individuals who are regular contraveners of the law, are not well prepared and as such they are thrown out of the roll in court as a result of lack of evidence…" (Sup.8, Interview, 23 October 2015).

"… Sometimes offenders after serving other sentences have to be handed to SAPS and then SAPS has to hand the victim to DHA (Department of Home Affairs) for deportation. In most cases, certain victims are not handed to DHA for deportation and as such Department of Correctional Services (DCS) ends up handing them straight to DHA…" (Sup.7, Interview, 23 October 2015).

- ***5.3.2.5 Effectiveness of work teams***

Some of the responses specifically from people in management positions (EM1, EM2, EM3, EM4, EM5, EM6, EM7 and EM8), it was identified that teamwork between the local government institutions in Barberton is limited and ineffective. The following participant mentioned that:

"…one can notice that there is no teamwork between the local government institutions in Barberton and as such they cannot be effective…' (EM1, Interview, 19 October 2015).

"…We need to join hands and work together as stakeholders…" (EM2, Interview, 19 October 2015).

"… I think us as members of stakeholder committee need to respect and take each other serious then we will be more effective…" (EM3, Interview, 22 October 2015).

"…working together can empower us to be effective…" (EM4, Interview, 22 October 2015).

"…difficult situations like this need teamwork so that we become more effective…" (EM5, Interview, 22 October 2015).

"…teamwork is what is lacking amongst us…" (EM6, Interview, 22 October 2015).

"...teamwork can solve most of our problems…" (EM8, Interview, 22 October 2015).

It was also the consideration of participants Cit.1, Cit.2, Cit.3, Cit.4, Cit.5, Cit.6, Cit.7 and Cit.8 who explained that members of the SAPS gold squad are busy financing their lifestyle. The following participant mentioned that: "… You become even afraid to tip off the police because the system is not effective at all…" (Cit.1, Interview, 23 October 2015).

"…We are faced with social consequences of living with these people. Some are illegal foreigners but have fathered lot of kids locally, without being detected, it so discouraging…" (Cit.2, Interview, 23 October 2015). "… Maybe the system will be effective if Jesus comes…" (Cit.3 and Cit.4 Interview, 30 October 2015).

"… Illegal gold miners especially from Zimbabwe own RDP houses around, simply because there is no effective system to deal with this problem…" (Cit.5, Interview, 23 October 2015).

"…the day government departments and the Barberton gold mines will be effective that will be the day we will have peace of mind…" (Cit.6, Interview, 23 October 2015).

"…Our government officials do not have that burning desire to do this right the first time…" (Cit.7, Interview, 23 October 2015).

Participants Sup.6 and Sup.8 identified cases of certain victims not being properly finalized because of lack of proper investigation into them. This was supported by a participant mentioning that:

"… In most cases we are faced with issues of cases of certain victims not being properly finalized because of lack of proper investigation into them…" (Sup.6, Interview, 23 October 2015).

"…There is no proper handing over of victims to the relevant departments after serving of sentences. This for us is seen as effectiveness, and that is not available…" (Sup.7, Interview, 23 October 2015).

"… Basically, most government institutions are not effective…" (Sup.8, Interview, 23 October 2015).

5.3.3 Capacity

5.3.3.1 Lack of human capacity

All the participants reported that there is insufficient human capacity. All the participants complained about the lack of human capacity, and more importantly, all participants from the local government institutions complained that they had received an instruction from Department of Finance (National Treasury) not to fill any posts but to prioritise only the critical ones and return funding to National Treasury.

In this regard participants said:

"…The issue of staff shortage is a crucial one; it's so confusing that we are not going to the money…" (EM1, Interview, 19 October 2015). In this regard, the following participant said:

"…There is a moratorium not to fill vacant posts but to prioritize the critical ones and save money…" (EM2, Interview, 19 October 2015).

"… We are short staffed and won't be hiring anytime soon. It's only the selected ones that will be filled…" (EM3, Interview, 22 October 2015). "… Service delivery will be compromised by this lack of staff capacity…" (EM4, Interview, 22 October 2015).

"… We hope that one day, the moratorium will get to an end but currently, we are still facing a serious problem of staff shortage…" (EM5, Interview, 22 October 2015).

"… The problem is that all the knowledgeable people with institutional knowledge have gone on retirement and to replace them with more competent ones is a dream currently and not in the near future will it materialize. The directive was clear not to fill posts unless they are critical…." (EM6, Interview, 22 October 2015).

"… Human capacity is what is needed to get things going…"' (EM7, Interview, 22 October 2015).

Participants EM1, EM2, EM3, EM4, EM5, EM6, EM7 and EM8, as well as participants Sup.1, Sup.2, Sup.3, Sup.4, Sup.5, Sup.6, Sup.7, Sup.8, Sup.9, Sup.10 and Sup.11 shared the same sentiments in the following statements:

"…the mining sector is not doing well. We are rather thinking of retrenching than hiring…" (Sup.1, Interview, 23 October 2015).

"…most mines are closing. The value of commodities went down drastically…" (Sup.2, Interview, 23 October 2015).

"… To remain competitive, we don't have to hire until the value of gold is doing good…" (Sup.3, Interview, 30 October 2015).

"… We are not going to fill posts. There is no money. We were directed to save…" (Sup.4, Interview, 23 October 2015).

"… Posts are not going to be filled soon…" (Sup.5, Interview, 23 October 2015).

"… Justice works well with enough human capacity to ensure there is no backlog. This scenario will be a problem…" (Sup.6, Interview, 23 October, 2015).

"…we are not hiring anytime now. The worrying issue is that we have capable interns that we are going to lose to the private sector because of that…" (Sup.7, Interview, 23 October 2015).

Consistent with the above was the following participants who said that "…people receive fair justice with courts that are running at full capacity. Now we are facing a problem. Let's just hope for the best…"'

(Sup.8, Interview, 23 October 2015).

"… There is no money to fill posts (Sup.9, Interview, 23 October 2015 "… "Let's have positive minds that all would be well soon, even if it's hard to face the current problem of staff shortage…" (Sup.10, Interview, 23 October 2015).

"…It was announced everywhere that we must save money for free education. So no more filling of posts until further notice…" (Sup.11, Interview, 23 October 2015).

5.3.3.2 Transport shortages and high costs of transport

Transportation is a serious challenge. Participants EM1, EM2, EM3, EM4, EM5, EM6, EM7, EM8, Sup.1, Sup.2, Sup.3, Sup.4, Sup.5, Sup.6, Sup.7, Sup.8, Sup.9, Sup.10 and Sup.11 explained that there is a shortage of vehicles.

”… Our members that are responsible for road blocks must have responsive vehicles that can stand the fastness or agility and performance of the vehicles used by these illegal gold syndicates…” (EM1, Interview, 19 October 2015).

“…There is a shortage of vehicles. Vehicles that are for arresting and deporting they end up being used for normal office work…” (EM2, Interview, 19 October 2015).

“… the problem of cars is an issue of concern to service delivery…” (EM3, Interview, 22 October 2015).

“… Cars that are out of their useful life takes time to be replaced and sometimes are not even replaced…” (EM4, Interview, 22 October 2015). “… To be able to attend to cases at different courts, transport is often a challenge…” (EM5, Interview, 22 October 2015).

“…The problem is that to be honest we have limited cars. To devote cars that are only for fighting illegal gold mining is a serious challenge…” (EM6, Interview, 22 October 2015).

“…Transportation is still a challenge, sometimes merely because we have got a vast area to cover…” (EM7, Interview, 22 October 2015).

“… We often task our municipal traffic cops to help us on this issue often because transport is a challenge…” (EM8, Interview, 22 October 2015).

Participants EM1 and Sup.4 in particular observed that members of the SAPS have to be provided with specialized vehicles. Those that are doing inspections require high performance multi-purpose vehicles because Barberton mines are situated in the mountainous area which is often characterized by poor roads that are difficult to drive on during the rainy season.

Participants said:

“…Transport is still a serious problem, most importantly because we are trying to save on fuel and other costs...” (Sup.1, Interview, 23 October 2015).

“…There is a problem with transport. The specialized cars for all terrain like four-wheel drives don’t come cheap and their maintenance cost is unbearable…” (Sup.2, Interview, 23 October 2015).

“… members of the SAPS have to be provided with specialized vehicles…” (Sup.4, Interview, 23 October 2015).

The issue of costs related to transportation was also raised by the following participants,

"…The security personnel don't come cheap. When the bill also includes transportation, it runs into millions…" (Sup.3, Interview, 30 October 2015).

"…given the budgetary constraints government institutions do not have money…" (Sup.5, Interview, 23 October 2015).

These participants, EM1 and Sup.4 also noted that their members in general, especially those responsible for roadblocks, must have responsive vehicles that can provide the necessary performance to match the vehicles used by illegal gold syndicates. This also has implications on cost.

"…Those that are doing inspections have to be given high performance multi-purpose vehicles because Barberton mines are situated in the mountainous area which is often characterized by off roads that are difficult to drive on during rainy seasons. So the problem is that we do not have those kinds of cars…" (Sup.6, Interview, 23 October 2015).

"…It was also said that the vehicles we are having are very old and mechanically, they are not reliable. They force us to become mechanics…" (Sup.9, Interview, 23 October 2015).

"… The moratorium on saving is maybe affecting the budget as a whole, even the one of buying cars. If it was possible we would borrow each other as departments…" (Sup.10, Interview, 23 October 2015). Furthermore, "…There are no cars. There is no money to buy them. It's a problem.…" (Sup.11, Interview, 23 October 2015).

5.3.3.3 Poor communication and lack of equipment and gadgets for communication

The participants all noted the lack of communication between the government institutions and the Barberton mines. Participants EM1, EM2, EM3, EM4, EM5, EM6, EM7 and EM8 mentioned that there is lack of equipment in general. Participants Sup.1, Sup.2, Sup.3, Sup.4, Sup.5, Sup.6, Sup.7, Sup.8, Sup.9, Sup.10 and Sup.11 shared these sentiments. This is presented in the following excerpts:

"…I think communication is very crucial especially between the stakeholder departments. We need to communicate more and we must have equipment to enable us to communicate more, especially where there is lack of police visibility…" (EM1, Interview, 19 October 2015).

"…if you deal with illegal gold miners you must always consider that these people are always armed and highly dangerous. As a result, members of SAPS gold squad have to have similar guns or better ones to be able to respond well to different situations…" (EM2, Interview, 19 October 2015). "… Communications especially within the stakeholder departments and means to communicate must be improved to ensure proper sentencing…." (EM3, Interview, 22 October 2015).

"…means of communication will be improved and communication on its own will be encouraged especially in the beginning and in the end of sentences…" (EM4, Interview, 22 October 2015).

"… We need to improve ways of communicating and means of communication must be considered…" (EM5, Interview, 22 October 2015). "If we can have communication gadgets surely we can make a difference…" (EM6, Interview, 22 October 2015).

"Mines, not only Barberton mines must be encouraged to develop communication mechanisms, especially where it will rescue them, because these illegal gold miners are dangerous…" (EM7, Interview, 22 October 2015).

Monitoring illegal gold mining was important and suitable gadgets are needed to execute that. In relation to this the participants said:

"…Apollo lights and street lights will also help if there are street cameras. Operators can have ways to communicate with law enforcement officers if there is any doubt or suspects identified, because illegal gold mines would normally be very dirty and carry backs of unprocessed gold containing soil…" (EM8, Interview, 22 October 2015).

"Communication was viewed as an important issue. One participant mentioned that "…Some areas around the mines do not have cellphone network. So specialized radio gadgets are needed to communicate with, which the police do not have..." (Sup.1, Interview, 23 October 2015).

"… I think also cameras with specialized laser detectors can be useful, so that when they inform mine security personnel and police, they can inform them about the specific location, where the culprits are…" (Sup.2, Interview, 23 October 2015).

"…Currently communication is poor and there is no workable solution in terms of equipment like panic buttons, that can be pressed at any time of need…" (Sup.3, Interview, 30 October 2015).

"… Mine security personnel need to have a group social network that we can alert all about incidents. Currently there is no proper communication including equipment to communicate with…" (Sup.4, Interview, 23 October 2015).

"…it is also important that their cars, as law enforcement officers, have blue lights so that they become more identifiable by other law enforcement officers, so that they can easily respond and help, in cases where there is high speed chase..." (Sup.6, Interview, 23 October 2015).

"...Most of these guys are illegal immigrants. As soon as they finish their sentence, they must be handed to Department of Home Affairs for deportation. Lack of communication mechanism becomes a problem, where you urgently need an immigration officer who is out of the office and our land lines can't phone cellphones…" (Sup.7, Interview, 23 October 2015).

"… Meetings are not enough. Sometimes we are needed to advise on too many issues regarding arrests and bail applications. Communication tools are needed in such incidents…" (Sup.8, Interview, 23 October 2015).

"… radio communication devices that can help them communicate with the office where cell phones are not reachable or out of network…" (Sup.5, Interview, 23 October 2015).

"'…We are always in the lookout. Proper communication mechanisms can help a lot if they are there…" (Sup.9, Interview, 23 October 2015).

"…Communication is very important and currently is lacking. Maybe it's because as the Department of Minerals and Energy we are responsible for the whole province that has a lot of mines. I believe we have to engage on this to improve communication and have all the equipment needed…" (Sup.10, Interview, 23 October 2015).

"…In most cases we do not become part of the stakeholder meetings, but only our principals. We only attend when they are not present. Yes, gadgets to communicate all equipment necessary will be very expensive and would always not be in our budget...." (Sup.11, Interview, 23 October 2015).

Participants Sup.5 and EM2 noted the importance of their cars, as law enforcement officers, being equipped with blue lights so that they become more identifiable by other law enforcement officers, who can then easily respond and help, in cases where there is high-speed chase of lawbreakers.

In summary, the findings in chis chapter present the Three Cs which are categories emerging from the data in line with the research questions of this study. The Three Cs are Coordination, Commitment and Capacity. These themes were further confirmed and validated and exploring them through in-depth interviews with the four selected data verification participants. The findings of the data verification are presented below.

5.4 Presentation of Data Verification INTERVIEWS

Participants who were interviewed as part of Data Verification Interviews were divided into Data Verification Interview 1 (DV1), Data Verification Interview 2 (DV2), Data Verification Interview 3 (DV3) and Data Verification Interview 4 (DV4). Questions asked were based on the findings from the data gathered from the main study participants.

For all four interviews, the researcher started by explaining the results or data collected and then asked if the participant agreed with the data collected or not. All the participants gave comments on the findings and they all agreed to be audio-recorded but requested not to be mentioned by name because of security reasons and the sensitiveness of issues regarding illegal gold mining in Barberton. For ensuring confidentiality and anonymity, explicit socio-demographic of the participants is excluded from this report and the descriptions of education level, age,

The questions asked to the four participants were based on commitment, coordination and capacity as suggested by the findings above and will inform the data presentation.

5.4.1 Data Verification Interview 1 (DV1)

Participant DV1 was interviewed on 01 February 2016 at about 13h20. The interview lasted 41 minutes and 43 seconds (00:41:43). The problems that participant DV1

raised were more associated with the corporate social investment, which he believes must be social responsibility of the Barberton mines.

Participant DV1 is a bona fide resident of Barberton. He is a teacher by profession and later studied Occupational Health and Safety. Thereafter DV1 became unemployed for 12 years while applying for posts at Barberton gold mines. Realizing that the chances of being employed at Barberton gold mines were limited, DV1 applied at Nkomati mine. Nkomati mine deals with chrome and nickel and is situated 70 kilometers south-west of Barberton in Machadodorp. Nkomati mine trained him further on Occupational Health and Safety and that resulted in his career growth path that benefited him to the extent of him developing a sense of belonging.

This kind of mindset or positive attitude made the employer send him for training on geology. He has recently graduated and is now employed as a geologist, which as he mentioned could have been done by Barberton gold mines.

5.4.1. (a) Responses on issues of commitment

Participant DV1 (interview, 01 February 2016) was explicit on how he believed management of local government institutions in Barberton are not committed to their work to participate and deliver as expected by advancing the interests of the employer. The participant labelled some members of the local government institutions in Barberton as being actively involved in the issues of illegal gold mining to the extent that they became part of syndicates and they support acts of illegal gold mining in Barberton.

Participant DV1 believes illegal mining will never stop as long as there are foreigners who are not patriotic to the Republic of South Africa, but who hold management positions of institutions that are influential in the curbing of illegal gold mining in Barberton. Participant DV1 also mentioned that SAPS, for example, included in its employ foreign nationals of Swazi origin holding management positions up to the level of Captain and Colonel. The participant believes that this discourages good governance and administration.

Participant DV1 maintains that the security officials in the mines do not have a sense of belonging and as a result they are not patriotic to the Barberton mines as an institution. "*They are foreign nationals who came to Barberton for money*".
Another major point that was raised by the pparticipant was that security services are outsourced. There are no security officers that work for the mines. That means, according to Participant DV1, the security companies and personnel have nothing to lose. Because they are not permanently employed by the Barberton gold mines they do not fear issues of misconduct since they are not having pension funds and permanent work to lose. According to participant DV1, that most illegal miners enter the closed shafts and air ventilation pits, through the assistance of security officials in return for certain payment.

Participant DV1 also mentioned issues of a football team that is sponsored by the Barberton gold mines, that was supposed to benefit the people of Barberton and provide recreation to discourage them from illegal activities but in fact benefited people from outside the town, including foreign nationals. This pparticipant believes that the management of that soccer team are Barberton gold mine officials who are part of management of that institution. This is what he said:

"Barberton community members are not being considered for employment because they are not playing for the soccer team as playing for it guarantees employment. Further to that, since those mines have managers that are foreign nationals, interest is given to the Swazi nationals. This also means that support from the Barberton gold mines in terms of education and social investment will not benefit Barberton at large."

5.4.1. (b) Responses on issues of coordination

Participant DV1 (interview, 01 February 2016) acknowledged that there is no proper coordination within the institutions of Barberton. Participant DV1 also mentioned that the Department of Mineral Resources does not do inspections regularly.

"Their visibility is lacking. Sometimes they only inspect once or twice a year. They only become available when there is a problem. If there was proper coordination, all the institutions would have agreed on tougher sentences. By now illegal gold mining should have been completely reduced. The stakeholder committees should have made very tough decisions."

5.4.1. (c) Responses on issues of capacity

Participant DV1 (interview, 01 February 2016) also noted that there are serious issues of lack of capacity. Participant DV1 emphasised that vehicles that are available are not managed carefully. Some government vehicles are even personalised to an extent that you find them in entertainment places where alcohol is being consumed. He further said:

> "This shows that there are elements of poor management. Vehicles are not monitored correctly and when they are damaged they are just left outside exposed to the sun and rain. Capacity in terms of specialised gadgets where cell phone network reception is poor, remains a problematic issue to most of the law enforcement institutions."

5.4.2 Data Verification Interview 2 (DV2)

Participant DV2 was interviewed on 01 February 2016 at about 14h32. The interview lasted 25 minutes and 38 seconds (00:25:38). The participant DV2 (interview, 01 February 2016) did not mind being recorded but requested not to be mentioned by name because of security reasons and the sensitiveness of issues regarding illegal gold mining in Barberton. The researcher started by explaining the results or data collected to the participant DV2. The researcher then asked if participant DV2 agrees with the data collected or not. The participant agreed with the findings and identified problems beyond the findings. The problems participant DV2 raised were more associated with patriotism and sense of belonging, which he believes must be seriously taken into consideration by the Barberton gold mines.

Participant DV2 is a bona fide resident of Barberton. He is a banker by profession and his wish was to be an accountant in the Barberton gold mines. Realizing that chances of being employed at Barberton gold mines were limited DV2 applied at one of the banks in Phalaborwa. Phalaborwa is an old mining town that is a tourist destination and is situated 260 kilometers north-east of Barberton in Limpopo Province of South Africa. This gave rise to different nuances being shared in the interview as compared to the data that was collected from participant DV1.

5.4.2. (a) Responses on issues of commitment

The participant DV2 (interview, 01 February 2016) reiterated that it is not a problem of commitment as such, because you only commit to something which you are patriotic to or you have a sense of belonging. Participant DV2 mentioned that gold is the major natural resource in South Africa and accounts for the wealth of the country.

The following questions were asked: How did the Barberton gold mines hire security personnel who are of foreign origin to come and guard the natural resources of the country? Were those security officials vetted? If they were not vetted what is the role of the National Intelligence Agency (NIA)?

5.4.2. (b) Responses on issues of coordination

Participant DV2 said:

" Proper coordination will be impossible if the system is not changed from above, where things should follow the right protocol. If proper processes are to be followed right from the start, there will never be a problem of illegal gold mining in Barberton."

5.4.2. (c). Responses on issues of capacity

The participant DV2 (interview, 01 February 2016) said:

"The issue of hiring foreign security officials has nothing to do with capacity. The point is that relevant national departments must play their role in getting things right. For example, members of SAPS who are of foreign origin and are employed at management positions is a concern."

Participant DV2 mentioned that there is a SAPS member at the level of a captain whose origin is Swaziland and would go fortnightly to Swaziland to visit his mother. He said:

"Is he patriotic to South Africa? If he is, why didn't he made sure that his mother is relocated to South Africa with immediate effect?"

The participant DV2 also mentioned that there was no point in hiring Swazi nationals at human resources management level in Barberton gold mines as this does not make

sense and has possible implications around it in terms of future hiring in the Barberton gold mines.

The problem of illegal gold mining in Barberton needs a positive mindset towards South Africa as a country, according to participant DV2.

5.4.3. Data Verification Interview 3 (DV3)

Participant DV3 was interviewed on 01 February 2016 at about 15h35. The interview lasted 32 minutes and 01 seconds (00:32:01) and then it was paused as the participant was called away to meet someone. After 16 minutes he came back, he continued with the interview and this lasted for 21 minutes and 38 seconds (00:21:38). The participant DV3 (interview, 01 February 2016) did not mind being recorded but also requested not to be mentioned by name because of security reasons and the sensitiveness of issues regarding illegal gold mining in Barberton. The researcher started by explaining the results or data collected to the participant DV3. The researcher then asked if the participant DV3 agreed with the data collected or not. The participant agreed with the findings and also mentioned that there are problems beyond the findings. The problems participant DV3 raised were associated with patriotism and sense of belonging, which he also believes must be seriously taken into consideration by the Barberton gold mines.

The interesting part of the interview was that the participant did not believe that Barberton community members are involved in illegal gold mining, which was a different view to all of the previous participants. Participant DV3 believed that illegal mining is usually done by illegal foreigners. DV3 mentioned that the issue of illegal gold mining is being encouraged by the influx of illegal immigrants, both those who are working for the stakeholder institutions and illegal gold miners of foreign origin. He said: “

> “The Barberton mine security personnel, for example, are foreigners, who were mostly members of the former 21 Battalion apartheid military wing, and were mostly from former Portuguese colonies like Angola, Cap Verde and Equatorial Guinea. This became problematic because Mozambique was also a Portuguese colony and is nearer to Barberton. As a result, it became easier for the Mozambicans to flourish

in illegal gold mining as the other foreign nationals could communicate through them, even when they needed permission to enter the shafts.

5.4.3. (a) Responses on issues of commitment

Participant DV3 (interview, 01 February 2016) said:

"It would be good if all the institutions can be headed by the people of Barberton as they will have next to their heart the interests of the community at large. "

Participant DV3 further mentioned that the issues of illegal gold mining are now declining. He said:

"SAPS is traditionally the most recognized law enforcement institution and must play an important role in curbing illegal gold mining as this is part of its mandate. It is therefore the reason why SAPS should be the ones to show seriousness by being committed. Even though other related departments were not showing evidence of commitment in support of SAPS to curb illegal mining, it still remains the duty of SAPS to enforce that through the stakeholders' forum."

5.4.3. (b) Responses on issues of co-ordination

Previously the SAPS was headed by a lady who was not from Barberton, and the same lady was suspended on allegations of irregularities in dealing with the problem of illegal gold mining. Now, as explained by participant DV3,

"Illegal gold mining decreased, as compared to before, thus prior to 2014.Different strategies were involved. Since the whole Barberton police station could not be trusted by then, different police from elsewhere were deployed to Barberton specifically to deal with the problem of illegal gold mining. This strategy together with that of police visibility, proved to have good results."

5.4.3. (c) Responses on issues of capacity

Participant DV3 (interview, 01 February 2016) mentioned that the issue of capacity is a well-known factor, which in this case does not play a very important role. He said:

"The problem of illegal mining can be dealt with as a project, where members of SAPS and Department of Home Affairs can be deployed from different areas to Barberton to specifically deal with illegal gold mining and illegal immigration."

5.4.4. Data Verification Interview 4 (DV4)

Participant DV4 (interview, 01 February 2016) was interviewed on 01 February 2016 at about 16h40. The interview lasted 32 minutes and 29 seconds (00:32:29). The participant DV4 did not mind being recorded but requested not to be mentioned by name because of security reasons and the sensitiveness of issues regarding illegal gold mining in Barberton. The researcher explained the results or data collected to the participant DV4. The researcher then asked if the participant DV4 agreed with the data collected or not. The participant agreed with the findings and mentioned that there are problems beyond the findings. The problems thus raised were associated with patriotism and sense of belonging, which he believes must be seriously taken into consideration by the Barberton gold mines.

The participant believed that Barberton community members are the ones involved in illegal gold mining, which was a different view to that of participant DV3, but the same as most other participants. Participant DV4 believed that illegal mining is usually done by Barberton community members, as they know the place very well even though some of the illegal foreigners are involved.

Participant DV4 believe that confusion is caused by the Barberton mine security personnel who were mostly members of the former 21 Battalion apartheid military wing drawn from former Portuguese colonies like Angola, Cap Verde and Equatorial Guinea. Pparticipant DV4 like the participant DV3 mentioned that this was another strategy that there might be communication breakdown with the locals. This became problematic because Mozambique was also a Portuguese colony and is nearer to Barberton which made it worse for Mozambicans to access the illegal gold mining as the other foreign nationals could communicate through them such as when permission to enter the shafts was needed.

Another interesting point was that the discussion revealed that the researcher had already (without knowledge thereof) interviewed a well-known local illegal gold miner that DV4 knows personally, who was a Swazi national who had arrived in Barberton as a young boy and had grown up there. Participant DV 4 explained that the leaders of the illegal syndicates are the foreigners. That means South Africans are the gold diggers while foreigners have graduated to be the managers in control.

5.4.4. (a) Responses on issues of commitment

Participant DV4 (interview, 01 February 2016) observed that there is no commitment by the Barberton gold mines. The stakeholder institutions may be there to support the Barberton mines but the willingness depends on them. Participant DV4 complained that there are politics within the Barberton gold mines where they use the soccer team that is run by a Barberton mine manager from Swaziland as a ticket to employment at the mines. Participant DV4 also complained that more money is put into the soccer team but the soccer team does not have a structure as it is a one-man show. An amount of R200,000 is given to the team every month but the team cannot perform well since the Swazi manager was ill and the team appeared to be in chaos. The whole mine went on strike according to participant DV4, and the above-mentioned issues shifted the focus of commitment to other irrelevant issues.

5.4.4. (b) Responses on issues of coordination

Participant DV4 (interview, 01 February 2016) believes that coordination must start with the Barberton gold mines which should have a good working relationship with members of SAPS. Other than this point, there was no particular recommendation made by DV4.

5.4.4. (c) Responses on issues of capacity

Participant DV4 (interview, 01 February 2016) did not mention issues of capacity.

The focus of this section was on the presentation of data collected. The entire presentation plan was outlined. Furthermore, themes or categories or topics engaged were discussed.

5.5. Data presented on documents studied

Documents studied are as follows: newspapers, training manuals, seminars and speeches by influential persons (Ministers and Deputy Ministers of the Parliament of South Africa).

Business Day (2015, 21 August: 1). Public Speech. The advisability of setting up a state-owned mining company is questionable even at a national level.

Chamber of Mines (CoM), (2007). Theft of precious metals from South African mines and refineries' report.

Chamber of Mines of South Africa, (2016). Illegal Mining Fact Sheet 2016, Available at http://www.chamberofmines.org.za/industry- news/publications/fact-sheets/send/3-fact-sheets/182-illegal-mining-2016a [Accessed June 25 2016].

Chamber of Mines (2016). Illegal and artisanal mining fact sheet 2016.

Department of Minerals and Energy (DME) (2010). Annual Report 2009/2010. South African Report of the Portfolio Committee on Mineral Resources, 18 November 2009. GPW. Pretoria.

DMR (2015/16). Department of Minerals and Resources, South Africa. Annual Performance Plan for the years 2015/2016. Also available from http://www.dmr.gov.za/publications/annual-performance-plan-app/summary/252-annual-performance-plan/1798-annual-performance-plan-20152016.html.

DMR (2014-2019). Department of Minerals and Resources, South Africa. Strategic Plan and 2014/15 Annual Performance Plan. Annexure E Technical Indicator Descriptions.

DMR (2014-2019). Department of Minerals and Resources, South Africa. Strategic Plan and 2014/15 Annual Performance Plan. Annexure E Technical Indicator Descriptions.

The Mining Resources Act

Mabuza, D.D. (2010). Mpumalanga Department of Legislature, February. State of the Province Address, Mpumalanga South Africa.

Mabuza, D.D. (2011). Mpumalanga Department of Legislature, February. State of the Province Address, Mpumalanga South Africa.

Mabuza, D.D. (2012). Mpumalanga Department of Legislature, February. State of the Province Address, Mpumalanga South Africa.

Mabuza, D.D. (2016). Mpumalanga Department of legislature, February. State of the Province address, Mpumalanga South Africa.

Makhura, D. (2016). State of the Province Address, Gauteng. South Africa. Illegal mining activities remain a worry for premier Makhura. *Mining Weekly* Also available from http://www.miningweekly.com/article/illegal-mining-activities-remain-a-worry-for-premier-makhura-2016-02-22.

News24. (2016). Six things to know about illegal mining boom, available at: http://www.news24.com/SouthAfrica/News/Six-things-to-know-about-the-illegal-mining-boom-20140626.

NCSMT (2015). An integrated training manual developed by the national coordination and strategic management team. Seminars by National Coordination and Strategic Management Team of South Africa. 13 to 18 August

Oliphant, G. (2016). Deputy Minister Godfrey Oliphant: Debate on illegal mining in South Africa. 13 Oct. Also available from http://www.gov.za/speeches/deputy-minister-gg-oliphant-debate-illegal-mining-south-africa-13-oct-2016-0000.

Parliamentary Portfolio Committee on Mineral Resources

Shabangu, S. (2009). Mining Weekly - SA courts now recognise illegal mining as organised...Retrieved from: www.miningweekly.com/.../sa-courts-now-recognise-illegal-mining-as-organised-cri... Nov 13, 2009

SAHRC Investigative Hearing (2013). Report of the South African Human Rights Commission (SAHRC) Investigative Hearing. Issues and Challenges in relation to Unregulated Artisanal Underground and Surface Mining Activities in South Africa. A report prepared for the South African Human Rights Commission by the Office of Commissioner Janet Love – Portfolio on Environment, Natural Resources, and Rural Development

Van der Merwe, C. (2009a). SA courts now recognise illegal mining as organised crime. *Mining Weekly* 13th November Africa / Europe Edition. Also as extracted on 02/10/2016 from http://www.miningweekly.com/article/sa-courts-now-recognise-illegal-mining-as-organised-crime-2009-11-13.

Van der Merwe (2009b). http://www.miningweekly.com/article/sa-courts-now-recognise-illegal-mining-as-organised-crime-2009-11-13

World Bank (2004). World Development Report 2004: Making Services Work for Poor People. Washington, DC: World Bank.

Content analysis of the document was done and the data was grouped according to the same themes as in the interviews above. Extracts from different documents have been included accordingly in relation to specified themes.

5.5.1. Documents studied presented on issues of coordination

The speech by Oliphant (2016) during the seminar on the debate on illegal mining in South Africa argued that the government institutions do not coordinate objectively in dealing with issues related to illegal gold mining. Furthermore, South African mining legislation is silent on issues related to dust containing gold and stones containing gold. This makes it difficult to coordinate some stakeholders who do not share the same views on legality and illegality as proposed by the literature review in chapter two when compared with Ghana and Zimbabwe, resulting in government institutions not being fully committed to deal with issues that are confusing to them and making coordination between the relevant public institutions difficult.

Notwithstanding such seminars and an integrated training manual (NCSMT, 2015) developed by the national coordination and strategic management team that was incorporated into various government department training programmes, and which explained that illegality begins when unregistered miners have a substantial impact on the environment, the Annual Performance Plan 2015/2016 (DMR, 2015/16) suggests that legislation must support coordination in combating illegal mining, unlike previously when legislation only became clear when one was found in possession or dealing with raw solid processed gold. It was explained through an integrated training manual developed by the national coordination and strategic management team that only recognized gold was the issue when there is more than 95% gold substance material.

The DMR (2014-2019) annual performance plans, annexure E Technical Indicator Descriptions, refers to the equitable and sustainable benefit from mineral resources (customer/stakeholder) that ensures that all the mining permits have adequate provision for mining rehabilitation and that artisanal small scale mining is legalized. The Mining Resources Act gave no clarity in terms of legality in dealing with gold in South African as legislation or bylaws to declare the activities of these miners illegal, which made coordination of relevant public institutions difficult. In addition, the literature above in two narrated that while they (illegal gold miners) are often trespassing on mine-owned property, this same property is traversed by pathways that are used by everyone in the vicinity to get to work, or to visit the shop, friends and relatives.

The South African laws that pertain to the surface do not govern the underground resources while on the other hand it is illegal to own or trade in raw gold and other 'precious metals'. However, until the final process that results in refined metallic gold, the material they deal in is just dust and dirt. Despite this, the DMR (2014-2019) annual performance plans, annexure E Technical Indicator Descriptions, refers to the equitable and sustainable benefit from mineral resources (customer/stakeholder) that ensures that all the mining permits have adequate provision for mining rehabilitation and that artisanal small-scale mining is legalized. DMR (2014-2019) clarifies the legality of the guilty persons on possession of gold bearing material distinguishing everyone including the trespassers, who know that ordinary soil or dust in areas like Roodepoort and Barberton usually contain gold. However, not everyone can be considered guilty by loading a wheelbarrow with dirt from a hole since the whole area is underpinned by the Central Rand Goldfields and gold is being mined by some in surface soils. The Mining Resources Act only allows industrial mines to hold or process mined material, and only registered industrial mines can obtain permits.

This simply means that most of the illegal gold miners in Barberton are arrested with dust containing gold and stones containing gold, not with raw solid processed gold that can be recognised to be more than 95% gold substance material, irrespective of size or shape. On rare occasions illegal miners will be in possession of raw solid processed gold, as mentioned in the literature review. The SAHRC Investigative Hearing (2013) noted similar roundtable meetings where the resolution of the hearing was to raise the issue with the Parliamentary Portfolio Committee on Mineral Resources to discuss how artisanal diamond mining can be enabled and brought into a regularized legal mining system to not only provide a source of income and improve the quality of life for the miners and their families, but to contribute to rehabilitation efforts and development of the diamond mining areas. In view of these reflections the study noted there is no proper coordination to deal with the problem of illegal gold mining in Barberton.

5.5.2. Documents studied on issues of commitment

Report by Van der Merwe (2009). http://www.miningweekly.com/article/sa-courts-now-recognise-illegal-mining-as-organised-crime-2009-11-13. The issue under the spotlight and the then newly appointed Minister of Mineral Resources, Susan Shabangu, emphasised that all stakeholders should intensify the fight against illegal mining.

"...Criminal mining is now viewed as organised crime by South African courts, whereas, previously, illegal miners who were arrested were charged only with trespassing. This was achieved after several meetings with mining companies and the Justice Department in Welkom and Bloemfontein and after the sophistication of gold smuggling syndicates had become more apparent" (Shabangu, 2009).

Despite the aforementioned, South Africa's Directorate for Priority Crime Investigations, the Hawks, as suggested by Shabangu (2009) are now involved in the investigation of illegal mining syndicates, a problem which mining companies say they simply cannot deal with on their own. Also, to demonstrate commitment, government's security agencies are now at the forefront of the battle against illegal mining with the newly established Hawks having taken over the investigations, adds the Department of Mineral Resources (DMR, 2010).

The Minister of Mineral Resources, Ms Susan Shabangu indicated determination of proper coordination mechanisms. This is also evident in her speech (www.miningweekly.com) where she announced that "In Barberton, Mpumalanga, illegal diggers are now taking over equipment and workplaces. They are openly carrying a huge number of weapons, including AK-47s and 9-mm pistols. Inter-gang fights and shootouts are now a daily occurrence in this area. Confrontations between illegal miners and the police and security personnel are becoming more frequent. In Welkom, booby traps using explosives have been set for the police and security personnel. Illicit mining is also spawning other illegal activities, including child prostitution and child labour," highlighted Shabangu in her address to the National Council of Provinces on the occasion of the debate on illegal mining. (Van der Merwe, www.miningweekly.com, 2009).

Furthermore, the rival gangs are said to be fighting underground to mine the richest seams. Human trafficking, smuggling, money laundering, bribery and corruption are also identified as activities emanating from illegal mining (Van der Merwe, 2009).

This suggests that illegal gold miners in South Africa mean business. They have created their own empires and to crack them, there should be committed law enforcement. Government law enforcement officials must properly coordinate amongst themselves with gold mining houses to eliminate these kinds of practices. It is also noted that criminal mining is now viewed as organised crime by South African courts. This definition of organized crime as a common understanding was achieved through proper commitment and coordination of government's security agencies and mining companies by holding meetings and also shifting the responsibility of dealing with the battle against illegal mining to the newly established Hawks as they have proper authority to deal with these heavily armed illegal gold mining syndicates.

The last two sentences in Van der Merwe's (2009) document above specifies what the Minister of Mineral Resources committed herself to ensuring that there is proper coordination amongst government's security agencies and mining companies and also to ensure that such illegal gold mining activities are given to well capacitated institutions like the Hawks to deal with.

Other provinces in South Africa like Gauteng have progressed in terms of coordination: "Communities live in fear of marauding armed gangs that work under the belly of the earth and come out to commit violent crimes. Improving overall police performance, visibility and establishing policing units to focus on drugs, gender based violence, illicit mining, taxi violence and other priority crimes would go a long way in making Gauteng safe." (Makhura, 2016, State of the Province address, Gauteng, South Africa).

This clearly shows that Mpumalanga does not prioritize illegal gold mining as a problem that needs to be dealt with. Other provinces like Gauteng have included illegal gold mining in particular as being of paramount importance. It is also significant for the reader to note that previously in 2011 only the issue of mining was touched on in the State of Province Address and not illegal mining, which is widespread in Barberton.

For example: “Mining, manufacturing and the energy sectors are also important drivers of economic growth and job creation in the province. We are the major producers of coal and power generation, also a home for big manufacturing industries. It is argued that opportunities in the mining industry will come from coal; chrome; gold; platinum; and dimension stones” (Mabuza, 2011, State of the Province Address, Mpumalanga, South Africa).

It is also important to note that historically such as in 2010, the notion of mining was pivotal to the province as explained by the Premier of the Province: “We are aware of businesses that have pledged billions of investments in the province, particularly in the mining and energy sectors. One refers to initiatives such as the Kusile Power Station, the Sasol Secunda Growth Project, Xstrata Goedgevonden, Anglo Coal Zondagsfontein and BHPBilliton Douglas Middelburg Optimisation Project and many other initiatives presently in progress in the province”. (Mabuza, 2010, State of the Province Address, Mpumalanga, South Africa)

5.5.3. Documents studied presented on issues of capacity

Mpumalanga might enjoy the benefits of capacity government institutional personnel, in particular law enforcement officials as people are reduced by migrating in numbers to other provinces like Gauteng. It may be argued that on average people are migrating from other provinces like Mpumalanga to Gauteng. This is supported by the fact that most of the people are moving to Gauteng and this causes the problems of employment and housing (Makhura, 2016, State of the Province Address, Gauteng, South Africa). “Earlier on Monday, during the early stages of his address, Makhura said that at least a million people settled in Gauteng from other provinces between 2011 and 2016, putting pressure on service delivery and job opportunities in the province. He said an average of 200 000 people moved into Gauteng each year, putting pressure on “jobs, housing, health, education and other life supporting infrastructure” (Makhura, 2016, State of the Province Address, Gauteng, South Africa). This excess capacity may be beneficial to Barberton as suggested by (Hilson & Laing, 2017), in that to work as a team is a collective effort that involves management to make every employee realize their shared and common vision as a collective.

It is also important to note that as specified by the Chamber of Mines (CoM) (2007), theft of precious metals from South African mines and refineries' report, illegally produced gold is also exported to outside countries because of poor coordination and capacity of the relevant government institutions.

A 'Theft of precious metals from South African mines and refineries' report, published by the Institute of Security Studies and the Chamber of Mines (CoM) in 2007indicates the level at which the illegal miners operate and identified three level-five (the exporters of the illegally procured gold) gold smuggling syndicates that were supplied by 17 level-four syndicates operating in South Africa.

5.6. Problems Limiting the Combating of Illegal Mining in South Africa

To augment the above in addition, by presenting the data relevant to supplement further, the following were considered:

5.6.1 Co-ordination

Whilst emphasizing the importance of coordination, Mining Weekly (2014) highlights the need to promote coordination, not only amongst departments and agencies within the Republic, but also to draw from international coordination to facilitate the stamping of illegal mining:

> A universal approach is needed to provide a global, legal and operational framework of understanding and cooperation between the mining industry, government, the community and law enforcement to effectively deal with illegal mining and the criminal links between illicit trafficking in precious metals, other organised crime and the financial support of criminal and terrorist activities at local, regional and global levels.
> (Mining Weekly, 2014, p.3).

5.6.2 Capacity and/or Resources

Another setback to combating illegal mining is lack of adequate resources from the government, since the law enforcement agencies require adequate resources to do their work as expected. “There are limited resources at the disposal of law enforcement agencies to stem illegal artisanal mining, such as police, immigration, border controls and prosecuting authorities” (Chamber of Mines of South Africa, 2016b: 1).

According to documentary sources, despite all efforts to stop illegal mining, an obvious limitation and/or setback, amongst others, is the lack of capacity to root out illegal immigration. Hence, the Chamber of Mines of South Africa (2016a) observes that of the arrested illegal miners in South Africa, 70% are illegal immigrants. This suggests that only an insignificant number of illegal miners (30%) are South Africans and legal immigrants, as presented in Figure 18 below.



Figure 18: Percentage of Illegal Immigrants Engaged in Illegal Mining in South Africa

Source: Chamber of Mines of South Africa (2016a)

5.6.3 Commitment

The issue of commitment is pivotal to good functioning of the government institutions. Even in the face of abundant resources, there is also the need for commitment which

is apparently somewhat weak in combating illegal mining. Mining Weekly (2014, 2) highlights the need to improve commitment: "… the law enforcement system needs to be improved in terms of policing, prosecution, immigration and border control". There is also an urgent need to close loopholes in regulations and laws and administrative actions, as explained by BusinessDay (2015, 21 August: 1):

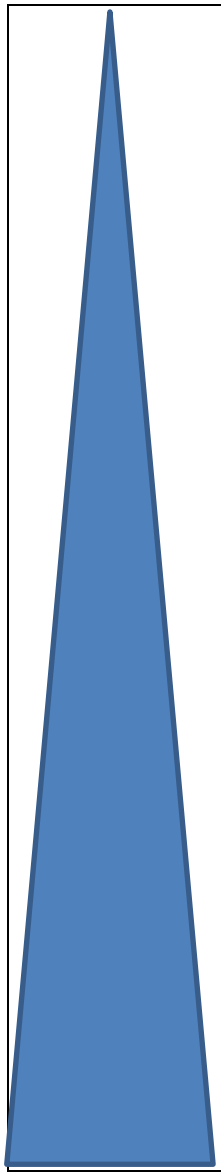
> Lawyer Koos Pretorius said illegal mine workers were 'falling through the cracks' amid underlapping responsibilities among various spheres of the state". …." There is also a lot of ambiguity in the Mineral Petroleum Resources Development Act in terms of what point a mine has to enforce enclosure' … 'Mines that had been put into warehousing for extended periods constituted an open invitation for anyone to come in and engage in illegal activity, he said.

The above comments point to lack of commitment on the part of the state to tighten administrative and regulatory loopholes that pave the way for illegal mining in South Africa. Whilst narrating the issue of commitment by the administrators, News24(2016, 2) indicates that illegal mining is an organised crime which needs the government to be committed in identifying the "big guns" behind the organised activities using the vulnerable youths. This is illustrated by the following quote:

> Livhuwani Mammburu, acting national spokesperson for the National Union of Mineworkers, said that not enough was being done to protect the people lured into illegal mining by "big guns". He said: "In this regards NUM calls on government to intensify efforts to track down the kingpins of illegal mining operations in order to protect the poor from falling prey to this dangerous cycle." (News24, 2016: 2)

Despite the above comment to illustrate that illegal gold mining is a cartel of serious organized crime that operates in a more advanced manner, Table 10 below was extracted from the COM (2007) and indicates the level at which the illegal miners operate.

Table 10: Level at which Illegal Miners operate

	Level Five	where the international buyers sit
	Level Four	the exporter of the illegally procured gold
	Level Three	the local criminal syndicate
	Level Two	The group or gang behind the individual criminal, and these gangs are said to often have arrangements with shift managers and security guards within the mining company, who are paid off to alert those underground to any impending police sweeps or dangers. The gangs provide Zama-Zamas with the necessary equipment and food and water, but 'luxuries', which can include cigarettes, alcohol and prostitutes, are said to be exorbitantly priced
	Level One	The mining company merely deals with the first level, which is the individual criminal miner, which could be an illegal immigrant, a former mine employee, or an existing mine employee. The illegal miners are known as Zama-Zamas, which translates to 'try your luck'.

Source: Chamber of Mines (CoM) 2007.

CHAPTER SIX - REFLECTING ON THE COMPLEXITY OF ILLEGAL GOLD MINING ACTIVITIES IN BARBERTON

6.1. Introduction

The framework of the data analysis is based on the interaction of the data in relation to the literature review and the voice of the researcher. Since the initial stage of data analysis in this study is descriptive, it moved from specifics to inductive and analytical. Thus, the reality was found and then tested against what is already known because this is qualitative research informed by inductive reasoning.

This chapter presents the interpretations and discussions of the findings from the qualitative data in chapter five. The findings are discussed according to the themes that emerged from the data.

6.2 Discussion of results

In data presentation, it was noted that the nature of a single case study that this research is dealing with displayed multi-levels of data. It is based on these multi-layers of data that the data analysis provides for the complexity of the phenomenon under investigation or consideration. The themes used for interviews were sorted into the main themes as previously explained. The sections that follow interpret the findings under four themes: Lack of employer patriotism; Lack of job satisfaction; Lack of human capacity; and Lack of transport and equipment.

6.2.1 Demographic profile.

The findings showed that of a study sample of (N=27), four (4) participants were female while the remaining twenty-three (23) were male and the discrepancy in the proportion is understandable for the mining industry where there are more men than women. This is supported by literature, which cites that, the mining environment is more masculine because it is male-dominated (Festing, Knappert, & Kornau, 2015; Nielsen et al., 2015; R. J. Burke et al., 2008; Eagly & Karau, 2002). It is also important to consider that societal influence plays a vital role in women's involvement in mining activities in South Africa (L. De Beer, Rothmann Jr, & Pienaar, 2012; L. T. De Beer,

2012; Mphokane, 2010). Furthermore, literature mentions that whether formally or informally involved in the mining activities or any male-dominated industries, there are traditional gender stereotypes dictating participation of women (Fraser, 2013; Gyekye, 2013). Literature shows that over decades there are work-related gender stereotypes negatively influence women's career growth in male-dominated workplaces (Lundkvist, 2015; Bruckmüller, Ryan, Rink, & Haslam, 2014; King et al., 2012; O'Neil, Hopkins, & Bilimoria, 2008; Tharenou, Latimer, & Conroy, 1994).

The demographic profile of the study further reveals that six (6) out of twenty-seven (27) participants did not complete formal tertiary education, with three (3) of them with middle-level secondary education which is Grade 10 and the remaining three finishing at Matric (Grade 12). This profile will not influence the data as almost less than half of the participants do not have a tertiary education while less than a quarter of the participants have matric or grade 12 only. Those without matric or grade 12 are less than a quarter of the participants, which is not material enough to make a difference.

6.3 Lack of coordinated efforts, transparency and community development support

Lack of coordination arose from a lack of teamwork. Lack of transparency in decentralizing decision-making and lack of understanding and a relationship of support and development among the mining management and leadership, local government institutions and the general community where Barberton gold mine operates.

6.3.1 Lack of teamwork

Teamwork is often one of the factors that contribute to well-being and order in an institution and assists it to be effective and productive (Bryceson & Geenen, 2016; Kumar & Mishra, 2016; Reeves et al., 2011). Findings of this study show lack of teamwork at all levels of work and lack of interdepartmental governance among people holding management positions in the institutions. The lack of teamwork is not beneficial towards addressing problems of illegal gold mining in Barberton.

Different local government institutions in Barberton with similar responsibilities regarding key performance areas are managed at different ranks or salary levels and authority. The employees of the local government institutions that are higher in rank

and authority tend to take final decisions with ease when compared with those with lesser authority and rank. Low ranking personnel needs to contact head office to finalize certain decisions that were taken in the same platform or meeting with those higher in rank and authority, whereas they are all managers who are heads of local government institutions.

Literature indicates that centralizing decision-making is most cost-effective to every institution (Manikas, Wnuk, & King & Tucci, 2002). Incumbent entry into new market niches: The role of experience and managerial choice in the creation of dynamic capabilities (Shollo, 2015; Dybå, Dingsøyr, & Moe, 2014; Skouloudis & Evangelinos, 2014). On the contrary and for the context of this study, the researcher believes that centralized decision-making is not empowering managers to take prompt decisions and, in some cases, opportunities that can benefit the organization are often missed as a result of delays in decision-making. Although the majority of the participants believe there is some teamwork, it is important to note that most of them were at an operational level and/or ordinary citizens who are not experiencing the benefits and shortcomings of government and mining institutional management. Based on these arguments the researcher is of the view that teamwork is limited and this lack tends to stifle prompt decision-making.

Addressing governance requires attending to social partners and ideas about how to synergize action among them (Kapucu, 2009; Costantinos 2015). Furthermore, to work as a team is a collective effort that involves management making every employee realize their shared and collective direction (Von Krogh, Nonaka, & Rechsteiner, 2012; Gould, 2009; Singh & Kant, 2008; Riege, 2005; Lee & Choi, 2003). This is in line with the findings of this study. Data suggests that the social partners are not working collectively towards a common goal and then creates management challenges and the consequential lack of satisfaction. Existing inequality in ranks or discrepancies of unequal authority, for the same job rank among heads of offices, compromises efforts for teamwork. Situations like these often make heads of local government institutions reluctant to operate transparently since they feel they will be embarrassed by having to refer decisions upstream. This also makes coordination difficult, since certain decisions would not be finalized on collectively agreed stipulated dates provided for in meetings.

Theories of governance emphasize on an understanding implementation of welfare policies (Hansson, 2011; DRAFT, 2001; Stoker, 1998). This implies that governance mediates for implementation strategies for programmes that are interconnected clusters of firms, governments, and associations which come together within the framework.

Failure in executing governance activities in the implementation of mining and neighbouring community programmes lead to heads of local government institutions being perceived as ineffective and unreliable concerning providing support. This is seen in the shortage of vehicles, for example, needed to pursue illegal miners, but where a vehicle is requested from other government departments, those departments have to wait for head office permission and are made to look inefficient and lacking in authority. By the time permission was granted, the vehicles are no longer needed, and the illegal miners have escaped.

The literature review asserts that the essence of governance is its focus on governing mechanisms, which do not rest on recourse to the authority and sanction of government (Sørensen & Torfing, 2016; Folke, Hahn, Olsson, & Norberg, 2005; Newman, 2001; Stoker, 1998). This means that where institutions fail the government must intervene. The governance concept points to the creation of a structure or an order, which cannot be externally imposed but is the result of the interaction of a multiplicity of governing and mutually supportive actors (Mogale, 2003; Stoker, 1998).

Findings in this study show that teamwork is compromised and that affects transparency in dealing with governance issues regarding illegal gold mining in Barberton. Common causes of mutually dealing with coordination mechanisms as a collective effort are also stifled by poor governance activities (Phala, Mistry, & Matlala, 2017; Wolle, 2018; Van Grembergen & De Haes, 2018). This challenge predicts lack of support amongst the stakeholders involved as they will not be confident about having shared objectives to address issues of illegal gold mining in Barberton. This means that the study contends that for appropriate coordination to prevail, there must be legitimate support of all the fundamental key partners, and that depends on transparency in performing functions by all stakeholders. The findings of this study are

not aligned with what the literature portrays for good governance since there appears to be little coordination within the stakeholders involved in dealing with issues of illegal gold mining in Barberton.

6.3.2. Lack of Employer patriotism and low job satisfaction

From the data collected, there are no signs of employer patriotism at all. It appears as though employees are more interested in earning a salary than advancing the expectations of the employer. It is important to draw attention to the data presentation, which indicates that during stakeholder forum meetings, members of SAPS were part of the illegal gold mining syndicates. This finding suggests the existence of a conflict of interest among the SAPS workforce. Possible complications that arise from issues of lack of employer patriotism, low work morale, and conflict of interest could explain lack of commitment efforts (Matsaung, 2014; Aguilera et al., 2018; Kimenyi, 2018; Van Grembergen, & De Haes, 2018).

Furthermore, the document analysis revealed that a need for a universal approach is necessary to provide a global, legal and operational framework of understanding and cooperation between the mining industry, government, and the community and law enforcement. Coordination can lead to effectively dealing with illegal mining and the criminal links between illicit trafficking in precious metals. Coordination efforts can also reduce organized crime and the financial support of criminal and terrorist activities at local, regional and international levels. This requires a shared solution emerging from collective efforts whereby employees of the Barberton government institutions and Barberton gold mines become loyal to their employers and execute their fiduciary responsibilities with their employers to collectively address illegal gold mining in Barberton.

Issues related to low job satisfaction were discovered and that mostly related to being paid low salaries, which is regarded as a potential trigger for attrition in search for better opportunities. This also suggests that where there is a lack of job satisfaction, there is low employer loyalty. Instead, employees or law enforcement officers are seen taking bribes, and some join the illegal gold miners.

It was previously noted within the study that a noteworthy obstacle, as per the commission, is the absence of coordination among government offices and a lack of commitment towards implementing existing laws. The commission's job requires, among others, coordinated activities for the division of mineral assets, among labour, trade and industry, and controllers, authority mining vested parties and the Chamber of Mines (Gernetzky, 2015). While emphasizing the importance of coordination, Mining Weekly (2014) highlights the need to garner coordination, not only amongst departments and agencies within the Republic, but also to draw on international coordination to facilitate an end to illegal mining.

The interviews on document analysis indicate that government law enforcement officials should adequately coordinate amongst themselves with gold mining houses to eliminate these kinds of practices. It is also noted that illegal or criminal mining is now viewed as an organized crime by South African courts (Phala et al., 2017; Van Grembergen & De Haes, 2018). As mentioned above this shift in perception was achieved through proper commitment and coordination of government's security agencies and mining companies by shifting the responsibility of dealing with the battle against illegal mining to the newly established Hawks as they have proper authority to deal with heavily armed illegal gold mining syndicates. Law enforcement by the local government institutions also plays a key role are they are at the centre of the activities.

Lack of job satisfaction was stated in interviews and seen in document analysis as instruments of data collection for this study. This showed a pattern of existence whereby local law enforcement institutions are connected to illegal mining. This indicates a lack of commitment.

6.3.3 Lack of human capacity

The data revealed that the government funds are being rapidly depleted and as a result, vacant government posts have been frozen, and human capacity is a serious matter of concern. Data revealed that there is a severe shortage of human capacity. Some of the law enforcement local government institutions have only one law enforcement officer instead of seven as per their staff establishment. A hiring

moratorium was passed on all government institutions to save money on posts in order to divert funds to subsidizing university fees across the country.

For the government departments in Barberton to become fully operational they need to be well capacitated regarding resources, whether human resources, financial resources or physical resources. According to documentary sources, despite all efforts to stop illegal mining, an obvious limitation and/or setback is lack of capacity to address illegal immigration. The Chamber of Mines of South Africa (2016a) noted that 70% of arrested illegal miners in South Africa are illegal immigrants.

The literature review supports this notion and indicates how detrimental it is to the economy when there is a lack of capacity. For instance, (Brusis, 2003) believes that to make optimum use of the available economic, cultural and human resources requires the efficient use of resources, a high level of public infrastructure and services corresponding to a country‘s level of development, as well as effective anti-corruption policies. Furthermore, Gavin (1993), Torvik (2009) and Gavin (1993) criticize the tendency for governments to invest in projects with high prestige or political payoff but with the little economic rationale or positive benefits.

A further challenge to reducing illegal mining is lack of adequate resources from the government, in particular for law enforcement agencies. The Chamber of Mines of South Africa (2016a) states that "There are limited resources at the disposal of law enforcement agencies to stem illegal artisanal mining, such as police, immigration, border controls and prosecuting authorities." Illegal mining is an aspect of environmental crime and requires resources to deal with it as such, but researchers such as (Bergenas & Knight, 2015) find that common obstacles to fighting environmental crimes include lack of resources and corruption.

If the government could capacitate the police, immigration, border controls and prosecuting authorities to reduce illegal immigration, then the security agencies could more easily stamp out the illegal miners legally residing within the South African borders. While it has been agreed that small-scale miners can play a role, they also lack the enabling capacity. Hence the large-scale miners can support government efforts with their capacity and resources (Hoadley & Limpitlaw, 2004).

Another insight that emerged from the document analysis shows that government institutions in Barberton like the Department of Home Affairs still need to be capacitated to be more functional, including with vehicles and personnel. The reliance on other government departments should be reduced.

Most of the economic migrants in gold mining areas including Gauteng bring problems related to employment, housing and health and education provision, as explained by Premier Makhura of Gauteng (SOPA, 2016). The same kind of influx has happened in Barberton as a gold mining town.

With the increase in residents, whether legal or illegal, one solution may be the increased provision of technical education and apprenticeships. According to Pillay et al., (2012), 93% of a group that was employed claimed that the apprenticeship qualification was an important factor to obtain adequate employment and to manage more responsibility in the workplace. The Barberton mines are well placed to provide such training to the local people.

6.3.4 Lack of Transport and Equipment

Generic observation showed that there is a shortage of vehicles and equipment with many cars in poor condition. The issue of illegal immigration that emerged from the data about the capacity of vehicles and equipment also mentioned the problem of capacity concerning vehicles, which forms the primary source of transportation. This shows that government institutions in Barberton like the Department of Home Affairs need to be well capacitated with relevant equipment. The problem of illegal mining can be dealt with as a project, where members of SAPS and the Department of Home Affairs can be deployed from different areas to Barberton to specifically deal with illegal gold mining and illegal immigration.

Department is forbidden to exchange vehicles and equipment in and across Barberton government institutions according to the data. The literature review revealed that there must be an exchange of resources within the government institutions, and in particular Hood (1991) and some scholars like (Hilson & Laing, 2017) emphasize that

organizations are dependent on each other for the achievement of collective action and thus must exchange resources and negotiate shared understandings of ultimate programme goals. Government institutions tend to work in silos. Furthermore, they work separately with the Barberton gold mines. There is a lack of synergy or collective effort in dealing with the challenges of illegal gold mining.

6.4 Summary

The data from interviews and document analysis indicates a lack of commitment which is positively linked to employer loyalty that results in a lack of job satisfaction and renders employees ineffective. The commitment of the active parties within governance plays an important role in ensuring proper governance to address illegal mining in Barberton. Lack of human capacity and lack of transport, communication, and equipment affect governance negatively resulting in institutions failing to meet their mandates (Koroso, van der Molen, Tuladhar, & Zevenbergen, 2013; Rezaee, 2004). This shortage of resources and human capacity undermines the ability of government to address illegal gold mining. Commitment of employees and management is positively linked with both individual job performance and firm performance in a broad range of settings (Kim, Rhou, Uysal, & Kwon, 2017; Latorre, Guest, Ramos, & Gracia, 2016; Platis, Reklitis, & Zimeras, 2015; Chang, 2006).

Authority relations, in the sense of accepted assignments, must be administered or coordinated by a central agent (Brusis, 2003; Williams & West, 2000; Coase, 1937). Findings indicate that where there is no transparency, there will not be adequate teamwork, resulting in lack of support by all the parties involved in governance. Without good co-ordination, the problem of illegal gold mining in Barberton will not be addressed.

Consistent with the above literature and conceptual framework, the concept of governance and capacity means the lack of political management, lack of proper management of gold mining institutions in terms of knowledge and skills and also capacity in terms of resources. This study suggests a modified governance approach of the integration of the triple Cs in the implementation of programmes to curb illegal

mining because currently there is no co-existence of the triple Cs. Besides, general observation confirms a lack of commitment, capacity, and coordination.

CHAPTER SEVEN - CONCLUSION AND RECOMMENDATIONS

7.1. Introduction

The problem statement narrates the existence of an increase in illegal gold mining activities in Barberton and apparent lack of governance mechanisms by local government institutions to deal with this problem. The purpose statement reflects on possible governance mechanism or aspects to deal with illegal gold mining by government structures.

The research questions for this study are: Why is illegal gold mining increasing in Barberton, South Africa, and the Sub-questions are: What commitment mechanisms may government institutions, and Barberton gold mines found as relevant to reduce illegal mining in Barberton, South Africa? How can capacity of government institutions and Barberton gold mines help to deal with illegal mining activities in the Barberton area?
How may coordination mechanisms be found as relevant to curb the increase in illegal mining activities at Barberton gold mines in South Africa by government institutions and Barberton gold mines? And why lack of integration of coordination, commitment and capacity challenges could curb illegal gold mining in Barberton.

The objective of the research is to understand and explain the underlying aspect related to an apparent lack of governance in institutions dealing with curbing illegal mining activities in Barberton. The themes are grouped to give the conclusion. Following the conclusions emanating from the thematic issues generated in the data analysis, a further reflection was made to discuss the theoretical implications of the study. Consistent reference was made to the theoretical and conceptual framework to link the findings of this study and reflect on the potential contribution to the body of knowledge.

7.2. Conclusion

The components for governance recognized by this study are not entirely upheld by the government establishments in order to guarantee their efficiency and viability towards advancing the curbing of illegal gold mining. The study further concludes that capacity will remain tricky and elusive for the governance of illegal gold mining in as much as resources are not adequately regressed to the relevant government institutions that are not fiscally suitable in curbing illegal gold mining.

Noting from the data, that commitment is central to the existence of the notion of achieving what was intended; the study advised that both the state institutions and the stakeholders with specific reference to gold mining houses achieve better results when committed to working together towards curbing illegal gold mining. Above all data also demonstrated that issues of better salaries and existence of higher employment ranks motivate commitment of human resources holistically. Also, the highest provincial political head, who is the premier, did not show commitment to address issues of illegal mining in his provincial state of address when compared to other provinces like Gauteng and Free State. Issues of capacity concerning human, transport, and equipment were cited to trade off governance of illicit gold mining. Ultimately, there is a need for calming robust governance, the obdurate nature that hinders its usefulness. Given all and sundry of these conclusions which are to some degree related, the study additionally supplemented that coordination of these government institutions is imperative for the governance of illegal gold mining and better tended to, if there is an interface of every one of these elements raised, comprising of commitment, capacity, and coordination.

This study contends that the integration of the 3C’s is an indispensable process for effective proper governance to exist in dealing with the curbing of illegal gold mining in Barberton. The conclusions, as detailed below, are based on the thematic issues, and they constitute building blocks with a connection to construct an argument in order to create a logical flow of the information provided.

7.2.1 Lack of teamwork

Findings confirmed the lack of teamwork between government institutions and the Barberton mines. If there can be proper coordination, commitment and capacity then every participant will be duly motivated. The study by (Setati & Mafunisa, 2015) concluded that employees be allowed to actively participate in decision making in order to reduce turnover, absenteeism and increase productivity.

The major issue is to find ways to make government institutions achieve greater efficiency through the primary objective of managerialist reforms by decentralizing, privatizing, or otherwise offloaded government services as central to the managerialist strategy. This is to close the gap between the different government institution managers with regard to powers in relation to decision-making, salary, and creativity. Further to that is to locate workable frameworks of a private-sector set of techniques and practices that are raised by public choice and market theories, so that both the market and economic factors can derive the need. This means that decentralization can bring decision-making closer to the people where it is needed. Managers who understand the environment can take the most and prompt decisions they operate in, given the continuous changing of the governance environment.

Fundamental to that, it must be noted that no single stakeholder can address the challenge of illegal mining on its own and collaboration is key. The researcher argues that given the challenges attached to gold mining and the benefits attached to gold as a natural resource, the industry individually and through the Chamber of Mines must remain committed to working with other stakeholders to address the challenges of illegal gold mining. The study concludes that the absence of teamwork within the government institutions suggests that there is a lack of coordination.

7.2.2 Lack of employer patriotism and job satisfaction

Fundamental to commitment, it is imperative for the reader to understand that patriotism in this sense means to serve the employer with total devotion, love, and loyalty in order to promote the interests of the employer without any personal gain. In the study, most of the law enforcement officers were not patriotic to their employer and

expressed lack of job satisfaction. The study also revealed that stakeholder organizations are not supported to plan and perform better because of the dependable activities attached to law enforcement to realize achievement of their organizational aims, which is to curb illegal gold mining activities.

In this study, lack of commitment and demotivation was attributed to lack of job satisfaction. The reasons given include the working conditions, stress levels resulting from workloads due to excessive service delivery targets and organizational worker independence to make contributions that are meaningful and considered within the organization the workers operate in. Job satisfaction does not necessarily require a high salary, but there must be a high level of motivation and service delivery productivity. Fundamentally, workloads are attributed to a lack of capacity and coordination. In this sense, lack of capacity was attributed to organizations, human, equipment, systems including resources and their proper coordination including commitment thereof. Resulting from the latter, this study determines that this be due to the lack of interface between proper coordination, commitment and capacity, which is supposed to foster every participant to play their part in curbing illegal gold mining activities with success and be motivated. The study affirmed and maintains that disregarding employee appraisals whether, in monetary value, rank, power or progression (often called logical career growth) was perceived as a form of employee victimization and may often reduce the employee's loyalty. Furthermore, dictating on the duties of employees instead of motivating them can also contribute to a decrease in employee productivity.

Data illustrated that where employees feel undervalued, they may react in different ways, including the loss of drive or loyalty. This demonstrated to lead to reduced productivity and even disruption in the workplace.

The success of most organizations depends on management and employee commitment that is sympathetic to institutional growth to service delivery. This is positively linked to both individual job performance and organizational performance in a broad range of settings, thereby enhancing effective governance.

A cultural expectation of African communities in Barberton is that they should take care of the extended family. The need for additional income led to some people to consider illegal activities. Employers may not be sympathetic to the concerns of their employees. In this perspective, the study suggests that a lack of employer patriotism and job satisfaction indicated a lack of commitment.

7.2.3 Lack of human capacity

It has been noted in interviews that there is a notable lack of human capacity. There is a need for committed people to be capacitated with relevant skills in dealing with the problem of illegal gold mining. Such experience is demonstrated by the document analysis, which revealed that in other places similar cases of illegal gold mining were addressed by the Director of Specialised Crimes Unit, the Hawks, whereas it was not the same with Barberton as a result of lack of capacity in relation to human resources.

The literature review indicates that mineral resources such as gold might have positive impacts for South Africa in terms of economic growth, and it is proper for the state to ensure sustainable growth of Barberton gold mining as an economic growth engine. Where institutions under-perform, the state must intervene as identified by economic forces such as misuse of state institutional funds, audit disclaimers, corruption, mismanagement, and maladministration. The political forces such as the recognition of headquarters to observe issues of loss of voter confidence and hiring of unqualified political party loyalists must note the conditions under which the state can intervene appropriately. Based on this notion of economic and political forces, the study maintains that politicians concentrated on the nature and capacity of the state to advance their political gains and considerations, which may typically compromise service delivery within the public organizations if there is lack of coordination and commitment by both political and administrative management.

The reality is that there are limited resources at the disposal of law enforcement agencies such as the police, immigration, border controls and prosecuting authorities to address illegal artisanal mining. This indicates that there is a common implication of lack of human capacity, which compromise**s** governance, as it would impact both

the coordination of government institutions and their employee commitment and loyalty.

7.2.4 Lack of vehicles and equipment

There is a shortage of both vehicles and proper equipment conducive to combat illegal gold mining activities. Shortage of specialized off-road vehicles suitable for all terrains and handheld communication devices or equipment, especially where cellphone network is not available was a severe problem. The issue of illegal immigration was identified in data analysis. Government institutions in Barberton like the Department of Home Affairs need to be well capacitated to be more operative.

Gold mining towns and cities lack peace and stability as a result of illicit activities connected to illegal mining that lead to social problems and unrest. This suggests the need to increase police visibility to minimize violent crimes and improve overall police performance. This is important because illegal gold mining requires a coordinated response by law enforcement officers that includes policing units to focus on drugs, gender-based violence and gangsterism violence, illicit mining, taxi violence, and other priority crimes.

Data from document studied showed that Mpumalanga Province did not prioritize illegal gold mining as a problem that had to be addressed as it excluded it in its state of province address. Other provinces like Gauteng have included in their state of the province address, a budget for the reduction of illegal gold mining in particular, as being of paramount importance to their development activities and stability. In Barberton, illegal gold mining has not been identified as a key challenge, despite being stated rationally in the Gauteng state of the province address that manufacturing and the energy sectors are also important drivers of economic growth and job creation in the province. These results in mining industry opportunities found in South Africa and Mpumalanga province in particular, mainly from coal, chrome, gold, platinum and dimension stones. This study concludes that improved coordination, commitment, and capacity will promote better job opportunities in existing sectors of economic growth and job creation.

7.2.5 General Conclusions

In summing up, this research concludes that there is a lack of coordination, commitment, and capacity in Barberton, South Africa. If there is proper coordination, commitment and capacity then every participant will be duly motivated. This reflects that the interface of proper coordination, commitment and capacity is critical to curbing illegal gold mining in Barberton, which may be similar elsewhere.

7.3 GENERAL REFLECTIONS

7.3.1 Reflections on the literature review

The data analyzed showed that for commitment, capacity and coordination to sustain government institutions and gold mines in Barberton, there must be an evident existence of governance with norms and values from the participating organizations that are structured around the loyalty of employees. When these employees have developed loyalty to their employers, their inner drive will influence them to have job satisfaction. This study proposes that such attitudes can only be achieved by transformational governance other than transactional governance. This is because there must be a shared vision between all employees of the government institutions and the Barberton gold mines, as well as the communities of Barberton.

Like the situation of Barberton, secondary evidence from literature review chapter revealed that the ordinary citizens of Barberton are not interested in or intrigued by issues of the mines or working in the mines whether legally or illegally. However, the immigrants seem to be interested in illegal mining, as we show in the data. For the economy to become a functional chain, illegal mining has been curbed and be dealt with amicably. The point to note is that the economy of Barberton grew as a settler-based economy from the 1880's (de Grassi & Salah Ovadia, 2017; Hatton, 2015; Weiner, 1991)

This implies that Barberton grew as a town where settlers and/or immigrants came and went for economic reasons to the extent that the environment slowly pushed ordinary citizens away from mining activities because of the vicious the outsiders occupying Barberton. Evidence from literature review noted the socio-dynamics of

Barberton to be described as social poverty as members of the Barberton community do not add value to the formal social economy. They are seen to be just drunkards, and people who are not active in the formal economy as explained in section 2.5.2 under natural resources as a driver to social factors with specific reference to social degeneration and that is the result of enclavity as interpreted (Brown, Esbensen, & Geis, 2013; Gifford, Kestler, & Anand, 2010; Ballard et al., 2005; Weiner, 1991).

The difference is in the positions of groups that take different advantage in relation to the economy. In other words, this means that because one is out of the formal economy, the ability for the person to be out of the condition of poverty becomes difficult. So, you recycle and have activities within the formal economy, but that does not let you jump out of that poverty condition. There should be one thing that takes you out of the condition of poverty and that's when the state intervenes. Otherwise the rich will become richer.

One can take a position that argues that the situation is a result of capitalism (in terms of access to resources), based on the deliberations of (Jeffers, 2005; Zelleke, 2005; Slater, 1987) thus the capital of the capitalists makes the connected wealthier over time (Davanzati & Pacella, 2013; Inderst & Müller, 2004; Norton & Tenenbaum, 1993). It can also be argued in the position of neoliberalism (Bond, 2000; Bond, 2007). The concept generated post-Washington consensus. When you see the generation of ideas you will see that neoliberalism is the socio-economic policy model that transfers or shift the control of economic factors from the public sector to the private sector. In short, neoliberalism is the form of intervention where the state plays a minimal role or does not intervene and suggests there is an invisible hand of the state, where , and privatization takes place (Bond, 2002).

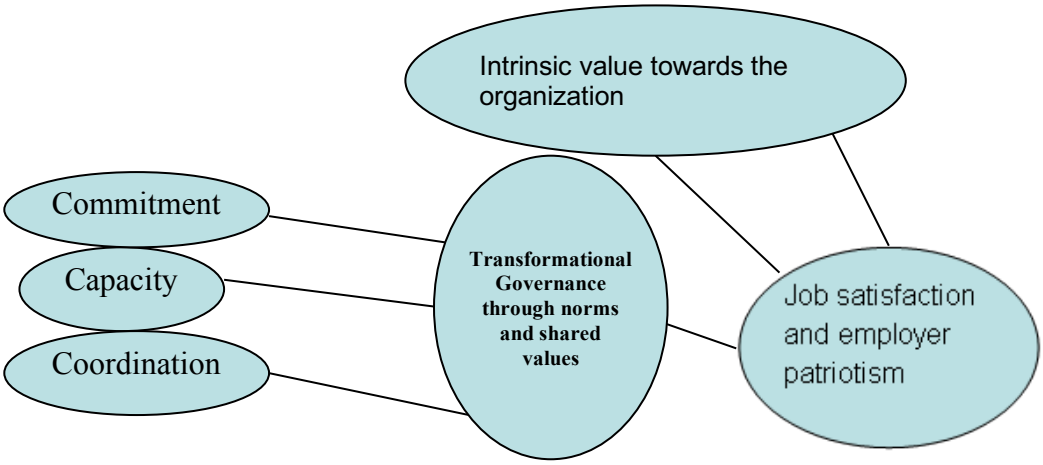
The study revealed that building the qualities and techniques to be transformational, can be practiced as a culture to be instilled in individuals through training and this is in line with literature (Northouse 2016; (Elrehail, Emeagwali, Alsaad, & Alzghoul, 2017; Lowe, Kroeck, & Sivasubramaniam, 1996; Martin, 2017) Transformational institutions recognize their workforce better than the institutions who are just value-based or transactional.

There are four elements that assume a part in the governance procedure: the institution, the supporters or followers, the unique circumstance or context, and the results through strong or solid staff members who must acknowledge how each part influences the governance or administration chain (Siegmund-Schultze, Rodorff, Köppel, & Sobral, 2015; B. S. Black, de Carvalho, & Sampaio, 2014; Shaoul, Stafford, & Stapleton, 2012). Transformation and governance require inspiration or motivation and aggregate push or collective effort to move workers from nothing new to business strange (i.e., business as usual to business unusual) where there are appropriate administration systems or proper governance mechanisms (Vinkhuyzen & Karlsson-Vinkhuyzen, 2014; Ezzamel, Lilley, & Willmott, 1994).

In this case, all employees ought to comprehend the vision of the organization, from the least positioning authority to the most unique positioning or top authority in the governance chain (Teece, 2010). A transformational institution that embraces governance strategies motivate their employees and show appreciation through granting employees promised tokens for good performance (Asrar-ul-Haq & Kuchinke, 2016; Mohamed, 2016; Munir, Rahman, Malik, & Ma'amor, 2012). Institutions also award employees contracts, trade of prizes or awards for exertion or effort, whereby compensates or rewards for good execution of work activities. Where people have not met set targets, standards of administration or norms management by special case ought to be presented as a remedial measure.

The above notion on transformational institutions gives rise to transformational governance as elaborated by (Koroso et al., 2013; Kapucu, 2009; Jeffers, 2005; Bass, 1990; Bass & Stogdill, 1990;). Transformational governance is a form of governance that encourages worker participation with a sense of belonging and eager to add maximum value to the organization (Bass, 1995). Worker participation according is encouraged by promoting the culture of excellence, through progress of learning to, reasonability and essential considering that is reward based which is believed by the researcher to increase job satisfaction and employer patriotism (Micheli & Mari, 2014; Restrepo & Salgado, 2013; Hausknecht, Hiller & Vance 2005; Bass, 1995). Such worker's participation will increase intrinsic value towards the organization they work within**.** In the same token and also as narrated by (Schriesheim, Castro, Zhou, & DeChurch, 2006), this means that transformational governance with norms that are

based on shared values through the interface of commitment, capacity and coordination encourages job satisfaction and employee loyalty and as such employees develop intrinsic value towards organizations, as depicted in Figure 19 below.



Source: Own, 2016

Figure 19: Transformational governance through norms and shared values

The above reflections are based on the study findings. As noted above the underlying issue in Figure 19, is to demonstrate that job satisfaction and employer patriotism by transformational governance. Job satisfaction and employer patriotism are achieved through norms and shared values in organizations with the proper coordination of roles and responsibilities. It is also achieved through appropriate capacity and provisos for human resource and equipment which are all achievable through committed and productive staff and management (Vincent et al., 2015).

The literature review and the data reiterate that the interaction of the 3C's addresses the issues within governance with a peculiar, which interplay the relevance of institutions to intersect imperatives of governance interest, as a platform to sustain a great argument, to enhance socioeconomic transformation of South African society as detailed in section 7.3.1 above. It is for this reason that this challenge is presented with reliance that one shall be delighted of such endeavour and at end to make a strong claim that display an outstanding narrative to explain governance dynamics that

underscore the confluence of socio-economic determinants to challenge the prospects of South Africa's development, with specific reference to gold mining.

Notwithstanding the decision that was solicited in Barberton to help (with artisanal gold mining machinery) the illegal miners to mine illegally and sell to one sole supplier, the situation continued to be problematic as the illegal miners were getting less money per gram of gold when compared to selling to illegal buyers. This was also argued in the literature as suggested in Ghana (Agyapong, 1998; Babut et al., 2003). The point is that for that to be fruitful institutions must communicate and coordinate very well. It is also in this light to note that proper coordination needs proper capacity, which in turn requires a commitment to eradicating illegal gold mining. The study concludes that this illustrates the importance of having the 3C's interface in addressing the challenges of illegal mining in Barberton.

7.3.2 Reflections on the theoretical framework

The contribution of the study to theory is that it provides a guide to the changing world of governance, by providing a window to realize results that are based on effective and efficient mechanisms. Its value can be judged on how best issues of commitment, capacity, and coordination are addressed where there are challenges in a government organization or a specific context.

Although the governance perspective outlined in this study draws on illegal gold mining and government institution experience, it has been framed, argued and narrated in a manner that achieves appropriate resonance with the organizations from other backgrounds and experiences. Organizing and control perspective provides a theoretical contribution at a more general level in providing a set of assumptions and research questions. The framework of the study provides critical features of a complex problem and how to pose questions to examine the perceived realities or apparent substances of illegal gold mining.

The vital position taken by data in this study showed that governance in the governmental (public) and private sectors is achieved through mounting the above mentioned multi prongs as the pillars of governance, necessarily and logically the

successful combination or interface of three factors, namely coordination, commitment, and capacity. Earlier in the literature review, before the data was analyzed, governance as a theory was also seen as being about a reinvented form of government, which is better managed, in this case, to deal with the problem of illegal mining and to govern the governmental institutions better.

Literature review in section 3.3.3 supports the notion of governance by outlining and discussing the issues that result in the three factors namely coordination, commitment and capacity as described above, which constitute the conceptual framework. The governance theory was based on effective and efficient results in creating the conditions for ordered rule (legality) and collective action. However, the major issue is that the involvement or contribution of the governance perspective to theory is not at the level of causal (pivotal or fundamental) analysis, but its value could be argued to be an organizing framework.

These findings possibly illustrate lack of governance (Constantinos, 2015; Koroso et al., 2013; Kapucu, 2009). Lack of governance reflects the inability of government institutional capacity, coordination and commitment within departments responsible for the regulation and enforcement of the eradication of illegal gold mining. Capacity within departments refers to human resources, communication, equipment, transport, and finance, while co-ordination refers to lack of support, teamwork, and transparency; and commitment refers to lack of patriotism, job satisfaction and effectiveness. If effective governance is to be realized, these factors must be interfaced in solving the multiple socioeconomic problems evident in Barberton. The critical point to deliberate on is that governance will not be realized if one or two pillars (of the triple c's) are missing in the linkage to effective governance. In other words, there must be interphase of the triple C's. What is peculiar and interesting in the evidence is when issues of governance showed characteristics of enclavity and those of diffusion of responsibility depending on the positivity or negativity of their relationship towards governance. This is because human capacity employed by institutions in Barberton are behaving and making decisions that favours the mining houses as the owners of capital in the expense of those who are not connected to the capitalist system and a result the marginalized masses end up in illegal gold mining.

Governance propositions justified that governance is a process of governing, or a changed condition of ordered rule; or the new method by which society is governed. The researcher suggests that proper governance in any institution is the result of an interface of coordination, capacity, and commitment to achieve the planned outcomes, which was also confirmed by the data analyzed.

In addition the theory of diffusion of responsibility (customarily called ‘bystander effect', suggests that the higher the number of people present, the less likely people are to help an individual in distress) kicks in resulting from the effects on the escalation tendency (Aizstrauta, Ginters, & Eroles, 2015; Dibra, 2015; Bickman, 1972; Darley & Latane, 1968). This means that when the governance situation is in distress, the theory of diffusion of responsibility takes place. This is because moral obligation regarding contrary outcomes or unexpected outcomes prompts to review level-headedness or prudence since individuals by nature may have a strong need to be precise, correct or accurate in decision-making. On the other hand, literature review demonstrated that administrators are often hesitant to roll-out improvements in policy, because of unnecessary bureaucratic bottlenecks notwithstanding when defied with disappointment or failure (Edwards et al., 2007).

The findings of this study highlight that there is a negative relationship between the theory of governance and the theory of the diffusion of responsibility. This perceived conception result from the possibility that when decisions fail, people may cognitively distort the negative or failed consequences as a disguise to make them appear more favourable instead of changing their behaviour. This cognitive distortion could occur when people attempt to rationalize their actions or psychologically defend themselves against an apparent error in judgment. In simple terms, when government institutions fail, the state must intervene and put them under administration otherwise no one may take responsibility to correct the situation.

What is distinctive about this study with regard to the contribution to theoretical frameworks is that, unlike other studies, the study concentrated on governance issues at a collective or interface rather than in a disjointed manner. Although literature review identifies efforts for escalating commitment for implementation of governance, it is the view of the researcher that governance at a collective level will result in successful

efforts because of solidarity, notwithstanding that the diffusion of responsibility is an issue that is not emphasized in the literature, although it is of considerable theoretical and practical importance.

In light of the above theoretical and practical importance it is necessary to have confidence that in Africa, especially the Southern Africa, the situation of enclavity was approximated by the settler economies in using inward-looking policies (Bhorat et al., 2009; Norman, 2010; Banchirigah, 2006; Alexander, 1994;. Ashton et al., 2001) even though Barberton is a rural economy as previously explained in the background. Rural geographies as argued by some scholars such as (Hammett, 2012), have changed significantly over the past half-century. These reconfigured geographies are denoted as evolving from a productivist to a post-productivist state and second home development has increasingly been implicated as contributing to such change although it currently remains according to Visser (2004) an unexplored phenomenon in South Africa. Barberton remains a tourist destination which may be arguably included in the list of the field known as second homes destinations despite been not considered by such scholars (Hammett, 2012; Marais & Pelser, 2006).

Peculiar to this notion is the social formation of Barberton which showed the features elaborated by (Baran, 1957), as forms of production that are described in the literature review, under section 2.16 as being embedded in an inaccurate fashion. As such, in relation to enclavity, data showed the existence of dual economies in Barberton, considering that literature review of this study also advised, that Barberton had been a settler economy for the past 100 years.

Data also showed the signs of internal divisions whereby workers bearing some origins are preferred over the others as they are connected to the owners of production (capitalists) making them belong to the formal economy leaving others to be marginalized and vulnerable to exploitation. In this sense, there are those connected to the formal economy and those that are connected to the informal economy and this characterizes dual economy and as such enclavity.

According to the subcategories of socioeconomic enclaves, which include the economic, territories with a special economic regime, ethnic and religious, this study

only found ethnic enclaves (Bloch & Owusu, 2012; Zwane et al., 2006). This was found, where preference in hiring and promoting of staff was given to people of Swazi origin (people from Swaziland although Barberton is Swazi speaking due to proximity to Swaziland which is approximately 40 kilometers from Swaziland border). In light of this notion and considering that mines were dominated by European formal structure of ownership, it is suggested that the Barberton society showed characteristics of enclavity.

The marginalization of economic activities arising from the findings of this study, are in line with arguments of other authors such as Mkandawire (2001 & 2011); Bond (2002 & 2007) in addition to Kanyane (2018) and Côte & Korf (2018), in relation to understanding what dual economy with regard to enclavity. These arguments are around historical structural factors that result in the exclusion and marginalization of the majority of the labour force from engaging in productive activities that would result in sustainable increases in living standards Barberton is based on economic legacies and historical structural factors that dictate the dual economy that exists in Barberton.

Such dual economy advocates that those that are connected to the structural system will continue to get preference and benefits of being connected to the structural system than those not connected. As a result, those that are not connected to the structural system are not able to participate in the productive activities resulting in increases in living standards of sustainable in nature, which renders them excluded in the formal labour economy and therefore marginalized even though they represent the majority of the labour force.

This part of the labour force is driven by internal forces, unlike the formal sector labour force, which is more driven by external forces thereby preventing the need for an internal growth and transformation process leading to a change in the status quo. This kind of change in the status quo develops the system that takes the majority of the labour force into the capitalist process of growth. So the above-mentioned part of the study suggests that the existence of governance of institutions result in labour force inequalities and given the capitalist economy driven by market forces, prevalence of characteristics of enclavity are noticed and as such the study suggests the existence of a positive relationship between theory of governance and theory of enclavity. Also,

governance through the triple c's dictates the role players to be all responsible and such responsibility will not be diffused. If one of the triple c's is missing in governance then diffusion of responsibility will be realized. In short, that is the negative relationship between the theory of governance and the theory of diffusion of responsibility.

7.3.3 Reflections on the conceptual framework

From the analysis above, the study concluded that there is a lack of governance. Evidence from the literature review, document analysis, and interviews showed that this lack of governance is a result of lack of the interface between commitment, capacity and coordination. The study provides an organized framework for academics and practitioners with a broadly defined public administration that identifies layers as critical issues to consider when dealing with trends and developments in both public and private sectors.

The study also asserted that Barberton community members are not interested or involved in issues of gold mining, legally or illegally, whether formally or informally. Secondary evidence from the literature shows that such community members (Barberton) are participating in contributing to the value chain of illegal gold mining. Gold mining in Barberton started in the 1880s and Barberton people were structurally marginalized by the owners of production (Barberton mines) from that time until the present. Issues of commitment, coordination and capacity were not recognized and documented collectively as an interface in the Barberton government institutions. The economic and social reality that includes non-employment or underemployment may bring about low life expectancy affects the wellbeing of communities, which is the case in Barberton.

The issues of illegal gold mining in Barberton are argued by this study to be the result from the social, economic and political factors which are shaped by historical factors. As a result, there are historical structural factors that manifest as exclusion and marginalization of the majority of the labour force from engaging in productive activities of a sustainable nature.

The study findings showed low participation in employment and economic activities by the residents of Barberton in the mines, and there was no intervention from the government or other institutions. Where there is continual marginalization, and the capitalists or owners of production continue to become wealthier, then government must intervene to stabilize the situation. The study considers that intervention by government in addressing issues of commitment, capacity, and coordination collectively have not been attempted by the government institutions in Barberton and as such there is the continual exclusion of Barberton communities. This shows that in cases of labour being marginalized in the gold mining towns and where issues of commitment, capacity, and coordination are not collectively addressed as the means of intervention by the government then the situation that denotes exclusion arises. Where there is the marginalization of labour without the triple C's as an interventional mechanism by the government, then exclusion becomes common. As a result of this notion, the researcher concludes that there is a positive relationship between governance issues and enclavity issues regarding the marginalization of labour.

7.4 Reflections on contribution to knowledge

By contributing or adding to knowledge, the primary issue to consider about governance is that before the empirical study, literature already revealed that the triple c's are essential for informing operations of the institutions. The only difference was the lack of integration or intersection of the triple c’s, which are suggestive to be new and innovative ways for running of every institution. The study concluded that the essential issue revealed is that the service delivery improvement of institutions generally requires the integration of the triple c’s. The approach of implementing commitment, coordination, and capacity in silos need to be discouraged from adopting the integration of the triple c’s which is a contribution to the body of knowledge. The other significant contribution to the body of knowledge is that there is a negative relationship between theory of governance and theory of diffusion of responsibility and the positive relationship between the theory of governance and theory of enclavity as demonstrated above on the reflections on the conceptual and theoretical framework and that of literature review above.

7.5 RECOMMENDATIONS

Consequent to the deliberations of the data analysis and literature debates on the issue of legislative frameworks; the study recommends a review and overhaul of policy and legislative frameworks to keep up with the current developments in the gold mining sector in South Africa. This is due to the evidence that showed the absence of the standard operating procedures that government institutions have to follow when addressing such issues of illegal mining as described in the reflecting on the complexity of illegal gold mining activities in Barberton. Furthermore, to ensure proper coordination through stakeholder participation, the government stakeholder forum meetings have to be re-established. Despite these, as part of sustainable culpability, the gold mining industry should make provision to cater financially for prevention, care, and support of the social ills arising from the effects of illegal gold mining.

There is also a need to promote possible ways of the legalization of artisanal small-scale mining (ASM). Illegal gold mining is an industry generating millions of rands, although some authors like (Nhlengetwa & Hein, 2015; Woo, Eberhardt, Elmo, & Stead, 2013; Spiegel, 2009; Zwane et al., 2006; Côte & Korf, 2018) regard it as a highly informalised and pervasive system of production that expresses itself in different forms from illegal gold mining to illegal trade in foreign currency.

As demonstrated by secondary evidence in the literature review, more research on illegal gold mining was carried out, on socio-economic issues, by scholars such as (Ross, 2012; Umukoro, 2013; Lujala, 2010; Ross, 2002), who believe that gold as a natural resources determine the growth and wealth of the country and with proper governance can contribute to the economic development of a country. However, despite many earlier contributions on the other hand (Pritchard, 2013; Torvik, 2009; Ascher, 1999) believe that illegal mining exists out of issues of improper governance.

Although some authors such as Peluso (2018), Mawowa (2013) and Zwane et al. (2006) have demonstrated that in some countries, illegal gold mining is driven by political issues, peculiar to the previous authors there are academics like Merkel and Schipek (2012), who believes that natural resource countries with abundance of gold

are countries with lower entrepreneurial activity, poorer governments, and lower growth.

This study points out that there are existing institutions involved in illegal mining, that are in odds with the current legally recognized institutions as discussed in the literature review. The analysis developed in this study goes beyond earlier characterizations that note, how institutions emerge, as some institutions were illustrious to emerge out of production or socio-political need (Auty, 1990; Cavalcanti et al., 2011; Peluso, 2018). Typically, should they emerge out of production need that means, they can contribute to the economic being of the country (Pritchard, 2013; Lujala, 2010; Barro, 1991), This supplicates the question of legality, for the proceeds of those institutions to be legally recognised as previously argued by Nhlengetwa & Hein (2015) the same way articulated by Perelman (2000) and Anderson (1947) who agreed that the state has often moved in to provide institutions to support regulate and protect legally these gains coercively.

In some cases, industrial concerns have encouraged and promoted the extraction of pockets of industrially uneconomic deposits within their claims by artisanal miners (Nhlengetwa & Hein, 2015). Despite that Nhlengetwa & Hein (2015) reiterated that a shift in thinking could make 'illegal miners' legal. This was based on the notion that gold as a natural resource is regarded as assets but because it is in the hands of illegal gold miners, it's regarded as illegal. This denotes what some scholars refer to, as held resources in defective forms De Soto (2000) as they may be considered to be industries located where financiers and investors cannot see them. Nonetheless, any asset whose economic and social aspects are not fixed in a formal property system is extremely hard to move in the market (De Soto, 2000).

Data showed that there is still a gap in clear consistent way of defining illegal acts like possession of gold as some are found with gold in dust form, so it becomes difficult to punish them as they were mentioned to be equal to cleaners pushing dirt with gold concentrates or traces as part of their rubbish to throw away. This is also consistent with the notion that "…It's not that legal structures are non-existent (De Soto, 2000). They're often there, but they're obsolete, overwhelmed by rapid urbanization, and inaccessible to ordinary people (De Soto, 2000). It was also noted that to attend mining

indabas, where issues of investing in mines are discussed is very expensive for ordinary citizens as it costs around 1750 dollars (approximately R24000) a seat, depending on the dollar to rand exchange rate. In the background, this study revealed that Gold mining in Barberton has existed for more than one and a half centuries since 1867.

In this sense the same findings that the study of De Soto (2000) which illustrates how in the United States of America, pioneers moved and settled informally on land, and built houses and planted crops long before the legal system caught up with them, I argue that illegal miners were mining long before the legal structures caught up with them. Based on this study I also argue that legal systems are not always ideologically neutral, but are dependent on power and influence. This study, therefore, recommends the review of the illegality of gold mining evidently to the economic benefit attached to gold held in defective form.

7.6 Future research

Besides considerations of the abovementioned findings, it is evident, substantial or palpable that to some extent research cannot address every concern or issue. The major or key argument reveals that although the study concludes by giving recommendations, other issues or concerns require further research. This can include issues that were not fully explored by this study such as the impact of open neglected shafts and ventilation pits existing in Barberton and several other old mining places. Additional research should amongst others focus on revenue lost by the government of South Africa in illegal gold mining activities in Barberton that could be used to promote sustainable accountability upon closure of mines.

APPENDICES

APPENDIX A: CONSENT FORM

Dear Participant

This research forms part of my PHD research project. I will appreciate it if you could kindly complete the following questionnaires. You are please requested to tick with an "x" in one of the related boxes. Kindly note that, the confidentiality of your responses is guaranteed. You will not receive any form of benefit for taking part in this questionnaire. I am the principal researcher who will have access to research results associated with your identity. To make sure your participation is confidential; make sure that you did not provide any personally identifying information on the questionnaire.

Questions related to the current research should be directed to me or to Dr Zandamela Horacio. You can reach us in Parktown South Africa via the following address:

The University of the Witwatersrand, Graduate School of Governance, 2 St David's Place Parktown, Republic of South Africa or in my personal address: G1 Golden Groove, Cnr Liepoldt and Oosthuizen, Georgetown, Germiston, 1401.

Regards

Shoki D. Mphokane

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APPENDIX B: RESEARCH INSTRUMENTS

The research instruments used was in the form of interviews and document analysis.

Interviews.

A. Main Question: Why is illegal gold mining increasing in Barberton, South Africa?

A.1. Sub Question: How can commitment of government institutions and Barberton gold mines reduce illegal mining in Barberton, South Africa?

A.1.1. Do you think employees of government institutions (Department of Home Affairs, Department of Minerals and Energy, SARS and SAPS, etc.) love their jobs?

A.1.2. Do you think they go an extra mile to get their work executed?

A.1.3. On a scale of 1-5 how do you rate their love for their jobs?

A.2. How can capacity of government institutions and Barberton gold mines help to deal with illegal mining activities in the Barberton area?

A.2.1. What do you think is needed to execute work easier to ensure that illegal mining is curbed in Barberton area?

A.2.2. On a scale of 1-5 how do you rate their capacity in technical resources?

A.2.3. On a scale of 1-5 how do you rate their capacity in human resources?

A.2.4. On a scale of 1-5 how do you rate their capacity in financial resources?

A.3. How coordination of government institutions and Barberton gold mines is relevant to curb the increase in illegal mining activities at Barberton gold mines in South Africa?

A.3.1. Do you think institutions of government (Department of Home Affairs, Department of Minerals and Energy, SARS and SAPS, etc.) are working together for the good of curbing illegal mining?

A.3.2. Do you think government executives and gold mines executives are transparent in dealing with the problem of illegal mining?

A.3.3. Do they support each other?

A.3.4. On a scale of 1-5 how do you rate their performance?

A.4. Why is there lack of integration of coordination, commitment and capacity in curbing illegal gold mining in Barberton?

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APPENDIX B: SUMMARY OF INTERVIEW ANSWERS

This appendix is provided in two parts to reflect / illustrate the summary of the interviews based on the institutions and participants involved in relation to the major research questions which are related to the conceptual framework of the research / study.

APPENDIX B1: SUMMARY OF INTERVIEW ANSWERS

Institution	Participant	Coordination		Commitment		Capacity	
		Yes	No	Yes	No	Yes	No
Fairview Mine	Identity withheld for security reasons	N/A	N/A	N/A	N/A	N/A	N/A
New Consort Mine	Identity withheld for security reasons	N/A	N/A	N/A	N/A	N/A	N/A
Sheba	Identity withheld for security reasons	N/A	N/A	N/A	N/A	N/A	N/A
SAPS	Identity withheld for security reasons		No	Yes			No
DHA	Identity withheld for security reasons		No		No		No
DOJ	Identity withheld for security reasons		No		No		No
DOCS	Identity withheld for security reasons		No		No		No
NPA	Identity withheld for security reasons		No		No		No

DOD	Identity withheld for security reasons		No		No		No
DOME	Identity withheld for security reasons	Yes		Yes			No

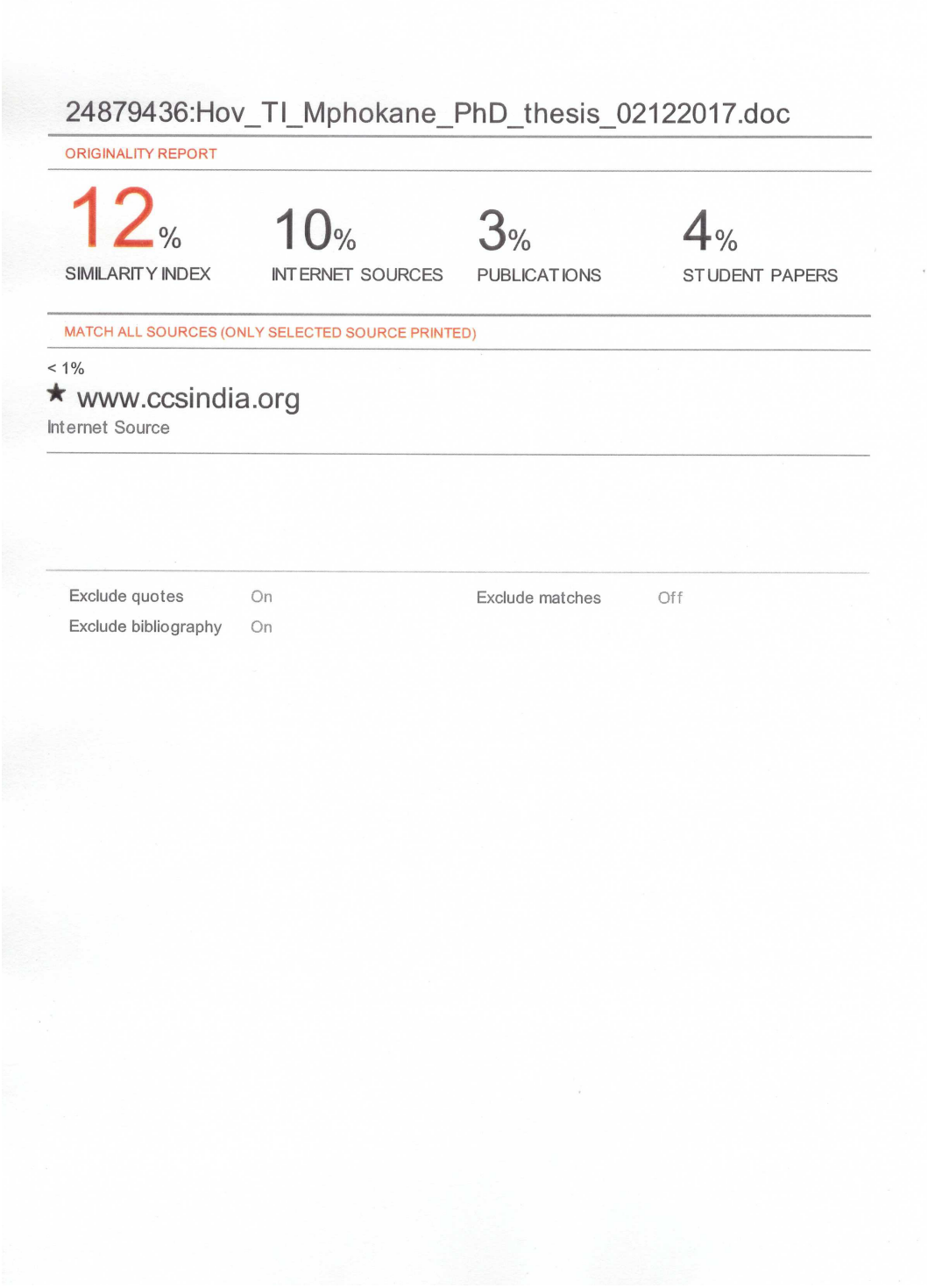
APPENDIX B 2: SUMMARY OF INTERVIEW ANSWERS (CONTINATION)

Institution	**Participant**	**Coordination**	**Commitment**				
COGTA	Identity withheld for security reasons	Yes			No	Yes	
Fairview Mine	Identity withheld for security reasons	Yes			No	Yes	
New Consort Mine	Identity withheld for security reasons	Yes			No	Yes	
Sheba Mine	Identity withheld for security reasons	Yes			No	Yes	
SAPS	Identity withheld		No	Yes			No

	for security reasons						
DHA	Identity withheld for security reasons		No		No		No
DOJ	Identity withheld for security reasons		No		No		No
DOCS	Identity withheld for security reasons		No		No		No
NPA	Identity withheld for security reasons		No		No		No
DOD	Identity withheld for security reasons		No		No		No
DOME	Identity withheld for security reasons	Yes		Yes			No
COGTA	Identity withheld for security reasons	Yes			No	Yes	
Barberton Township	Identity withheld for security reasons	Yes			No	Yes	
Barberton Township	Identity withheld for security reasons	Yes			No	Yes	
Emjindini Trust	Identity withheld for security reasons			Yes			No
Emjindini Trust	Identity withheld for security reasons				No		NO
Sheba Siding	Identity withheld		No	Yes		Yes	

	for security reasons						
Sheba Siding	Identity withheld for security reasons		No	Yes			No
Louwscreek	Identity withheld for security reasons	Yes		Yes		Yes	
Louwscreek	Identity withheld for security reasons	Yes		Yes		Yes	
	Total	11	16	9	18	10	17
		27		27		27	

APPENDIX C 1: SUMMARY OF TURNITIN RESULTS



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