THE COPING MECHANISMS OF WOMEN IN THE MINING INDUSTRY

by

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ABSTRACT

THE COPING MECHANISMS OF WOMEN IN THE MINING INDUSTRY

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Internationally, the involvement of women working underground is a relatively new phenomenon. In the past the mining industry was a male-dominated working environment and it is currently still the case. In South Africa, women were recently allowed to work in the underground mines. However, mining companies seem to find it difficult to meet the needs of women in the underground mine. The challenges relate to a domain historically dominated by men. The mining industry is characterised by hard labour and it is expected that women would experience working underground differently from men. The challenges of women and men are different and their coping mechanisms are not the same.

The research study aims to investigate how women cope under the challenging occupational and labour culture, and health and physical demands inherent to this type of work. By means of the non-probability sampling method, ten (10) women were purposively selected. The research approach in this study is the qualitative approach.

Researchers that use a qualitative research approach are primarily interested in the meaning the subjects give to their life experiences. The researcher made use of the collective case study design to gain insight into the coping mechanisms of women in the mining industry. Semi-structured, one-on-one interviews were conducted as the primary data collection method.

The findings of this study illustrate that women in the mining industry experience challenges with regard to labour, health, occupational challenges, work-life balance, sanitation facilities and sexual harassment. However, the said women use different mechanisms to cope with the challenges they face on a daily basis.

The research results call for the mining industry management to devise ways to meet the needs of women and offer support in response to their daily challenges.

Key concepts

Underground mining

Women

Challenges

Coping mechanisms

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CHAPTER ONE
GENERAL INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

The involvement and the hiring of women in the underground mines and plants of the mining sector in South Africa, under a directive from the Department of Mineral Resources (Minerals and Petroleum Resources Development Regulation, 2004), is a relatively new phenomenon. The Mining Charter, released in 2004 (South African Mining Charter, 2004) and reviewed in 2009, has set targets for increased numbers of women to be employed in the mining sector. However, due to the particular challenges experienced in a sector historically dominated by men, the mining industry has found it difficult to fulfil their obligations. Over the years, men have learned to cope with the difficult working conditions underground and have become fully integrated into the occupational culture and labour demands of the mining sector. It is therefore to be expected that women would experience working underground differently. Hermanus (2007:1) contends that due to these gender differences in the workplace the coping mechanisms and challenges differ between men and women.

The research study aims to investigate how women cope under the challenging occupational and labour culture, and health and physical demands inherent to this type of work. The research results may ultimately assist mining companies to devise ways to meet the needs of women and offer support in response to their daily challenges.

The research was conducted at a mine in the North West Province, South Africa. The core of the mine's business is production of chrome ore and ferrochrome. The researcher specifically focused on the women involved in underground mining. The following concepts are applicable to the study:

- **Coping mechanisms:** Coping mechanisms encompass the ways, means, and methods that can be applied and utilised by workers to endure and cope with the

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rigours of their occupations (survival skills). The *Collins Dictionary* [SA] defines a coping mechanism as "something a person does to deal with a difficult situation". There are negative as well as positive coping mechanisms. However, many people use their coping mechanisms to benefit them in a positive way. Within the context of this study, coping mechanisms are seen as those aspects that women in mining use to function within the mining work context on a daily basis.

- **Mining:** Mining is defined in the Macquarie Dictionary as the action, process, or industry of extracting ores and other materials from mines. It includes any activity that fits the definition of mining, irrespective of whether the activity relates to private individuals, organisations whose principal business is not actual mining (e.g. companies involved in diverse industries), or organisations whose principal business is mining. In some instances, the first stage of processing, known as primary processing, is included. Examples of primary processing include the refining and transformation of ore to its basic forms (Another way of viewing mining is through industry classification, for example, the industrial classification used by the Australian Bureau of Statistics (ABS). The Australian and New Zealand Standard Industrial Classification (ANZSIC, 2006) defines divisions in mining as units that mainly extract naturally occurring mineral solids such as coal and ore, liquid minerals, petroleum, and natural gas.

1.2   LITERATURE REVIEW

1.2.1   History of women in mining

Internationally the mining sector is described as being predominately male; women were traditionally barred from working underground and in the mining sector by law. Before 1994, when the new ANC Government came into power in South Africa, the mining industry was constrained by legislation that prohibited women from working underground. African tradition also precluded women from working in the mines, even in surface occupations (Naicker, 2013). It is apparent that women have to contend with a number of obstacles that prevent them from optimally carrying out their assigned duties underground. Research highlights major difficulties that women struggle with, including inadequate education and, in many instances, the non-availability of suitable mentors; the lack of physical strength and endurance –

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compared to men – which impacts negatively on women's ability to carry out certain tasks; the absence of facilities that cater specifically for women working underground; and the lack of appropriate ergonomics (Hermanus, 2007:1). South African law, through the South African Mining Charter (2004), compels sectors that are male-dominated, such as mining, to increase women's participation and it is taken as a legal compliance requirement.

Internationally the exclusion of women working underground is an historic and global issue. Bradley (1989:109) states that bringing women into previously male-dominated jobs and working environments has been a challenge because of the historical exclusion of women in mining, cultural work shift and legislative restrictions.

1.2.2   Challenges facing women in the mining industry

The researcher is in support of the above statements and argues that the mining industry is historically known as an industry for men, because it is characterised by hard labour, a dangerous environment, risky working conditions, and long working hours. While legislation compels mining companies and industries to employ more women in the sector, it is obvious that there are barriers and challenges facing women's participation in mining (Broad-Based Socio-Economic Empowerment Charter for the South African Mining Industry, 2010).

The physical demands of mining place women at a relative disadvantage as compared to men (Hermanus, 2007:6). There are significant differences between women and men for any given population in respect of physiological capacity, functional strength and anthropometry. These are key factors, which affect manual work and relate to the capacity of individuals who do physical work without becoming fatigued. Men have greater strength than women do on average in lifting and pushing, and turning tools and equipment. The importance of ergonomics cannot be underrated. It is incumbent upon the mining industry to effect changes to accommodate women, failing which mining will continue to be a male-dominated occupation. By the very nature of their physique, female miners cannot always meet the arduous physical demands imposed on them (Hermanus, 2007:6).

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In South Africa, the Employment Equity Act recommends that there should be fair treatment of employees, and those employees should not be discriminated against based on their gender (Employment Equity Act, No. 55 of 1998). The Employment Equity Act promotes equality between women and men. As a result, women now receive opportunities to occupy higher positions in the country and to do the work in industries that are traditionally male-dominated. These laws stipulate that the mining industry must promote equity in the sector in terms of employment and facilitate participation by "historically disadvantaged" groups, including women (Minerals and Petroleum Resources Development Act, No. 28 of 2002).

The same trend is seen across the world (Moyo, 2010:62). As recently as the beginning of this decade, legal systems impeded the employment of women on an equal basis. For example, until recently in Zambia, the law did not allow women to work underground except by virtue of an exemption, which could be granted upon application. In Zimbabwe, there is evidence of a limited number of women working in small-scale mining. Most are involved in illegal gold panning.

The International Press Service report, cited in Moyo (2010:63), published a story of a woman who owns three mines in Zambia where she mines aquamarine, a precious stone. She overcame many obstacles since she discovered the gemstone. The woman explained that cultural beliefs still had a negative impact on women's participation. The cultural norms contend that women are not supposed to go into the mines. There are some myths that if a women goes underground, the stones (minerals) will disappear. It is very clear that based on the above statement, the International Press Service report concurs with Bradley (1989:109) that cultural beliefs also contributed in restricting women from working underground.

Colonial policies of discrimination against women coupled with negative cultural and paternalistic attitudes towards them made it difficult for women to get jobs (Moyo, 2010:62). Another factor was that women had less access to education and training and did not have the skills required in the mines. The historical imbalances in terms of women's access to education, particularly in the fields of science and engineering, are well documented and throughout the region, women are under-represented in

institutions of higher learning. This means that women are not prepared for some of the more technical positions within the mines.

Other challenges reported by Keck and Powell (2000:34-42) are the involvement of women in politics and taking action against their discrimination. Those women started participating in actions that promoted their rights as women. They fought for their right to earn the same salaries as men. Only a few of them considered themselves feminists. They found broader political struggles of interest to them. A few of the women stayed untouchable to the militancy of mining work culture and the impact of the women's movement in the 1970s. It was not long before a small number of women emerged who were willing to hold the company and the union to their original promise that they would be treated as equal to men and be granted equal opportunities in the workplace. Women became active and formed a Women's Committee. Maternity leave was one of the concerns women raised in the committee. The main concern was that pregnant workers did not receive the same treatment as workers who incurred injuries on duty. The company could ask a pregnant employee to take an unpaid leave of absence when the company deems her unable to perform her normal duties. That simply implies that a woman would spend nine to 10 months without a salary until returning to work (Keck & Powell, 2000:34-42). The women found this unacceptable and contradictory to section 11.23 of the collective agreement that required the company to find alternative employment for employees who were unable to perform their regular work owing to age, disease or occupational injury. As a result, many women opted to keep their pregnancy a secret for as long as they could in order to escape from being sent home. (Keck & Powell, 2000:34-42).

The AngloGold Ashanti Report to Society (2006:4) identified the following issues as challenges faced by women in the mining industry:

- Because of a lack of knowledge and experience in mining, women could be placed in positions, often dangerous, which could lead to failure.
- Men are resistant to women entering the mining industry, as they perceive them to be more liable to fail than to succeed.

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- Because there are so few women in the mining sector, especially women in senior positions, newcomers have few, if any, role models or mentors to turn to for advice and assistance.

- In the mining sector, the company could ask a pregnant employee to take an unpaid leave of absence, even though the company is the one that deemed her unable to perform her normal duties, without granting the employee a light duty placement.

- Specific facilities such as crèches, change houses and medical facilities for women are lacking, and personal protective clothing and equipment are not always appropriate for women, for example one-piece overalls.

These findings of AngloGold Ashanti concur with some of the major findings by Benya (2009:129) which were broken down into incorporation, allocation, control, and reproduction:

- Incorporation: Due to the high unemployment rate in South Africa, women have no option but to seek careers in hitherto male-dominated sectors, such as the mining industry. This is in conflict with cultural tradition. Their own families and communities often accuse these women of being promiscuous and unfaithful to their partners or husbands, and this leads to the breakdown of normally stable relationships (Benya, 2009:130).

- Allocation: Women are mostly relegated to low-level or low-status jobs, and pregnant women are not considered for employment at all because they will not pass medical examinations in accordance with legal requirements. Women with a body weight of over 100kg or less than 50kg are not allowed to work underground. Women also find the work physically demanding.

- Control: Male workers often regard their female counterparts as lazy and incompetent. Women are seen as less willing to take risks and as rendering sub-standard work. Men regard this as stifling the work process and are of the opinion that it affects the team's production bonus. Women do not have the option of staying in hostels; they have to commute between their villages and the workplace, and this necessitates transport and the cost involved is a daily challenge.

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- Reproduction: It is not surprising that pregnancy can prevent even a healthy woman from performing effectively in the workplace. Even in women who are not pregnant, back pain and severe menstrual pains are attributed to the often labour-intensive nature of their jobs.

1.2.3 Coping mechanisms of women in the mining industry

In response to the aspects mentioned above, Benya (2009:132) further reports on how women cope on a daily basis in the mining industry. The reported coping mechanisms are:

- Incorporation: Women opt to take employment in the same mines as their husbands.
- Allocation: Some have transactional sex with male colleagues hoping that it will benefit them. They use their femininity and sexuality, as well as their ethnicity in order to cope.
- Control: Women engage in sexual relationships with men in the mine to climb the ladder and get job promotions. They involve themselves in adulterous affairs in order to gain financial assistance from extramarital affairs to be able to pay their bills. Some women adopt a dual persona in order to have an intimidating image towards men and scare them away. Some women opt for jobs that are not labour-intensive. They form strong coalitions with other women, as well as close relationships with fellow miners.
- Reproduction: Getting support from extended family by sending their children home shortly after birth is their coping strategy to ensure that their children receive appropriate care.

Women develop strategies to cope with their day-to-day challenges, after their incorporation into the mining industry (Keck & Powell, 2006:34-2). These women find work-life balance difficult to manage. Having to face the demands of their daily lives, homes and children, many have to survive on meagre earnings, in some instances without any salary at all. As a way of obtaining work-life balance, many women opt to work "graveyard" shifts. Their male partners and older children carry out household duties, and single parents take in lodgers to generate additional income in order to

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finance childcare and other needs. Irrespective of these challenges faced, however, these women regard their jobs as worthwhile (Keck & Powell, 2006:34-2).

Based on the discussion above, one may argue that it is evident that women in mining face major challenges. However, women seem to have mechanisms that they use on a daily basis to cope with their situation. The researcher concurs with other researchers that some of these coping mechanisms border on the unethical, and that this affects families negatively. The question that arises is, what can be done to support these women, and equip them with more ethical coping mechanisms?

1.3   THEORETICAL FRAMEWORK

Feminists maintain that gender inequality is rampant in society, with women the targets of suppression and its associated harmful behaviour. This inequality is seemingly based on the concept of power, mainly wielded by men. While the feminist philosophy seeks the origin and source of gender suppression (Corey, 2009:202), the objective of feminist theory is to establish a platform for women to articulate their thoughts and ideas from and to lessen and deal with the social sciences' preoccupation with male dominance (Mouton, 2001a:37). According to Neuman (2000:82), "it is postulated in pioneering texts that men and women learn and express themselves differently."

"Feminism embodies the lived experiences of women, in particular the negative impact of discrimination. It aims to analyse the social structures that engender this discrimination, which favours men, to the detriment of women" (Babbie & Mouton, 2001:37-38). Tandon (2002:27) defines feminism as "both a proposal for social transformation and a movement that strives to end the suppression of women."

The researcher therefore uses this theoretical framework in order to listen and understand the voices of the women working underground. This allows them to share their daily experiences and coping mechanisms. Patton (2002:129) envisages that the principles of feminist inquiry may include a sense of connectedness and equality between researchers and the researched.

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Patton (2002:129) states that "employers should take note of 'women's ways of knowing', and that reason, emotion, intuition, experience, analytical thought, and cognitive ability are equal to those of their male counterparts." In his study on liberal feminism, Patton (2002:129) states, "liberal feminists claim that through the ages women have been suppressed, marginalised, discriminated against, and relegated to a position of subjugation in society."

According to Rosser (2005:1-2):

> Liberal feminists argue that they do not seek special privileges for women, but rather advocate equal access and rights for all citizens, without discrimination based on gender. They regard the stereotypical mind-set, which influences gender status in society as the reason for the disproportionate level of power and autonomy of men compared to women. Liberal feminists pursue ways and means to remove barriers that prevent equal access for women.

Giddens (2006:469) alluded that liberal feminists channel their energies into establishing and protecting equal opportunities for women through the law and legislation and other democratic ways of challenging issues.

Schwartz and Scott (2010:49) state "feminist theory explores the reasons behind, and feasible solutions to, this stereotypical mind set and its impact on gender equality." This study is in line with this theoretical framework, which has a direct bearing on the challenges that women face in the mining sector.

1.4   RATIONALE AND PROBLEM STATEMENT

Through this study, the researcher attempts to find the answers to the question as to what coping mechanisms women use in the mining industry. A research question is based on the refining of a broad topic into a more specific research question on which data can be collected. Good research is based on certain characteristics, namely how well grounded the question is in the current knowledge base, how researchable the question is, and lastly how important the question is. The importance of the question is measured by the amount of information that the answer to the research question can provide (Whitley, 2002:93-95). The first phase of any research project involves transforming an interesting research idea into a feasible,

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researchable problem. The statement of the research problem should be a clear and unambiguous statement of the object of study (Mouton, 2001a:48). In this research study, women in mining and their actual coping mechanisms are used as the unit of analysis.

The new constitution recommends that there should be fair treatment of employees, and those employees should not be discriminated against based on their gender (Employment Equity Act, No.55 of 1998). This Act promotes equality between women and men. As a result, women are now given opportunities to occupy higher positions in the country and to work in industries that were male-dominated in the past, notably the mining sector. Women are also hired in this sector as a compliance requirement by governing bodies such as the South African National Department of Mineral Resources (South African Mining Charter, 2004).

Given the current labour requirements in the mining industry, the focus of the study is to determine how women cope on a daily basis given the labour and health challenges in underground mining. This is done to generate understanding of their experiences in a man's world of work, what support systems are currently in place to measure their effectiveness, and how these systems can be improved in order to meet the needs of the women and improve their day-to-day work and productivity. The research may benefit both the organisation and the female employees. The women may benefit through the possible support systems that may be put in place following the findings of the study, and that will benefit the organisation with a return on investment.

The research question for the study is thus: **What are the coping mechanisms of women in the mining industry?**

1.5   RESEARCH GOAL AND OBJECTIVES

The goal of the study is to explore the coping mechanisms of women in the mining industry.

The objectives formulated to reach this goal are:

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- To explore the phenomenon of women working in the mining industry.
- To explore and describe the challenges faced by women in the underground mining industry.
- To identify the various ways women cope with labour, safety, occupational and health issues in the underground mining context.
- To come up with recommendations of support systems that may assist women working underground.

1.6   RESEARCH APPROACH

The researcher uses a qualitative approach in this study with the purpose of analysing and transforming data into measurable findings (Patton, 2002:432). This involves reducing the volume of raw information, identifying significant patterns, and constructing a framework for communicating the essence of what the information reveals. The qualitative approach was selected in order to obtain personal data from women in underground mining. The researcher obtained pertinent data through semi-structured interviews and information through direct interchange with the group known or expected to possess the required knowledge (DePoy & Gilson, 2008:108).

The researcher conducted interviews with a group of women in order to obtain detailed information on their daily experiences in mining and their coping strategies. "The value of qualitative approach is embedded in its ability to produce rich and detailed explanations" (Neuman, 2000:126). An advantage of in-depth interviews is that the information garnered from respondents is likely to be unbiased and based on actual experience. Through using the semi-structured interviews, the researcher ensured that responses remain relevant to the study. The themes followed were the experiences and coping strategies of women with regard to labour, finances, health, family life and support systems.

1.7   TYPE OF RESEARCH

The type of research applicable to the study is applied research to focus on the existing problems that women are facing in practice in underground mining. The

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research is exploratory in nature and the questions were designed to elicit from these women their day-to-day experiences, with an emphasis on coping mechanisms as possible solutions to the problems they encounter. Whitley (2002:30) states the results of applied research intend to be immediately useful in solving a problem, thereby improving the conditions within the workplace and society.

1.8   RESEARCH DESIGN AND METHODOLOGY

A research design is a blueprint or a plan that outlines the entire strategy of an investigation to find answers and solutions to a research question or problem (Kumar, 2005:94). Based on the statement the researcher will have a plan and outline of how the study will be conducted in order to answer the research question. The research study employs a case study research design. This is mostly used when the researcher is more interested in a clearly delineated entity (Mouton, 2001a:279). According to Whitley (2002:37), a case study can be regarded as an exploration or in-depth analysis of a system bounded by either time or place, or both. Whitley further notes that a case study is an in-depth, usually long-term, examination of a single instance or a phenomenon. In this research, a case study is used for descriptive purposes in that, as a whole, a description of the experiences and coping mechanisms of women working underground is studied.

1.9   RESEARCH METHODOLOGY

The study aimed to explore the coping mechanism of women in the mining industry. Ten women were selected by means of purposive sampling and the researcher used collective case study research and face-to-face interviews with these 10 female participants. Semi-structured interviews were conducted in which the researcher was guided by the interview schedule to facilitate the process of the interviews. The systematic approach was used, as the researcher obtained a list of all female employees working in the underground mine. This allowed the researcher to gain reliable information from the interviews. The purposive approach was used by selecting a group of women working underground (Silverman, 2000:104). An audio recorder was used to capture the proceedings and data analysis was done through comprehensive and detailed transcripts. The researcher ensured that information

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recorded during the interview was correctly captured to reflect the exact feelings and meaning of the participants. The researcher also followed ethical guidelines during the study process.

1.10 LIMITATIONS OF THE STUDY

10.1 Reluctance

Because the study explored very sensitive experiences of women in the underground mining sector and their coping mechanisms, some women were not free to disclose sensitive information such as sexual harassment issues and their coping mechanisms regarding the specific challenges. They opted not to elaborate on some of the questions. It was evident that they were reluctant or were afraid to talk much about the topic.

10.2 Generalisation of the research results

Because the study sample was small, research results cannot be generalised. The research results can however be used to inform future research in which larger samples can be drawn.

10.3. References on women in mining

The lack of previous research and references on women in mining, specifically in the South African context, resulted in the researcher having to heavily rely on reports and documents available on the internet.

1.11 CHAPTER OUTLINE AND TIMEFRAME

The study comprises four chapters as follows:
- **Chapter 1: General introduction to the study**

The chapter comprises of an overview of the research study where the background of the study is highlighted, the rationale and purpose of the study is outlined, and the structure of the report is discussed.

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- **Chapter 2: Women in the mining industry**

The chapter includes a comprehensive literature study on coping mechanisms of women in the mining industry, taking into consideration the historical developments related to the study

- **Chapter 3: Research methodology and empirical study**

The chapter includes the findings of the study and the analysis of the data collected.

- **Chapter 4: Conclusions and recommendations**

The chapter includes the summary of the study and conclusions and recommendations.

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CHAPTER 2
WOMEN IN MINING

2.1 INTRODUCTION

The mining industry in South Africa remains an important contributor to the South African economy. South Africa is a world leader in mining and the country is famous for its abundance of mineral resources, accounting for significant proportion of world production and reserves, and South African mining companies are key role players in the global industry. The South African mining sector is a key component of the JSE and accounts for 24.7% of the all-share index. In 2012, the mining sector helped create 1,365,892 jobs in the South African economy (Southafrica.info, 2014).

2.2 THE MINING SECTOR

According to the Organisation for Economic Co-operation and Development's (OECD) report on South Africa (OECD, 2013:2):

> The world's largest diamond deposits was discovered in South Africa in the 1860s around the area that later became the city of Kimberley in the Northern Cape Province. it was the labour and capital-intensive deep-level mining in the gold fields that had the most impact on the economic trajectory of the future Republic of South Africa. After British mining magnates pushed the Empire to seize the Boers' territories after identifying the vast mineral resource potential therein - a series of military conflicts between the two nations culminated in the South African War of 1899-1902. The supply of the mine labour became the victorious British colonial authority's priority, and policies were formulated to drive the African population into the developing urban mining centres, without effectively integrating them into society. The long-term effects of these policies were devastating: Sets of assumptions and policies informed the development of segregationist ideology and later from 1948, apartheid.

The second impact of the discovery of gold in South Africa was the rising and formulation of mining companies. In the beginning, the objective of the mining companies was based on obtaining capital with the main emphasis on getting outside investors (OECD, 2013:2).

The mining business began to be affected in the 1970s due to the rise of politics and this had a negative impact on the industry. It was in this decade that mining companies which had previously actively recruited unskilled workers from rural areas outside of South Africa were forced to change their recruitment strategies due to political developments (Economy report Africa, 2013:2). They therefore changed the focus of their attention.

The Organisation for Economic Cooperation and Development (OEDC), (2013:2) further stated that the National Union of Mineworkers was established in 1980, and the first legal strike by black mineworkers occurred in 1984. It was not a coincidence that strikes took place after a great slump in gold prices, which remained a burden on the industry until the early 2000s. In the time of the wage negotiations, the number of illiterate mineworkers was rising and due to better labour representation and global commodity, prices decreased substantially and shareholders increased their pressure on companies. This resulted in an era of massive job losses, starting in 1988, a process that took place almost exclusively in the gold industry where approximately 60% of its workers lost their jobs within a decade. Mining companies declined and this was caused by the isolation of South Africa's economy during the late Apartheid era. Economic sanctions that were blocking inward investments and outward exports forced the mining houses to venture into manufacturing and other sectors. Although this forced venturing and diversifying, it also contributed to the establishment of large conglomerates such as SA Breweries. It also led to a rise in inefficiency. When the Apartheid era ended, the mining conglomerates were broken up by the sale of their noncore assets and new, leaner companies emerged (OECD, 2013:3).

Based on the above literature, it is evident that historically the mining sector has been contributing a lot to the economy of South Africa and it is therefore justifiable to be regarded as the heart of the country's economic development, with its naturally rich minerals and resources such as gold, chrome, platinum, manganese and diamonds. The sector also raised interest from external investors and contributed in lowering unemployment in South Africa as well as empowering women.

2.3   WOMEN IN THE MINING SECTOR

1.2.1   History of women in mining

According to Naicker (2013):

> Internationally the mining sector is predominately male; women were traditionally barred from working in mines by law. In South Africa, much the same situation prevailed until recently. Until 1994, mining law prohibited women from working underground, and tradition prevented women from working in surface mines or in surface occupations.

The mining sector has not yet managed to adequately remove the barriers to women in the sector, and available information suggests that major issues include low levels of education, a lack of workplace mentors and female friendly facilities, physical requirements of women in mining, and poor attention to ergonomics in the mining arena (Hermanus, 2007:1).

International history also illustrates that the exclusion of women working underground is a global issue. Bradley (1989:109) states that the inclusion of women into historically male-dominated jobs has been a daunting exercise. This is because historically they were excluded due to cultural work shift and legislative restrictions. In Britain, women were excluded from working in mines by law, but they participated in strikes and support activities. This exclusion was not universal, however. In Germany, India and Belgium women worked underground since the 20th century. The world wars also led to an increase in the employment of women, including in mines. Bradley (1989:109) further states that women performed heavy duties such as dragging and pushing trucks or covers for coal. They also worked as carriers, weighing, sieving, loading and unloading coal. However, it changed in the 1950s when men started taking over, to a point where in the 1970s only 0.4% of all workers in mining and quarrying were women. In the 1960s in India, women worked in opencast mines, and in the 1970s, Chinese and American women were employed in mines (Bradley, 1989:109).

"With the exception of a brief period during World War II, it was illegal in Ontario, Canada for mining companies to hire women in surface operations. It was an

important event when women were hired as blue-collar workers in the 1970s" (Keck & Powell, 2000:34-42). While the women were not the first generation of women to enter the mining industry, they were the first to enter as permanent workers. The law was changed in 1970, and between 1974 and 1976 Canadian companies hired 100 women in hourly-paid jobs in surface mining operations. This step had a positive impact as it opened up highly paid, unionized jobs in an industry that historically did not employ women. The inclusion of women had significance in a local economy dominated by a single industry – mining – and a labour market shaped by the hiring practices of two multinational mining companies.

Given the opportunity to join the mining sector and challenge the gender division in labour, the experiences of women became extraordinary (Keck & Powell, 2000:34-42). The women who joined the INCO Mine during the 1970s were the first generation of women to enter blue-collar jobs in the mining sector during the post-war period. A few of them were quite aware of the opportunity and that they were breaking into an industry that had been virtually male-dominated since the 19th century. A high percentage of men in the mining industry reflects more than social convention and the historical hiring practices of mining companies. The legislation that prevented the mining companies from hiring women formed part of a series of protective legislation introduced in the late 19th century. Middle-class reformers who viewed the primary role of women to be in the home drove discrimination against women working in the mining sector. Organised labour only viewed women as an opportunity for exploitation whenever they had strikes and used women to support the strikes. Unions also viewed women as a potential threat to male labour. Women probation and exclusion in the Mines was first introduced in the Ontario Mining Act in 1890, cited in (Keck & Powell, 2000:34-42). Women and girls were prohibited from being employed in the mine. However, amendments in 1912 and 1913 allowed companies to hire women in technical, clerical or domestic capacities. The prohibition was lifted temporarily during World War II, but it was not until 1970 that the law was changed allowing women to work at surface sites (Keck & Powell, 2000:34-42).

The Chairperson of the Australian Institute of Mining for the Women's Committee, Donna Frater, as quoted in the AusIMM Survey Report (AusIMM, 2009:1) stated:

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> …the goal of increasing women participation in the mining sector is increasingly moving onto the industry agenda. This is driven both by the recognition that a diverse workforce is an indispensable part of the corporate social responsibility, and the need to attract and retain a broader demographic in order to address the current skills shortage.

Frater further stated that her view in the present situation is that there are special tailor made opportunities designed to drive cultural change and open up opportunities for women to participate in the mining industry. Frater spent 15 years in exploration mining and the resource sector as a Geologist and she concedes that she has benefited from the mining and resource industry and has enjoyed the challenges that she has encountered. However, she still sees mining as an industry that does not always behave in a way that demonstrates an appreciation of diversity (AusIMM, 2009:1). One may argue that this illustrates that there is a long way to go before change and diversity can be achieved in the mining sector.

According to Moyo (2010:61-69) there was discrimination against women with regard to regulations governing their involvement:

> In Sub-Saharan Africa, the evolution of the mining industry during the colonial era institutionalised discrimination against women. The migrant labour systems in most of the mineral-rich countries employed males, and introduced laws that prohibited spouses from living together on the mines.

2.3.1   Employment equity in the mining sector

The mining industry is well known for being male-dominated in the past and is still dominated by men, especially the executive positions. However, there is a shift in order to allow women to occupy executive positions and it is paving the way for women to move up through the ranks. Nonetheless, women are still concerned about the rate at which the development of women in the workplace should be happening. It is a challenge to encourage and enforce change in the culture of the mining sector, and to breach the so-called glass ceiling where career development is perceived as being hindered by the leadership. Companies need to actively encourage, empower and develop women into higher positions in order to gain better equality (Delloitte Women in Leadership & Women in Mining South Africa Breakfast Report, 2013).

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According to the Mine Health and Safety Council Report (2012:11), the greatest challenge in the mining industry has been "to introduce and ensure full incorporation of women into a traditionally male-dominated sector." The second annual Women in Mining conference in 2008 acknowledged that there were significant barriers to overcome in terms of commitments made during the Mining Charter process. The mandate of the amended Mine Health and Safety Act (No. 29 of 1996) "is to protect the health and safety of persons at mines and to provide for effective monitoring of health and safety conditions, which will promote a culture of health and safety in the mining industry." In 1995 during the 12th joint assembly, the International Labour Organisation (ILO) and the World Health Organisation (WHO) committees envisaged the aims of occupational health as follows:

- Promoting and maintaining the highest degree of physical, mental, and social well-being of workers in all occupations.
- Preventing deviation from the set health and safety measures among workers caused by adverse working conditions.
- Protecting workers from risks resulting from factors harmful to their health and safety.
- Placing workers in occupational environments adapted to their physiological and psychological capabilities.

The ILO reiterated the fact that women workers are vulnerable workers with special occupational health and safety needs. This clearly illustrates the need to take into consideration the special needs of women in the mining sector and the need to protect and promote women's health and safety at work by addressing health issues unique to them (Mine Health and Safety Council Report, 2012:11-12).

At the Health and Safety Summit held in 2003 the important issues around health and safety hazards in the mining sector were discussed, and certain targets and milestones were agreed upon to be implemented by 2013. The elimination of injuries and fatalities, silicosis, and noise-induced hearing loss were identified as a priority (Hermanus, 2007:532-542).

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The South African Mining Charter (2004) brought changes for women in the mining industry. According to Mlambo (2011):

> The introduction of the South African Mining Charter in 2002 was instituted to readdress the gender imbalance in the mining sector. The charter required companies to ensure that 10% of their total workforce should be women by the year 2009 as compared to only 2% in the year 2000. The introduction of such laws resulted in a noticeable increase in the number of women involved in artisan mining, to the extent that it is no longer an unusual occurrence to see women in operational roles ranging from miners and tractor operators to plant managers. The charter was successful in ensuring that by 2009 at least 10% of the mining workforce consisted of women. Because of this and other measures in the region, the number of women miners in the South African Development Community (SADC) region is now estimated at 600,000. Although the number of women in mining has increased due to measures prescribed by the charter, legal requirements to incorporate women in mining do not guarantee the equal treatment of women.

However, it is great to notice that the mining sector also felt compelled to comply with the legislation and even though the exact targets were not met, there has been some progress.

2.3.2   Feminism and women in the mining sector

Feminism is described as being concerned with the under-representation of women and women's experiences with the social sciences, both as the subjects of research and producers of theory. Feminism starts with the lived experiences of women and how they have been discriminated against in the society and to analyse social structures that influence women negatively and give men an unfair advantage over them (Babbie & Mouton, 2001:37- 38).

"Feminism is inspired by pioneering texts that argue that women learn and express themselves differently from men" (Neuman, 2000:82). According to Zungu (2011b:4), feminism is seen as "the notion that women are unique individuals with inherent specific health needs". It then gives birth to the following four assumptions that hold the key to the way women's roles within mining must be seen:

- Although women are unique and have special needs, they qualify for the same rights as men.

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- Women can perform duties that were, and still are, supposedly limited to men.

- You do not have to be anti-man to be pro-woman.

- Women do not wish to have power over themselves.

Zungu (2011b:4) further states that the mining sector in South Africa is the heart of the country's economy with its minerals and resources. Letting women into the mining industry has many impacts on the industry, as well as on key stakeholders and the community. The introduction of women in the mining sector also challenges male gender stereotypes and introduces new challenges for mineworkers. With regard to the legislative frameworks related to gender employment, it is essential to note that the history of women in mining has noteworthy legal genesis, which has arisen from a number of landmark legal developments. Significantly, the Minerals and Petroleum Resource Development Act (No. 28 of 2002) encourages the entry of women into the mining sector. The mining sector has been challenged and found it difficult to fully incorporate women in the industry.

The Employment Equity Act (Act 55 of 1998) prohibits employment discrimination based on race, religion, or gender in the workplace. Whilst the law now encourages women to be incorporated into the mining industry, substantial amendments need to be introduced, especially since the mining industry was previously a male-dominated environment. One important area that needs urgent attention is the promotion of health and safety for women in mining (Zungu, 2011b:4-7).

According to Macdonald (2002:5), cited in Macdonald and Rowland (2002):

> The governments were considered to carry legal responsibility when it comes to human rights, but lately those duties are with non-state organisations, for example. NGOs. The prosecution of the crimes against humanity have been on individual basis, which implies that companies are not morally and socially held responsible for these activities, even though they might be viewed as liable organs of society in future.

Macdonald (2004:5), as cited in in Macdonald and Rowland (2002), further states: The same view by feminist organisations is that questioning the legal responsibility when it comes to human rights by traditional public and private companies, that human rights duties are the sole responsibility of governments and their agents. The

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centre of the criticism was that those with less power should be protected more by the human rights function. Most organisations debated that the issues of women abuse should be at the frontline of state institutions. The understanding of the International Human Rights law is to protect the vulnerable from the more targeted agents; it will be ignorant to exclude mining companies from these atrocities. This implies that mining companies should be legally responsible to protect women's rights under the theme of international law.

Women continue to suffer persistent and systematic human rights abuses worldwide merely because they are women. They experience these abuses in the workplace, home, health systems, public domain, and in conflict situations. Women are subject to violence, abuse and discrimination that are often sanctioned or ignored by judicial and political institutions. Although developments in legislation as well as technology have allowed for an increased number of women miners, companies are still not at the level that they should be. Companies have viewed reaching the 2002 South African Mining Charter's 10% quota for women as a goal that, once achieved, needs no more attention in terms of continual empowerment and employment of women in the mining sector (Macdonald, 2002:5 in Macdonald & Rowland, 2002).

2.3.3   Challenges faced by women in mining

According to the Centre for Sustainability in Mining and Industry's (2013) Annual Report, the Programme Manager in Occupational Health and Safety at Wits University, Dr Govender, stated the following:

> …in the 1990s, women were allowed to enter the traditionally all-male world of underground work in South African mines. It is time the industry and authorities reflect and take stock of the consequences of this decision by informing the way forward. Women face particular dangers when working underground, many of which are not openly discussed with a view to a sustainable solution. These dangers include the rape and murder of women while on duty underground, as recently as 2013 (*Centre for Sustainability and Industry Report*, 2012). Less dramatic, but equally important, issues that relate to the sustainability of technology are protective equipment and underground facilities. Gender attitudes and work organisation and design also affect the health and safety of women mineworkers. Due to the high unemployment rate, many women have opted for underground jobs previously performed by men.

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Dr Govender (Centre for Sustainability in Mining and Industry, 2013) further stated the government policy now allows women to work underground but that does not simplify this matter and the implementation thereof. The direct and indirect results of this, are not going to be responded to by the policy, there is a need to go beyond the policy for women at the workplace. This information can then be used to inform us with the practise now and in future.

2.3.3.1   Challenges of societal perceptions

Since women in the industry are a new phenomenon, it also comes with a number of challenges. According to Martin and Barnard (2013:1-12), women in the mining sector face challenges that differ from those who work in more gender-balanced and female-dominated occupations. These challenges affect their employment retention and career success. The challenges women face when trying to penetrate and settle in the mining sector prevail in the family and in society. Irrespective of workplace gender equality and empowerment, a traditional male-dominated structure still governs the household unit (Hartmann, 2010:54-62). These traditional stereotypical roles and expectations are extended to organisational policies and practices to maintain women's marginalised work roles and to entrench them in a gender-biased organisational culture. Women and men have different experiences with regard to workplace challenges. Men live in a very different world to that of women. Generally, a desire for status, power and social comparisons drive men. On the other hand, a desire to do a good job and contribute to organisational functions motivates women (Davey, 2008:650).

Davey (2008:650-671) envisaged that "typical masculine behaviour in a male-dominated environment is equated with success. This behaviour includes political game playing, aggressiveness, point scoring, and overconfidence, backstabbing, and unfairly blaming women for their failures." In order to cope in a male-dominated environment women rely on mentorships and they adopt participatory leadership styles, such as being caring, fair and encouraging. Many women find adapting to the male environment unattainable and the negative attitudes from men in accommodating them difficult to deal with. The lack of understanding on the part of

the mining industry in general seems to add to the poor integration and advancement of women in historically male-dominated occupations (Martin & Barnard, 2013:3).

The authors above further identify unique challenges that women face in male-dominated occupations. The unique challenges that emerged are two-fold. Firstly, the male-dominated environment seems to maintain the gender-segregated status quo formally and covertly. Secondly, women have unique physical, work-identity and work-life balance needs that challenge their ability to function easily in a male-dominate environment. Martin and Barnard (2013:6) report the following unique challenges:

- **Resources that are inadequate and infrastructure and policies that are biased**

Women are mostly unaware of the policies or practices that aim to improve their integration and accommodation in the workplace. Instead, the existing infrastructures, resources, and policies are made to best suit male employees and not women. Women struggle with inadequate basic facilities and resources, such as a lack of change houses and lockers to change into their overalls, and have to carry heavy gumboots home due to the lack of lockers available for women.

- **Spill over of stereotypical gender role expectations that relate to women**

Stereotypical and traditional gender roles of women still exist in the workplace and in society. The very idea of women defying traditional cultural norms and embracing gender-atypical roles remains contrary to the traditional roles of women among their family members and colleagues in the workplace. This results in a lack of social, emotional and work support.

- **Lack of transformation due to male resistance and prejudice**

Women report that the accommodation they receive from men is not genuine in nature, irrespective of the organisation's efforts to incorporate them into the mines. They experience vindictive and non-supportive behaviour from male colleagues.

- **Physical and health-related difficulties women experience**

The structure of the female body and the hard labour work, coupled with hormonal cycles, add to the emotional strain of working in a male-dominated occupation. For example, one cannot ignore women's monthly menstrual cycles, because they tax

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women's bodies with fatigue and pain. There is nothing in place to help women cope. Women's unmet physical needs have negative effects on their physical and mental well-being.

- **Negative work identity perceptions**

Men lack confidence in women's competence and this exacerbates negative self-perception, low self-efficacy, and low self-esteem in women. Although none of the women in male-dominated industries intended to leave their male-dominated occupations, they demonstrated a reluctance to progress into the more intensely competitive male roles because of negative self-perceptions. They rather opt for less physically demanding roles whilst remaining in male-dominated environments.

2.3.3.2   *Social and emotional challenges*

- **Work-life balance**

Women's roles emerge as a source of conflict, because they regularly need to balance being primary caregivers with being executives. Even without children and spouses, women in male-dominated industries still emphasise how their prominent roles in their households tax their work commitments, and vice versa. Women feel that their domestic responsibilities inhibited the pace of their career progression compared to that of their male colleagues. They also acknowledge that career advancement and achieving work-life balance are mutually exclusive. This means that they have to neglect aspects of one in order to focus on the other (Martin & Barnard, 2013:6-7).

Zungu (2011b:15) highlights the general occupational challenges faced by women in the mining industry and further states that the Mine Health and Safety Act and ILO standards aim to promote decent working conditions for all women. The mining industry has a moral obligation to promote and maintain health and safety in the workplace, with a focus on the prevention of occupational injuries and illnesses among the entire workforce (Minerals and Petroleum Resources Development Act, No. 28 of 2002).

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2.3.3.4   Environmental challenges

Occupational heat stress is regarded as a health and safety hazard in South African mines. Occupational heat exposure has serious negative impacts that can lead to impaired work capacity. It can also lead to heat stroke. (Schutte, 2009 cited in Zungu, 2011a:16). According to Zungu (2011:b16), a hot environment in South African mines means:

> …any work environment where the dry-build temperature is higher than 37 degrees Celsius. With regard to women in mining, careful consideration to gynaecological conditions and pregnancy in relation to environmental heat stress is crucial. In addition, pregnancy involves altered hormonal levels, changes in fluid balance, and increased circulatory demands.

2.3.3.5   Physical and health challenges

- **Lifting and bending**

"There are technologies in place that are meant to address some physical challenges in the underground mine, however many tasks remain physically demanding" (Heine, 2008:39 cited in Scheepers, 2013:20). The labour-intensive work that women engage in on a daily basis may lower their production rates (Benya, 2009:198). Zungu (2011a:18) highlights the need to raise women's awareness and knowledge about the safety limits for both men and women, management and staff when it comes to lifting objects and bending. This information will be useful in preventing lower back pain and other muscular/skeletal disorders among women working in heavy-duty industries, such as mining and construction.

- **Reproductive hazards**

"Women are found to be unsuitable for certain mining jobs due to their biological composition. These includes pregnancy, breastfeeding and menstruation cycle that poses certain medical and health risks such as like their tolerance to handle heat" (Fielden et al., 2001:299 in Scheepers, 2013:10). Reproductive hazards in women in mining are related to exposure to chemicals and physical or biological agents that can cause either reproductive impairment or adverse developmental effects on foetuses. Certain cultures take a female's ability or inability to be reproductive very seriously. Since the woman is usually blamed for couples' reproductive problems,

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this issue makes women of childbearing age in mining more socially vulnerable. Toxicants that have an effect on reproduction are evidently more important for women in mining than for their male counterparts. The South African legislation in South African mines is that pregnant female mineworkers are not permitted to work underground and consequently they should be accommodated on the surface. If this is not possible, they are given an option to go on unpaid leave until their maternity benefits commence. This is for the benefit of their personal health, as well as that of the unborn child.

However, there is another challenge that is brought about when a female mineworker is not aware of her pregnancy. She continues to work underground and is exposed to hazardous chemical substances that can have an adverse effect on the unborn baby (Zungu, 2011b:20). According to the Department of Minerals and Energy's (DME) annual report (DME, 2010), the majority of women in the mining sector are at childbearing age. These women are at risk of being exposed to hazards that may negatively affect their ability to conceive or give birth to healthy babies, or in a worst-case scenario, they may miscarry. It is crucial that women receive health education in order to recognise the early signs of pregnancy (DME, 2010).

- **Body protection / Personal protective equipment**

According to the Mine Health and Safety Act (No. 29 of 1996), women are required to wear specific personal protective clothes as identified for their daily tasks. As stated in Benya (2009:107), the design of personal protective equipment's was for centuries suitable for the male body shape and excluding the females. The women in Mining have different needs for Health and Safety due to their physical properties being different to their male counterparts. The recent introduction of women in mining also adds to lack of data published for Health and Safety issues relating to women. The reviews on literature has concluded that the safety clothing were design for male physique in industries such as Construction and Mining. This question is then asked how this equipment will protect the female physique if the designs were not for their bodies, and this relates to total productivity of these female employees as well.

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A review of literature showed that the selection, provision, and use of personal protective clothes in the workplace should not only be based on hazard identification and risk assessment, but should incorporate ergonomic and comfort aspects to guarantee personal protective equipment efficiency for all workers (Mine Health and Safety Council Report, 2012:8). Generally, personal protective clothing is the last-level hazards measure to protect workers from exposure to workplace hazards, and as such, it should be carefully selected based on the nature of the hazards in the workplace, the extent of risks associated with hazards, and differences with regard to men and women (Mine Health and Safety Council Report, 2012: 8).

According to Benya (2009:107): The recent introduction of women in mining brings with it complications of the protective equipment. The fittings are supposed to be ergonomical for the user, for comfort and manoeuvrability. The facilities like toilets, made it difficult for women to change comfortably like their male counterparts, this in turn makes their breaks longer than their male counterparts due to the nature of the protective equipment designed for male physical properties. This is time consuming and should be addressed as such when designing the female equipment.

The Mine Health and Safety Council Report (2012:61) sets out numerous health and safety challenges experienced by women in the South African mining industry, relating to the different types of personal protective clothes and equipment:

- **Body protection (overalls)**

Women feel that they cannot fit in overalls and they do not find them comfortable. They complain that they are too tight in certain areas and difficult to take off when using the toilet, especially the bodysuit overalls. In some instances, where overalls fitted well over the hip, the top would be oversized and sleeves too long given that the current protective clothes used by women were designed for men, thus making the female worker feel very uncomfortable (Mine Health and Safety Council Report, 2012:61). The PPE used in the mines is generally designed for men (Heine, 2008:56 cited in Scheepers, 2013:10).

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- **Hand protection**

As stated in Zungu (2011b:21):

> Women reported that the gloves were hard and oversized. They had long and wide fingers and thus looked and felt clumsy. In addition, because they are oversized they are ill fitting and do not allow for a good grip on equipment and tools.

- **Hearing protection**

Women complain that they experience ear infections because of using earplugs. Some women have small ear canals, thus one-size-fits-all earplugs are too big to provide good hearing protection. Zungu (2011a:21) points out that "long hair and clothing used by women miners to cover their hairstyles result in excessive sweating due to the high underground temperature, and this also worsens the problem. Ill-fitting ear protection might cause middle- or inner-ear infections."

- **Eye protection**

In South African mines, safety goggles are used for eye protection against various hazards and are available in one size only. This poses a challenge to women in mining as they have smaller facial structures than men, thus causing problems with fit and comfort. Women reported that they had to constantly adjust the goggles as they were slipping, especially when they were bending forward whilst working (Zungu, 2011a:21). Women also reported that they constantly suffer eye infections, because of using poorly fitting eye protection or safety goggles.

- **Gynaecological disorders**

Gynaecological disorders are very common in women in mining; this is due to exposure to extreme heat conditions that affect their health (Zungu, 2011a:21).

- **Underwear**

As stated in Zungu (2011a:21), female under garments are also in question here, most females used Nylon stretch pants to prevent friction caused by the overall fabrics and the skin of the inner thighs and also to cover the lower back during bending activities. These under garments are also used as a protective layer should one suffer a health related incident like heat stroke, when there is a need to ventilate the victim.

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The findings in the *Women in Mining* guide (Lonmin & International Finance Corporation, 2009) are similar to the above-mentioned challenges. Given mining's male-dominated history, the physical environment is often not accommodating to women. Failure to put appropriate infrastructure in place before introducing women to the workplace would make accomplishing the task harder as it would make women uncomfortable in an already uncomfortable environment.

- **Sanitary facilities**

According to the *Women in Mining* guide (Lonmin & International Finance Corporation, 2009), problems with access to sanitary facilities often poses problems for women who work in the underground mining context. When these facilities exist, they are often designed in such a way that they serve a purpose for both genders. Privacy may be a problem and the cleanliness may not be of a good standard. It may also happen that there are no specific facilities for women underground, exactly as mentioned by the research participants. They then have to walk far. Lack of running water and disposal bins for sanitary towels add to the problem.

It may even happen that the women working underground consume less liquids to avoid having to use bathroom facilities. This may contribute to health problems, especially due to the hot working conditions that result in losing bodily fluids as well. Women also reported the lack of hand washing facilities after using the toilet underground, an additional risk factor that promotes the transmission of infections.

2.3.3.6 Resources

The *Women in Mining* guide (Lonmin & International Finance Corporation, 2009) further identified the following challenges:

- **Underground toilets**

Miners work eight hour shifts underground and toilet facilities for women are a challenge. Women find it difficult to share ablution facilities with men. This has a negative impact on the efficiency of women under already difficult working

conditions. Separate underground toilets for women should be constructed and measures must be introduced for the disposal of sanitary waste (Zungu, 2011a:21).

- **Transport arrangements for women mineworkers**

Women are afraid to travel long distances to and from the workplace. It is incumbent upon the mining industry to provide safe transport for their female workers (Zungu, 2011a:21).

- **Cage protocol**

Both male and female mineworkers are obliged to share the limited space in cages. The cages are used as a means of transport down to the shafts and back to the surface. This also promotes sexual harassment, which comes in different forms, namely verbal and physical harassment. Physical advances occur frequently inside the cages (Zungu, 2011a:21)

2.3.3.7   *Cultural and operational challenges*

According to the IFC Women in Mining Report (2009):

> As mining has traditionally been a male-dominated environment, cultural and operational factors become particularly challenging in the process of integrating women into the workforce. Mining is undoubtedly a physically strenuous occupation, and the difficulties pregnant and breastfeeding women experience when working underground pose operational challenges that cannot be ignored.

In addition, the lack of career development support for women in mining can be directly attributed to the restrictive mind-set that mining is not a place for women. The AngloGold Ashanti Report (2006) that women do face challenges with regard to access to suitable ablution facilities underground indicated it. Older employees expressed their opposition to the employment of women in the underground by their resistance to set up suitable toilets or change rooms for women. Protective clothes that all miners are required to wear when they work underground includes one-piece jumpsuit overalls which women feel are not user-friendly, because a woman needs to remove the entire suit in order to use the toilet. Amongst other challenges is the high temperatures underground. It is a known fact that all miners are exposed to

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heat, but women in particular are at a disadvantage at least once a month during their menstrual cycle. Their body temperature gets higher than normal during this time. The advantage that men have over women with regard to high temperatures is that men can choose to work bare chested, but women do not have the same privilege as it is unethical for women to reveal their bodies. This simply means that whilst all miners may experience discomfort in the heat, women's physical and biological makeup ads to their disadvantage (AngloGold Ashanti Report to Society, 2007).

The 2007 AngloGold Ashanti Report further stated another challenge, namely inadequate and inappropriate housing for workers. Due to the unavailability of suitable accommodation closer to work, women find themselves having to commute from their homes to the mines and back every day. Transport is also a challenge. This concurs with the findings of Benya (2009), namely that women in mining reported that they have to rise as early as 02h00 in the morning in order to get ready and find transport to take them to work. The mines work on a shift system and as a result, failure to make it to work on time means one has to finish late and get home late. Overall, women miners work longer hours than men do because they are still responsible for their families and house chores after work.

2.4   COPING STRATEGIES OF WOMEN IN MINING

According to Martin and Barnard (2013:7-8), women in mining use the following mechanisms to cope with difficult circumstances underground:

- **Appreciation of feminine advantage**: Some women use to their advantage the effect their femininity has on male co-workers. They assimilate this knowledge into their working environment. It seems that women rely on their femininity to cope with the challenges relating to male-dominated occupations. That means their femininity becomes a coping mechanism.

- **Adopting male characteristics**: Women frequently adopt male characteristics, such as using inappropriate language and aggressive verbal and non-verbal

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behaviour, in order to gain acceptance and to alleviate the difficulties they endure in a male-dominated environment. This means they adopt intimidating characters to scare the men and use this change of personality as a coping mechanism.

- **Mentorship**: Women rely on mentorships for support and guidance in order to achieve career success in the organisation.

Benya (2009:130-131) concurs with some of the findings stated by Martin and Barnard (2013:7-8). The findings revealed that women adopt survival strategies that often involve their femininity. Some women get involved in relationships with men and engage in sexual relationships in order to get ahead and be promoted. It becomes acceptable to women and there is a common and mutual understanding that sexual relations are one of the ways in which they can cope at work. There is a complete rejection of the negative connotation of transsexual relationships and instead they are seen as a means to survival. Women are usually the ones that initiate these relationships to engage in sexual intercourse in exchange for money, gifts, transport, and promotions at work. Having sexual intercourse with a shift boss also benefits women, in that their workload will be reduced.

According to Ngai (2005:141), cited in Benya (2009:128), sexuality as coping mechanism is also used in China by women in Mining. Referred to "Sexualised Bodies" because most view by is that women's body is sexual. There is a possibility of sexual favours or trade when there is money involved as well. The parties involved recognise that these relations are not permanent and they therefore cautiously stabilises their home relationships. The majority of them are married. Most women find working underground challenging, but because of the scarcity of overall job opportunities they have no option but to take the job. They adopt coping strategies and body survival skills. For example, they sometimes deliberately fall pregnant in order to be moved from an underground to a surface position. Even though it looks like an advantage, it sometimes creates problems if it does not always yield positive results. Sometimes there are no positions available on the surface and these women are faced with an even more challenging situation of having to take unpaid leave until they give birth. Breastfeeding women may take up to a year and a half before they can return to work. Some women therefore opt to control their bodies and

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prevent themselves from conceiving in order to keep their jobs (Benya, 2009:130-131).

Women use age as source of power to cope underground. The older women use their age to gain acceptance from team members. Mineworkers accept them as adults who must be respected by teams. They use their age to avoid being placed in heavy duty and labour-intensive duties or treated with hostility. Women use this as an escape route and it works for them in order to tap into this form of strategy, as even male miners still firmly abide by traditional views of how to treat older women (Benya, 2009:130-131).

Women with fuller figures also use their bodies to their advantage underground, as they are more respected by men. They are more respected not only as workers, but also as women. Men call them "real African women". This often wins them favours from men. Women also use what they called "professional bribing" whereby the female mineworkers bring members of their team cold drinks and meat when the crew performed well. This is done to gain cooperation between female and male team members (Benya, 2009:130-131). This simply means that women use their "African trademark" of fuller bodies as a survival skill and coping mechanism.

Another strategy used is to demonstrate that they are competent in fulfilling their duties. Women are willing to learn from their male counterparts. It becomes easier for the men to accept and respect the women mineworkers. This includes being able to provide them with the material they need for the work, on time. Men tend to disrespect women who lack knowledge of particular jobs. When women demonstrate their respect for men this also helps them gain cooperation from their male team members. Fetching water for the men and communicating with them in a respectful way go a long way towards gaining acceptance. If they want to trade favours with women, the women should also play along to gain favours (Benya, 2009:130-131). This means that collaborative working relationships, competence and respect are used as survival skills and coping mechanisms by women in the mining industry.

Other mechanisms women use to cope in male-dominated environments are mentorship and adopting participatory leadership styles, such as being caring, fair,

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and encouraging, among other things. This is in line with the notion of women being expected to exhibit behaviours that are consistent with the female sex. Conversely, in order to cope and compete in a predominantly masculine environment, females reported having to adopt certain characteristics and act in an atypical manner, such as self-seeking and individualistic behaviour unrelated to organisational success (Benya, 2009:130-131).

One may argue that it is compulsory for female miners to understand the culture of a male-dominated environment in order to adapt to the environment. In the end that will influence women's choice of behaviour in the mine. According to Davey (2008 cited in Martin, 2013:35), the masculine agenda creates a dilemma for women and they try to resist and accommodate in some cases. Where women take a high moral route, subsequently it makes it difficult to maintain a self-identity, which is positive. The easier route is to engage in the male agendas, to achieve belonging and hence the exposures to selling out from different rivals and they will also condemn some activities personally

According to Martin (2013:35), it is easy to maintain female type behaviour and avoid the male stereotype characters by many women. To avoid being called deviants they maintain their identity as females. They would go along with stereotype labelling preferring to avoid conflict management. There is also a negative side because once viewed stereotypically, and then the promotion advancement is limited. The majority of males will not admit to recognising these negative characterisations towards females, and this is consistent with the values attached to aggressive stance when dealing with problematic situation

Women resort to strategies such as rejecting gender discrimination in order to cope in the male-dominated environments.

2.4   THE ROLE OF EMPLOYEE ASSISTANCE PROGRAMMES

The Employee Assistance Programme (EAP) is defined by the EAPA-SA Standards (2005:6) as a work site based programme that is formulated to assist in identifying and resolving productivity problems that are associated with employees impaired by

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personal concerns, but not limited to health, marital, family, financial, alcohol, drug, legal, emotional, stress or other personal concerns that may adversely affect employee job performance. EAPs are used as a part of the business strategy to enhance employee's social and personal functioning, loyalty and performance in organisations around the world.

The EAP is also defined as a programme that is aimed to assist work organisations in addressing productivity issues and employees in identifying and resolving personal concerns including health, marital, family, financial, alcohol, drug, legal, emotional, stress or other personal issues that may affect their performance at work (EAPA-SA Standards, 2010:6).

As stated in Masi (2000:317):

> The mining industry played a significant role in in the birth and evolvement of EAP as a field of practice in South Africa. The Chamber of Mines of South Africa, the body that coordinates the different mining houses in South Africa, first noted the start of structured occupational counselling services within an industrial setting. In the mid-1980s, the concept of EAP was officially accepted and introduced in two main mining regions through the Chamber of Mines.

According to Du Plessis (1990:07), cited in Mbana (2005:46-47), the core activities of an EAP in the mining industry are the following:

- **EAP training and education**
  - Management awareness training
  - Supervisory training
  - Workforce education
  - Labour representative training
- **Ongoing promotion of the EAP**
  - Designing brochures/posters/newsletter articles
  - Using all available platforms to promote the EAP including management meetings, safety meetings and inductions
  - Swooping around posters
- **Direct services to troubled employees**
  - Constructive confrontation
  - Confidential counselling

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- o Counselling families where appropriate
- o Referral to community resources
- o Accompanying employees to resources and visiting them while in treatment, if appropriate
- o Aftercare and follow up
- **Indirect services to referring supervisors**
  - o Giving feedback to supervisors without prejudice and breaching the principle of confidentiality
  - o Negotiating the requirements of treatment
  - o Reporting to supervisors on progress
  - o Assisting supervisors to reintegrate employees
  - o Assisting supervisors to fill in the referral form
  - o Counselling supervisors to identify troubled employees
- **Indirect services to management**
  - o Reporting on progress of EAP
  - o Identifying employees' collective problems and interpreting needs to management
  - o Identifying EAP projects requiring financial support
- **Community resources**
  - o Developing a network of community resources
  - o Personal visits to resources
  - o Maintaining contact with resources and undertaking aftercare
- **Administration of the EAP**
  - o Designing a system of confidential record-keeping
  - o Updating records
  - o Keeping EAP statistics
  - o Planning for the EAP budget

The researcher is of the opinion that the EAP programme would play an important role in the lives of the women in mining. The researcher believes that happy employees are productive employees. With on-site, first-hand assistance, women in the mining sector will have solutions to their day-to-day problems in the underground mining context.

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2.5 CONCLUSION

Without a doubt, the culture in the mining industry is still relevant for men and not yet suitable for women. The researcher is convinced that it is imperative to develop policies and procedures specifically designed for women in the mining industry. Mining houses may employ different strategies to cover loopholes in the policies and procedures in order to accommodate women, but it is also important that these policies and procedures reflect local law compliance and context. The policies and procedures would be guidelines that mandate managers to provide equal or preferential recruitment opportunities to women, as well as introducing support structures to encourage more women to apply for jobs.

Policies and guidelines on maternity issues would provide direction for all company employers and female workers on how to handle cases of pregnant and breastfeeding women in a fair and equitable manner, including guidelines on providing alternate job placements until the end of the maternity leave period. This would also include management of maternity leave, in this way women will feel accommodated in a male-dominated environment and the working culture will become favourable. Compliance from the organisation's side and the inclusion process will not be difficult, since the guidelines would have already paved the way.

CHAPTER 3

RESEARCH METHODOLOGY AND EMPIRICAL FINDINGS

3.1　INTRODUCTION

In this chapter, the researcher presents an overview of the research methodology used for drawing the empirical findings on challenges and coping strategies of women in the mining industry. The chapter also provides an overview of the ethical aspects the researcher applied in the study.

The inclusion of women in the mining industry presents problems for women. The conditions of work and their environment are all problems beyond the control of the women and even the mine.

3.2　RESEARCH METHODOLOGY

3.2.1　Study population and sampling

A population is defined as a totality of persons, events, organisation units, case records or other sampling units with which the research problem is concerned. A sample can be described as consisting of elements or a subset of a population considered for actual inclusion in the study (McBurney, 2001:248). Royse (2004:189-190) states that the notion behind sampling theory is that a small set of observations can give a good idea of what can be expected in the total population of the intended study. A combination of the systematic and purposive methods was used in the study. The systematic approach was used, as the researcher had a list of all female employees working in the mine. This allowed the researcher to gain reliable information from the interviews and the women were able to share their experiences, which were influenced by their length of service underground.

The purposive approach was used by selecting a group of women working underground, and the selection was based entirely on the judgement of the researcher so that the sample represented the most characteristic elements

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(Silverman, 2000:104). The researcher selected 10 women as the sample, thus taking a portion or a smaller number of units to be representative of the total population. A point of saturation was reached. The sample was based upon the following criteria to ensure a diverse range of information and experiences acquired over a reasonable period:

- Aged between 30 and 35 years
- Grade 11 qualification or higher
- In semi-skilled positions
- Able to speak English
- A year or more experience working underground

Based on the number of women purposively selected according to the criteria, the researcher used simple random sampling to select the required number of participants for the sample as indicated above. A list of all women working underground was used and every third women in the list was selected and approached to voluntarily join the group. The 10 participants on the list, who were prepared to participate voluntarily, were included in the sample.

3.2.2   Data collection

Interviews were used as a method of collecting data. Kumar (2005:144) states that interviewing is a commonly used method of collecting information from respondents. When interviewing participants, the researcher has the freedom to decide the format and content of the questions to be asked; select the wording of questions; decide how to ask them; and choose the order in which they are to be asked. This process of asking questions can either be flexible, where the interviewer has the freedom to think about and formulate questions as they come to mind around the issue being investigated, or inflexible, where the interviewer keeps strictly to the questions decided beforehand, including their wording, sequence, and the manner in which they are asked. The interviews helped the researcher to gather information. The interviews were semi-structured and open-ended to allow the participants to elaborate on their answers. Questions asked during the interviews included the following:

- What are your experiences of working underground as a woman?

- What are the challenges that you face on a daily basis as a woman with regard to labour, safety, health and occupational challenges?

- What coping mechanism/s do you use? (What do you do to cope with the challenges mentioned above?)

- What support systems do you think should be put in place to benefit women working underground?

Whitley (2002:323) defines a semi-structured interview as an interview guide that specifies the topic and issues to be covered, and which may include a number of specific questions. Although there may be no specific questions, there should be a specified order in which the various topics are covered. This makes data collection more systematic and allows the interview to be flexible. The researcher allowed the interviews to be semi-structured in order to benefit from the advantages stated above. The researcher put participants at ease by ensuring that they all understood what was expected of them. Interviews took place in comfortable surroundings with enough ventilation and light and comfortable seating. The researcher followed interesting avenues related to the women's experiences in the underground mining context that emerged in the interview. With the permission of participants, a digital recorder was used to ensure that no information was omitted. The researcher transcribed the recordings of the interviews in order to analyse data.

3.2.3   Data analysis

Data analysis is defined as the process of bringing order, structure and meaning to the mass of collected data (Patton, 2002:434). After the collection of data, the researcher made sure the data was analysed for reporting purposes. Content analysis was used to analyse and interpret the research data in a systematic, objective and qualitative way. Creswell (2007:150-155) believes that the process of data analysis and interpretation is best presented by a spiral image called a *data analysis spiral*. The researcher used Creswell's (2007:150-155) analytical spiral of data analysis to analyse the data, as depicted in Table 1.

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Table 1: Creswell's analytic spiral of data analysis (Creswell, 2007:150-155)

Guidelines	Implementation of guidelines for the study
Planning for the recording of data	• This includes planning before commencement of data collection. • The researcher planned when and where interviews will take place, e.g., a boardroom was booked well in advance to ensure secure interviews in a quiet environment without interference. The dates were confirmed with the mining management to allow release of the women that were interviewed.
Data collection and preliminary analysis	• Data was obtained from semi-structured interviews. • Interviews were digitally recorded and notes were taken during the interviews to enhance data collection.
Managing or organising data	• Data was transcribed from recordings. The transcripts were stored on a computer.
Reading and writing memos	• Transcripts were proofread several times in order for the researcher to familiarise herself with the given data on the coping strategies of women working underground.
Generating categories, themes and patterns	• Recurring themes were generated from the recorded data. • The researcher made notes on recurring themes and formed categories to which themes should be assigned.
Coding the data	• Data was coded according to recurring themes. The researcher made use of different colours in order to code information.
Testing emergent understanding	• The researcher challenged the findings and evaluated data gathered by reading and comparing with literature.
Searching for alternative explanations	• The researcher searched for any possible explanations related to or pertaining to the study.
Representing	• The researcher presented data on coping strategies of women in an understandable form. Text was used to present information gathered.

Neuman (2000:420) envisages that "qualitative researchers analyse data by organizing it into categories on the basis of themes, concepts or similar issues." The researcher adopted a thematic content approach in analysing collected data. This enabled the researcher to organise the data according to key findings that emerged during the study.

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3.2.4 Trustworthiness

- **Reflexivity:** The researcher engaged in reflexivity by acknowledging that her own actions and decisions will inevitably affect the meaning and context of the experiences under investigation (Horsburg, 2003:308). She deliberately focussed on staying as objective as possible during the interviews, during the analysis of the data, and when representing the findings.

- **Peer debriefing**: During the analysis of data, the researcher used reflexivity and an audit trail to increase trustworthiness in the study. Once the initial analysis had been completed, the researcher sent her analysis along with her personal narrative to the supervisor. In this study, only the researcher and her supervisor had access to the data in order to ensure confidentiality. The two parties engaged in further dialogue regarding the trustworthiness of the study. At this point in the process, the reflexivity included extensive dialogue to consider whether the data analysis was a trustworthy representation of the themes identified in the study with objective analysis. Working in a research team comprised of the researcher, a fellow social worker and the research supervisor allowed multiple perspectives to be considered at each stage in the research process (Lietz, Langer & Furman, 2010:450-451).

- **Member checking**: The use of member checking was taken into account to ensure trustworthiness. At this point, the researcher engaged in member checking and the findings from both teams were shared with the participants, in order to verify the trustworthiness of these findings, and analysed in order to confirm or challenge the accuracy of the work (Lietz et al., 2010:450-451).

3.2.5 Pilot study

A pilot study was undertaken prior to the formal research study. A pilot study refers to an initial piece of the research conducted with a sample of the research respondents (Whitley, 2002:403). The researcher requested one volunteer from the selected group to participate in the pilot study in order to ascertain trends. This allowed the researcher to test the nature of the questions and to make modifications

where necessary with the view to qualify interviewing during the main investigation. No changes were made on study after the testing.

3.3 ETHICAL CONSIDERATIONS

The researcher made sure that research ethics were applied in this study. The term *ethics* implies preferences that influence behaviour in human relations, conforming to a code of principles, the rules of conduct, the responsibility of the researcher, and the standards of conduct of a given profession (Babbie, 2007:62). The researcher considered and implemented the following classification of ethical issues during the study.

3.3.1 Avoidance of harm

Bringing no harm to participants is a fundamental ethical rule of social research (Babbie, 2007:27). This ethical rule of bringing no harm to participants collaborates well with South African law through the Mine Health and Safety Act (No. 29 of 1996), which ensures that all employees in the mining environment are safe at all times. The researcher ensured that she and the participants of the study adhered to all the mining safety rules during the interviews to ensure physical safety. The researcher made sure all safety protocols and procedures were followed. This was done by ensuring that participants were in a safe place and wearing proper personal protective equipment (Mine Health and Safety Act, No. 29 of 1996). Emergency exits were identified, participants were made aware of them, and they were reminded of the assembly points and first aid requirements in place.

The researcher also took into consideration that some participants might experience emotional harm, especially because the study touched on sensitive issues such as relationships, employment situations, family life and personal experiences. The researcher protected participants within all reasonable limits from any form of emotional and physical discomfort that could emerge from the study (Creswell, 2003:64). The researcher informed the participants beforehand about the potential impact of the study and those participants might withdraw from the investigation if they wanted to, without any negative consequences. The researcher engaged in a

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formal partnership with a therapist in private practice before the interviews for possible referrals should the need arise.

3.3.2   Voluntary participation

Participation in this study was voluntary. The researcher realised that voluntary participation is of the utmost importance, and ensured that no one was forced to participate in the study (Rubin & Babbie, 2005:71). Participants did so by choice without any coercion on the part of the researcher and knew that they could withdraw from the study at any time.

3.3.3   Informed consent

The researcher verbally explained to the group prior to the investigation what the study entailed and the areas of focus. The researcher then made sure all participants understood the focus of the study and signed informed consent forms before the study commenced, as a way of showing voluntary participation and agreement to partake in the study. The researcher made sure the signed consent forms were treated with the utmost discretion and stored them in a correct and safe manner, so that a particular form could be easily located should the need arise. The researcher remained responsible for the ethical quality of the study (Hakim, 2000:143).

3.3.4   Deception of subjects

The researcher did not withhold any information from the participants and ensured transparency at all times. All details of the study were explained to the participants, both verbally and in the letter of informed consent.

3.3.5   Violation of privacy, anonymity and confidentiality

Participants' privacy and their right to confidentiality were taken into account at all times. Maintaining confidentiality of information collected from research participants means that only the investigator(s) or individuals within the research team can identify the responses of individual subjects. The researcher made every effort to

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prevent anyone outside the project from connecting individual subjects with their responses. Providing anonymity of information collected from research participants means that either the project does not collect identifying information of individual subjects (e.g. names, addresses, email address) or the project cannot link individual responses with participants' identities. This study did not collect identifying information of research participants. The researcher did not take participants' names, departments or company numbers during the investigation. They were also not essential for the purposes of the research report. In reporting on the collected data, the researcher ensured that anonymity was strictly adhered to and ensured confidentiality, as was stated in the letter of informed consent. Letters of the alphabet were used when coding and reporting the data (Morris, 2006:246).

3.3.6   Debriefing of participants

The researcher conducted one-on-one debriefing sessions with all participants. These sessions allowed participants the opportunity to work through their emotions and the experiences they face underground (McBurney, 2001:60). The participants were asked to discuss their feelings about the study immediately after the session, as this is the easiest way of debriefing (Salkind, 2000:28). The debriefing session entailed the following process (Strydom, 2011:122):

- Debriefing sessions took place after the study, during which women were able to work through their experiences and the aftereffects thereof. In this way, the researcher assisted subjects in minimising possible harm, which may have been done in spite of all the precautions taken against it.
- No misinterpretations arose in the minds of the participants after completion of the project.
- The researcher ensured that termination of the interview was handled with the utmost sensitivity and women were able to voice out their experiences and talk about them freely.

One participant was emotional and cried during the interview, and a referral was made for the participant to get counselling at no cost.

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3.3.7 Release of findings

The findings of the research study are presented in written form, and information is formulated and communicated clearly and unambiguously. Report writing includes making sure the report is as clear as possible and contains necessary information for the reader to understand. The researcher complied with the standards and regulations of the University of Pretoria regarding the publication of findings. The research report will be submitted to the University of Pretoria and to the researcher's employer. The researcher will also ensure that participants have access to the report of the study. Research results will be safely stored in the Department of Social Work and Criminology for a period of 15 years and may be published in a professional journal (Creswell, 2003:67).

3.4 EMPIRICAL RESEARCH

In this study, the researcher presents the qualitative research data in line with the data analysis process as outlined by De Vos, Strydom, Fouché and Delport (2011:403-404). The biological information of the participants is presented by means of a table and they reflect age, relationship status, number of children, highest qualification obtained, and years of experience working underground. The findings of the semi-structured interviews are discussed according to specific themes and sub-themes.

Table 2: Biographical information

	Age	Relationship status	Children	Highest qualification	Years of underground experience.
1.	27	Single	2	Grade 12	4 years
1.	35	Single	1	Grade 12	4 years
2.	35	Married	1	Grade 11	4 years
3	27	Single	2	Grade 12	4 years
4	39	Widowed	4	Grade 12	4 years
5	41	Single	1	Grade 12	8 years

6	35	Single	2	Grade 11	4 years
7	36	Single	2	Grade 11	6 years
8.	36	Single	2	Grade 12	1 year
9	35	Married	3	Grade 9	6 years
10	35	Single	2	Grade 12	5 years

Ten women working in the underground shafts participated in the study. The participants were between the ages of 27 and 41 years. The length of service reported by the respondents ranged between one and eight years.

3.5   DISCUSSION OF THEMES AND SUB-THEMES

Table 3: Identified themes and sub-themes

MAIN THEMES	SUB-THEMES
Theme 1: Women have positive attitudes about working in the underground mine.	**Sub-theme 1** Women describe their experience of working in the underground mine as interesting. **Sub-theme 2** Working in the underground mine is a positive challenge. **Sub-theme 3** Women employ a positive attitude as a coping mechanism in order to survive in the mining industry.
Theme 2: Women experience challenges working in a male-dominated environment.	**Sub-theme 1** Men expect women to work as hard as them. **Sub-theme 2** Women experience that men still dominate. **Sub-theme 3** Women experience that men disrespect them. **Sub-theme 4** Women experience sexual harassment in the underground mine.
Theme 3: Women face labour challenges in the underground mine.	**Sub–theme 1** Women experience working underground as physically demanding. **Sub-theme 2** Women use job security as a coping mechanism to deal

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	with the labour and occupational challenges they face on a daily basis.
Theme 4: Women face safety challenges in the underground mine.	**Sub-theme 1** Women experience working in the underground mine as unsafe. **Sub-theme 2** Women use their religious beliefs to occupy their minds in order to cope with the reality of safety challenges in the mining industry.
Theme 5: Women face health challenges in the underground mine.	**Sub-theme 1** Women experience that sanitation facilities are not up to standard in the underground mine and pose health risks. **Sub-theme 2** Women experience that female-friendly sanitary facilities are not available. **Sub-theme 3** Women experience that they have to resort to ways not conducive to their health to deal with their bodily functions. **Sub-theme 4** Participants experience health problems because of working conditions in the underground mine.
Theme 6: Women face occupational challenges in the mine.	**Sub-theme 1** Women experience lack of career development.
Theme 7: Women in mining experiences challenges regarding work-life balance.	**Sub-theme 1** Women experience difficulties managing dual work-family roles. **Sub-theme 2** Women use their extended families as coping mechanism with regard to work-life balance challenges.
Theme 8: Women in mining experience challenges regarding transport.	**Sub-theme 1** Women have trouble getting to work on a daily basis due to transport problems. **Sub-theme 2** Women face life-threatening risks getting to work due to transport.

	Sub-theme 3
	Women use job security as a coping mechanism to deal with labour, occupational, transport and health challenges.
Theme 9: Women use different coping mechanisms to deal with challenges they face in the underground mine.	**Sub-theme 1** Coping mechanisms with regard to the mining environment

The participants' experiences of working in the underground mine were expressed in the main themes and sub-themes as per Table 3 and will be discussed below.

3.5.1. Theme 1: Women have positive attitudes about working in the underground mine

3.5.1.1 Sub-theme 1: Women describe their experience of working in the underground mine as interesting

- *"Working in the underground mine is very interesting."*
- *"I feel happy to work underground. This is because I like the challenge."*
- *"I do love my job. I love it because I am learning a lot from underground by working here."*
- *"I enjoy working in the mine. It's a good experience."*

Working in the underground mine is a new phenomenon for women. However, women generally have positive attitudes towards working in the mine.

3.5.1.2 Sub-theme 2: Working in the underground mine is a positive challenge

- *"I need to show that a woman can work and take her own responsibility."*
- *"I can do the job that people think is for men only."*

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Although women find it interesting working in the mine, they are of the opinion that it is also challenging. Most women reported that they experience it as a positive challenge in order to gain experience. They feel that they have to show men that they can do the job and show the world their capabilities as women. The fact that they see working in the underground mining context as interesting and as a positive challenge may be one of the coping mechanisms to endure the harsh conditions in a male-dominated working context. The participants revealed that they have proven that they can survive in this environment.

Wynn (2001:33) envisaged that the reasons for pursuing a mining career are similar for both sexes. This opportunity should be a vacancy related to the abilities of the person to complete the tasks and no related to their gender. There will always be a challenge when joining a male dominated sector traditionally not for women. The development of Occupational Health and Safety guidelines and improved ergonomics of the equipment, no task will be difficult for women to complete. When promoted properly and with academic approach, more opportunities will open for more women and the awareness will be raised as well. Only women with a certain character will be attracted to this industry and its environment. Women need to adopt strong personalities in order to cope in the challenging environment.

Mining companies have the responsibility to incorporate women in the mining environment and must do so while still maintaining a good safety record. In 2009, reports indicated that only 26% of mining companies had complied with the requirement of 10% female participation in mining. Women represent only 1% of personnel core functions (Mlambo, 2011 cited in Scheepers, 2013:8). The government is however ready to increase the targets of women in mining without turning back (Times Live, 2012 cited in Scheepers, 2013:8). Mining houses are also obligated to comply with government targets.

3.5.1.3 Sub-theme 3: Women employ a positive attitude as a coping mechanism in order to survive in the mining industry

- *"I like to challenge everything in life, so now I am learning a lot from underground by working here."*

- *"I am getting experience."*

Women participants acknowledge that the mining industry is a hard and challenging environment. However, a positive attitude helps women to cope on a daily basis. They encourage themselves in a way that helps them face the challenges. Their self-talk includes that they are gaining experience by working underground and they gain knowledge from men on how to perform duties in the underground mining sector.

3.5.2 Theme 2: Women experience challenges working in a male-dominated environment

3.5.2.1 Sub-theme 1: Men expect women to work as hard as them

- *"When we work with men, they say you said you want to work in the mine, that's 50/50. So we are here all, we are all men."*
- *"Some men say, you said you want equality, so it's 50/50 my wife is at home, you do the work."*

Women in this study reported that men are forever reminding them that they wanted equality and therefore they must always remember that it is a 50/50 challenge, which simply means men expect that women should be able to complete their tasks without assistance from men. As a result, women feel that there is still some prejudice against them. Women further reported that men want them to work like them.

It is crucial that men still have to understand that even though women are working in the mine, they are still women and they cannot be men. Women have different biological structures, which they feel men do not understand. Weyer (2005:442) states that the biological differences between men and women are based on the genetic patterns resulting from adaptations to differing reproductive challenges. This implies that women's physical appearance is a result of inherent characteristics embedded in their biological make-up and there has to be justification that they are still different from men.

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Feminism explains that gender inequity exists and that this is a source of oppression, which is painful and harmful to individuals and societies. It is based on power and for the most part the power balance is in favour of men. "Feminist philosophy seeks to answer the question as to the source of gender oppression" (Corey, 2009:202). "Feminist theory aims to give a voice to women and to correct the male-oriented perspective that has predominated in the development of social science. It is concerned with the under-representation of women and women's experiences within the social sciences" (Mouton, 2001a:37). Neuman (2000:82) mentions, "Pioneering texts argue that women learn and express themselves differently from men." Based on the above definitions of feminism, the researcher is of the opinion that life experience has proven that men and women think differently and live in separate worlds. From culture to culture, men have always been regarded as the head. If a woman then enters a male-dominated environment as with underground mining, the men will still see them as inferior unless they act exactly as required for the male prescribed job.

3.5.2.2   Sub-theme 2: Men still dominate

- *"There are areas that you are working alone as a lady and when you need to go to the toilet, who are you going to tell? You can't trust men obviously, it's dark in there and so if you go alone, if they attack you who is going to help you there?"*

Women in this study regard their workplace setting as still being characterised by male domination. This result is the continuation of gender-biased discrimination against women and women feel they cannot trust men. They still have doubts about working as a team in a male-dominated area. They are never at peace around men and live in fear due to a lack of trust in men.

Mining companies are obligated to live up to expectations of incorporating women, since the government threatened to revoke mining rights should they fail to do so (South African Mining Charter, 2004). "Government encourages the involvement of women in mining, not only to empower women to participate in building South Africa but also to end the male-domination and gender biased discrimination characteristics

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of the mining industry" (Shabangu, 2011 cited in Scheepers, 2013:8). The important message to take from this is that mining companies should not only incorporate women in the sector in order to reach targets and tick compliance boxes, but they must take the positive work attributes of women and use them to their benefit.

3.5.2.3   Sub-theme 3: Women experience that men disrespect them

- *"Men are not respecting us. They talk to us anyway they want."*
- *"They are not taking us seriously. They don't respect us in the manner which they talk to us and say anything they want at any time."*
- *"Some of the men don't support us; they say 'you are women, what are you doing here?'"*

Women in this study reported that they feel disrespected by men and that men do not take them seriously. Historically, women have been subjected to several kinds of discriminatory behaviour, attitudes and policies (South African Board of People Practices, 2011:13).

In South Africa, efforts to eradicate negative stereotypes and perceptions of women and to establish a gender-neutral society have been implemented (Odak, 2009:01). The researcher is of the opinion that given the above statements expressed by women, despite these successes women are still encountering challenges in gaining acceptance from men in a male-dominated environment and still encounter some prejudice based on biological grounds.

In South Africa, the new constitution recommends that there should be fair treatment of employees and those employees should not be discriminated against based on their gender (Employment Equity Act, No. 55 of 1998). The Employment Equity Act promotes equality between women and men. As a result, women now receive opportunities to occupy higher positions in the country and to do the work in industries that are traditionally male-dominated. These laws stipulate that the mining industry must promote equity in the sector in terms of employment and facilitate

participation by "historically disadvantaged" groups, including women (Minerals and Petroleum Resources Development Act, No.28 of 2002).

The situation therefore calls for women to voice their frustrations, which relates to feminism. Thompson (2001:8) states, "Feminism is concerned with exposing the reality of male domination, while struggling for a world where women are recognised as human beings in their own right." Schwartz & Scott, (2010:49) state that "Feminist theories attempt to answer the question of 'where are women' and 'why is this situation as it is?'"). This simply means that women need to stand up for their own rights and dignity.

3.5.2.4   Sub-theme 4: Women experience sexual harassment in the underground mine

- *"Yes, there is sexual harassment in the underground."*
- *"One day our shift boss took me to an abandoned area. There are no people there; he asked me if I was scared, I asked myself why does he sent me to that place... I decided to tell my colleague thereafter and she confirmed that, the shift boss did that to her too."*
- *"Women are scared to talk about sexual harassment; some are enjoying it and play along with shift bosses."*
- *"They do flirting, they do words and they touch you, they do whatever they feel like, there is no one to report to and no one will believe you."*

Some participants in this study reported that women are still being sexually harassed in the underground mining environment. This is a sensitive issue that women do not want to discuss. Women are scared to deal with the issue and most of them are the victims, but suffer in silence because of fear. Boland (2005:4) defines sexual harassment as "a type of sexual discrimination in the work place, which includes unwelcome sexual advances, requests for sexual favours and sexual conduct directed towards a person because of gender."

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3.5.3 Theme 3: Women face labour challenges in the underground mine

3.5.3.1 Sub theme 1: Women experience working underground as physically demanding.

- *"Working underground is hard, it's hard because sometimes I have to carry a 50 kilograms bag of cement on my shoulder and transport it to another area."*
- *"I can carry two per day or a number that is needed at the other area per day."*
- *"It's hard for women, we don't have those powers like men, and it wants a force of men."*
- *"This is for men... it's too hard.''*

Participants reported that working underground is hard labour and they feel that the work needs a man's strength. According to Weyer (2005:442), the biological differences between men and women are based on the genetic patterns resulting from adaptations to differing reproductive challenges. This suggests that the obstacles to women performing hard tasks are not intentional, but based on their biological limitations.

Compared with men, the physical demands of mining place women at a relative disadvantage (Hermanus, 2007:6). There are significant differences between women and men with regard to their physiological capacity, functional strength and anthropometry. These are key factors that can affect manual work and relate to the capacity of individuals who do physical work without becoming fatigued. Men are generally regarded as having greater strength than women have and thus more capable of performing tasks that require heavy lifting and pushing, and using certain tools and equipment. The implications in the mining sector are that if ergonomics remain unchanged, male mineworkers will continue to be a physically select group and female miners will be less so, given the fact that fewer women meet the physical demands of mining (Hermanus, 2007:6). This therefore calls for a change in mining ergonomics.

3.5.3.2   *Sub-theme 2: Women use job security as a coping mechanism to deal with the labour and occupational challenges they face on a daily basis*

- *"There is nothing I can do; I just work because I have no choice."*
- *"There is nothing I can do with the situation, but just tell myself that at least I have a job."*

Women resort to accepting employment in the mining sector mainly to have a source of income. Irrespective of the challenges that they face that come with the nature of the underground environment and the mining sector at large, they console themselves with the fact that they will receive a pay cheque every month. The pay cheque and job security is their motivation to keep going and they use it to survive.

3.5.4   Theme 4: Women face safety challenges in the underground mine

3.5.4.1   *Sub-theme 1: Women experience working in the underground mine as unsafe*

- *"I don't feel safe, because underground is not a safe place."*
- *"Underground is not safe."*
- *"I never get used to the environment."*
- *"It's not safe underground."*

Participants reported that they do not feel safe underground. This is because the underground mine is a risky environment. However, women continue to work because they need the money. According to the Mine Health and Safety Council Report (2012:11), the greatest challenge for the mining industry has been to introduce and ensure full incorporation of women into a traditionally male-dominated sector. The mandate of the amended Mine Health and Safety Act, No 29 of 1996, is to protect the health and safety of persons at mines and to provide for the effective monitoring of health and safety conditions, which will promote a culture of health and safety in the mining industry.

3.5.4.2   *Sub-theme 2: Women use their religious beliefs to occupy their minds in order to cope with the reality of safety challenges in the mining industry*

- *"I pray when I go underground and I pray when I come out."*
- *"I sing and worship to distract my mind from thinking about the dangers."*

Female participants reported that since they are aware of the daily risks they face when entering the mining shaft, they try to occupy their minds in order to cope with the realities of the life-threatening environment they work in on a daily basis. They use their religious beliefs daily, such as praying, singing, and worshipping God, when entering and leaving the underground. They feel that helps them cope by distracting their minds and they are then able to carry on with their work.

3.5.5   Theme 5: Women face health challenges in the underground mine

3.5.5.1   *Sub-theme 1: Women experience that sanitation facilities are not up to standard in the underground mine and pose health risks*

- *"I don't go to the toilet underground, I control myself/system because the chemicals used in the toilet gives me infection."*
- *"The toilets are too far; I just go to the madala site and find a place where I can help myself."*
- *"When I have diarrhoea, I can't reach the toilet because is too far, I help myself anywhere in the underground."*

3.5.5.2   *Sub-theme 2: Women experience that female-friendly sanitary facilities are not available*

- *"We wrap used pads with toilet paper and put in a plastic bag inside the pocket."*

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- *"We only throw the used pads later when we go home, when we are in the surface."*

- *"I put the used pad inside my school bag until I go home because at the moment there are no sanitary bags or bins."*

Participants reported that sanitary towel bins are not available in some departments. When women are on their menstrual periods, they have to devise a plan to keep their used sanitary pads inside their pockets for the whole day, until they can get to the surface to dispose of them. This is clearly one of the coping mechanisms that they have for addressing the issue.

3.5.5.3   Sub-theme 3: Women experience that they have to resort to ways not conducive to their health to deal with their bodily functions

- *"I control myself because the chemicals used in the toilet give me infection."*
- *"I go to the madala site and find a place where I can help myself."*
- *"I help myself anywhere in the underground."*

Participants reported that toilets are a problem underground. They have to walk long distances to get to the toilet and women end up relieving themselves anywhere where they can find a corner to hide. Women also reported that the chemicals used in the toilet are very strong and often give them infections. In order to avoid the infections some women suppress their need to go to the toilet as a coping mechanism.

Sanitation and Cleanliness for a Healthy Environment booklet (Conant, 2005:4) states the following:

> The germs spread many diseases from person to person. Other experts are of the opinion that health problems from poor sanitation can be prevented only if people change their habits or behaviours about staying clean, but this idea often leads to failure because it does not consider the barriers that people face in their lives such as access to sanitation facilities or resources. Then when behaviour does not change, people are blamed for their own poor health.

The researcher is in support of this statement that women in the underground can be blamed for their behaviour of helping themselves wherever they want due to lack of ablution facilities as this may create health problems in the long run for both men and women. It is again evident that women have no choice with their current behaviour but adopt maladaptive behaviour as a coping mechanism until they have adequate sanitation facilities to their disposal.

The *Sanitation and Cleanliness for a Healthy Environment* booklet (Conant, 2005:7) further states:

> Illnesses caused by germs and worms in waist products are constant sources of discomfort for many people. These illnesses can cause many years of sickness and can lead to other health problems such as dehydration and anaemia. Severe sanitation-illnesses can bring sudden death to people. Since people have different sanitation needs, decisions about sanitation should be made by people who will be most affected by those decisions. Women and men have different needs and customs when it comes to sanitation. Men may be more comfortable than women relieving themselves in public open spaces may. Leaving women out of sanitation planning puts them at greater risk of health problems.

This implies that the coping mechanism that women adopt benefits them in order to relieve themselves, but on the other hand, it has a negative impact on their health.

3.5.5.4   Sub-theme 4:   Participants experience health problems because of working conditions in the underground mine

- *"We carry heavy objects and they affect our womb."*
- *"You find that you get a man and get married, but when you are trying to conceive you struggle and cannot have kids because the work affects the womb."*
- *"I get irregular periods due to the hard work that I do."*

Women participants reported that they experience health problems because of the kind of jobs they are doing. Some reported that they end up having irregular menstrual periods due to the heavy equipment they have to carry on a daily basis and this has an impact on their health.

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Zungu (2011b:20) also adds the following:

> For women in mining, reproductive hazards are related to exposure to chemicals, and physical or biological agents that can cause either reproductive impairment or adverse developmental effects on foetuses. In general, the reproductive status of females is socially more important in certain cultures since the female is usually blamed for couples' reproductive problems. This makes women of childbearing age in mining more socially vulnerable. Toxicants, which have an effect on reproduction, are evidently more important for women in mining than for their male counterparts.

One of the women reported that she is now in a process of applying for incapacitation, because the chemicals and dust damaged her eyesight and she is due for compensation.

- *"I have a problem with my eyes, so I cannot see because of dust and the chemicals underground ...now my eyes are damaged and I have to go home with compensation."*

The International Labour Organization (ILO) and the World Health Organization (WHO) committees defined the aims of occupational health as being about:

- The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations.
- The prevention of ill health and injury among workers due to working conditions.
- The protection of workers from health risks resulting from their daily tasks at work.
- The placing and maintenance of the workers in an occupational environment adapted to their physiological and psychological capabilities.

The ILO classified female mineworkers as vulnerable workers with special occupational health and safety needs. This clearly indicates that it is essential to protect and promote women's health and safety at work, by addressing health issues unique to them (Mine Health and Safety Council Report, 2012:11-12).

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3.5.6 Theme 6: Women face occupational challenges in the mine

3.5.6.1 Sub-theme 1: Women experience lack of career development

- *"There is no development for women."*
- *"All shift bosses are men; there is no promotions for women."*
- *"Better jobs are only for men here."*

Women in this study feel that working underground has biased practices when it comes to development, recruitment and promotion. They believe that promotions are only given to men, whilst women occupy lower positions. They further stated that there are currently no female shift bosses and only men are employed in management levels underground. This is in complete disregard to the Employment Equity Act (Act No. 55 of 1998) and other policies regulating the process of recruitment and promotion in the mining industry. Recruitment requires an objective, systematic and planned approach if unlawful discrimination is to be avoided. Both short-listing and selection should be based on candidates' relevant experience, skills, qualification, knowledge and talent, and should be based on factual evidence (MacDonald, 2004:3).

The South African Board of People Practices' (SABPP, 2011:13) Women's Report states that historically, women have been subjected to different kinds of discriminatory behaviour, attitudes and policies. Women's career aspirations have progressed steadily with their increased workforce participation. Jackson (2010:73) supports that the types of careers women choose and the factors affecting their choices are relevant issues that should be examined, as women continue to work in lower paid jobs, which are traditionally female oriented jobs.

3.5.7 Theme 7: Women in mining experience challenges regarding work-life balance

3.5.7.1 *Sub-theme 1: Women experience difficulties managing dual work-family roles*

- *"My children are back home in another town with my mum; I only see them after two months when I go home."*
- *"I work 7 days including Sundays in order to cover overtime and increase the bonus."*
- *"When I am on my weekend off, I do the washing and house work, I can't spend time with the kids, it's affecting our relationship."*

The participants indicated that, owing to work demands, women are faced with limited choices but have to work extended hours. Most of the participants are from out of town and they have to leave their children at home with their grandparents and other relatives. They only see their children and their partners once a month at the end of the month. Participants stated that they have to work weekends, including Sundays, so that they can have overtime money and earn better salaries. This as a result affects quality time spent with their families.

According to Kakabedes, Bank and Vinnicombe (2004:50), work-life balance means the harmonious and holistic integration of work and non-work in people's lives, allowing individuals to fulfil all their roles. People seek a balance for many reasons, including quality of life, childcare, elderly care, voluntary work, education, travel, sports, hobbies and time with friends. The reason why many people continue to lead unbalanced lives is that they do not have a choice in their circumstances. They feel trapped by the demands of their jobs and their employers' attitude, or by the financial demands of supporting themselves and their families (O'Loghlin, 2010:4).

Lockwood (2003:9) states the following:

> Work life balance programmes have a significant improvement on employee morale. They have potential to improve staff morale and reduce absenteeism and whilst on the other hand they can retain

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organizational knowledge specifically during different economic times such as the times faced by the mining industry as we speak. In today's global market place many companies aim to reduce costs and it takes Human Resources professionals to understand the critical issues of work-life balance.

The programmes mentioned above may include personnel with family members or friends requested to serve their country; single mothers raising their children alone, yet being employed as well; couples where both partners are employed and they attempt to manage their marriages, or companies losing critical knowledge when employees resign. Work life balance programmes have advantages for both the employer and the employees. The researcher agrees with the above-mentioned statement that the more companies organise resources on-site that will address employees' work-life balance challenges, the more it will the benefit the employees and the company as a whole. Happy employees are productive employees.

3.5.7.2   *Sub-theme 2: Women use their extended families as coping mechanism with regard to work-life balance challenges*

- *"My children are back home in another town with my mum."*
- *"My Mother takes care of my children."*

The participants indicated that, owing to work demands, they opt to leave their children at home with their grandparents and other relatives. Women use their extended families to help them cope with work-life balance challenges.

3.5.8   Theme 8: Women in mining experience challenges regarding transport

3.5.8.1   *Sub-theme 1: Women have trouble getting to work on a daily basis due to transport problems*

- *"There is no company transport, I have to wake up at 04h00 am and get to the bus stop at 05h00 am even in winter."*
- *"I walk to the bus stop alone at twenty to five in the morning."*

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- *"We have to go to the bust stop and wait for public transport to be underground at 06h00 am."*

3.5.8.2 Sub-theme 2: Women face life-threatening risks getting to work due to transport

- *"I was standing at the bus stop waiting for the bus, there were five guys also at the bus stop, and suddenly I heard them talking a language that I couldn't understand. Then they grabbed me and started stabbing me. They stabbed me and took my phone and ran away."*

In this study, one woman reported that she was stabbed whilst waiting for transport to come to work. Women in general feel that the establishment of hostels for women will assist in solving the transport problems and life-threatening risks that they are facing on their way to work. Women feel the hostel system should not only accommodate men, but also consider women in order to protect them.

3.5.8.3 Sub-theme 3: Women use job security as a coping mechanism to deal with labour, occupational, transport and health challenges

- *"There is nothing I can do; I just work because I have no choice."*
- *"There is nothing I can do with the situation, but just tell myself that at least I have a job."*

Participants reported that there are various challenges that they are facing but that they can do nothing about, such as labour, health, occupational and transport challenges. They wish that the management would do something to deal with the challenges. Their current way of coping with these challenges is by telling themselves that at least they have jobs and are able to earn a salary. They use job security to cope with all the other challenges over which they have no control.

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3.5.9 Theme 9: Women use different coping mechanisms to deal with challenges they face in the underground mine

3.5.9.1 Sub-theme 1: Coping mechanisms with regard to the mining environment

- *"I pray when I go underground and I pray when I come out."*
- *"I sing and worship to distract my mind from thinking about the dangers."*
- *"I use a dust mask to protect myself from dust."*
- *"I don't go to the toilet underground, I control myself/system because the chemicals used in the toilet gives me infection."*
- *"The toilets are too far, I just go to the madala site and find a place where I can hide and help myself."*
- *"When I have diarrhoea, I can't reach the toilet because is too far, I help myself anywhere… I can hide in the underground."*
- *"We wrap used pads with toilet paper and put in a plastic bag inside the pocket."*
- *"We only throw the used pads later when we go home, when we are in the surface."*
- *"I put the used pad inside my school bag until I go home, because at the moment there are no sanitary bags or bins."*

Participants illustrated during the study that they use several skills to cope with the current challenges they are faced with in the underground context on a daily basis. The skills mentioned above seem to be working for them and helps them to approach a new day with a positive attitude.

The *Collins Dictionary* [SA] defines a coping mechanism as:

> Something people do to help them deal with stresses, pain, and natural changes that they experience in life. There are negative as well as positive coping mechanisms. However, many people use their coping mechanisms to benefit them in a positive way.

Within the context of these findings, coping mechanisms are seen as those aspects that women in mining use to survive within the mining work context.

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3.6 CONCLUSION

Initially, fifteen (15) women would have been interviewed in the study, but after 10 women were interviewed, a point of saturation was reached. The researcher identified nine major themes, each with sub-themes. The findings illustrated that women in the mining industry, and in particular the underground mine, are faced with challenges on a daily basis and support systems need to be put in place that can enhance their health and safety. The study sought to explore the experiences that women are facing on a daily basis and findings confirmed that women have remarkable experiences in the underground and they are able to apply different skills as coping mechanisms in order to survive these daily challenges.

CHAPTER 4
CONCLUSIONS AND RECOMMENDATIONS

4.1 INTRODUCTION

The empirical findings presented in Chapter 3 illustrated the challenges women experience in the mining industry and their coping mechanisms in a male-dominated environment in the underground mine. The purpose of this chapter is to revisit the proposed aim and objectives of the study, establish whether they were met, and to confirm if the research question has been answered. The researcher will provide conclusions and recommendations regarding the research findings and make suggestions for future research studies.

4.2 RESEARCH GOAL

The goal of the study was to conduct applied research in order to focus on the existing problems that women are facing in practice in the mining industry. The goal of the study was met by carrying out the following procedures. The researcher conducted a review of literature in order to form a conceptual framework for the study. The researcher formulated questions from the knowledge base that was created through the conceptual framework and used them in a semi-structured interview. Questions were formulated in such a way that they explored the experiences and challenges of women in the mining industry, as well as their coping mechanisms. Thereafter data was analysed and themes were identified. The researcher identified themes in relation to literature and discussed the integrated qualitative data analysis in Chapter 3.

4.3   RESEARCH OBJECTIVES

The researcher defined four key objectives for the research in order to meet the overall purpose of the study, namely:

- **Objective 1: To explore the phenomenon of women working in the mining industry**

  The researcher did a thorough literature review to explore the phenomenon of women working in the mining industry. The information is set out in Chapters 1 and 2 and this objective was met.

- **Objective 2: To explore and describe the challenges faced by women in the mining industry**

  The study also explored and described in detail the challenges faced by women working in the mining industry, both nationally and internationally. The study illustrated through transcripts that women are facing different challenges in the underground, including sanitation facilities, transport, sexual harassment, discrimination, and work-life balance. The information is set out in Chapter 3 and this objective was met.

- **Objective 3: To identify the various ways women cope with labour, safety, occupational and health issues in the underground mining context**

  The literature review illustrated how women cope in the mining industry in Chapter 2 and through transcripts; the study illustrated the findings on how women cope on a daily basis given the challenging environment in the underground. The findings are presented in Chapter 3 and the objective was met.

- **Objective 4: To make recommendations of support systems that may assist women working underground**

  Through this study, the researcher was able to get to know what exactly the women who work underground would like see in order to have better working

conditions and a better working environment. The researcher was able to understand the challenges that women face and come up with recommendations for support systems that should be put in place to improve the lives and working conditions of women in the underground mine. This objective was met.

4.4   KEY FINDINGS

Working in the underground mine is a new phenomenon for women. However, women generally have a positive attitude towards working in the mine; they find it interesting. Women also feel there are daily challenges that they encounter, such as safety, labour, health and occupational challenges.

If the mining sector can move towards a more transformed culture and improve systems that are currently in place, women would not need to use the survival skills that they are currently applying as coping mechanisms.

- In-depth interviews conducted by the researcher generated a wealth of information regarding the experiences of women working in the underground mine and the coping mechanisms they use on a daily basis. The researcher is of the opinion that the other methods would not have gained such detailed raw data.
- The study revealed that women find working in the underground mine interesting. They enjoy working for the mine and they love their jobs.
- The study revealed that women feel working underground is a positive challenge. Women are eager to face the challenge and prove to the world that they are capable of performing duties that used to be done by men only.
- The study revealed that women feel men expect them to work like men. They feel there are gender stereotypes in the underground mine. Women feel disrespected by men. They are of the opinion that men do not take them seriously. They feel discriminated against by men.
- The study revealed that women feel men cannot be trusted. When women work in dark areas where there is no luminance and/or at isolated workstations, they fear that the men will do something bad to them.

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- The study revealed that women experience working in the underground mine as hard labour. They feel there is some work that is still meant for men only and need a man's strength.

- The study revealed that women experience the underground mine as unsafe. They are of the opinion that anything can happen at any time with regard to safety. A rock can fall on them at any time and they are all vulnerable, including men.

- The study revealed that there are no sanitary towel bins in some departments in the underground mine. Women struggle when they have their periods, as they have to keep the used sanitary towels in their pockets until they finish their shifts to discard them in the surface bins.

- The study revealed that there are occupational challenges for women in the mine and they pose health problems, i.e. gynaecological problems, eye problems and backache. This is because of the heavy duties that women perform in the underground mining context.

- The study revealed that there is no career development for women. Women have limited prospects for development and promotion in their departments. There are no women in higher levels, like shift bosses and above. Women feel they are discriminated against because of gender.

- The study revealed that female mineworkers struggle to strike a balance between their work and home life demands. There is an overflow of responsibilities in executing both. This is characterised by women having to work weekends, including Sundays, in order to get overtime so that they will get better salaries at the end of the month.

- The study revealed that transport is a challenge for women working in the mine. They have to wake up as early at 04h00 to get to the bus stop, as they have to be at work at 06h00, and in winter they find it especially difficult.

- The study revealed that the lack of company transport for women poses life-threatening risks for women. Women do not feel safe waiting at the bus stop at 4h30.

- The study revealed that there is sexual harassment against women in the underground mine. Women are of the opinion that this is a sensitive matter that

they are afraid to talk about; as a result, nothing is done about the sexual harassment.

- The study revealed that irrespective of the experiences and challenges that women face on a daily basis in the mine, they do have coping mechanisms that they use, namely:

  Physical challenges
  - Women use dust masks to cope with the challenge of dust underground.
  - Women relieve themselves anywhere they can when they need to use the toilet, because the toilets are far away.
  - Women keep their used sanitary towels in their pockets, because there are no sanitary towels bins.
  - Women work as hard as men do to prove that they are capable of performing hard labour and to take the challenge in a positive way.

  Emotional challenges
  - Women do not talk about sexual harassment issues even though they are victims.
  - Women find something to occupy their minds in order to forget about the daily risks of underground safety. That includes singing, worshipping and concentrating on their jobs.
  - Women resort to their families in order to cope with work-life balance issues. Their families take care of their children.

4.5 RECOMMENDATIONS

4.5.1 General recommendations

In the light of the findings, it is recommended that:

- The mine should implement more safety measures in the underground mine to protect women, in particular women who are working in isolated areas and areas that do not have lights. Installation of panic buttons for women will guarantee their safety, as they will be able to press the button when they are in danger and they can go to the toilet freely without fear of being attacked.

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- Gender and diversity workshops should be conducted for underground mineworkers in order to educate men and women about equality and how to respect and work as a team.

- The mine should ensure the occupational safety of women and prevent occupational and health problems experienced by women, by adhering to the ILO and the WHO's definition of occupational Health and Safety as stated by the Mine Health and Safety Council Report (2012:11-12):

  o The promotion and maintenance of the highest degree of physical, emotional and social well-being of workers in all occupations.

  o The placing and maintenance of the workers in an occupational environment adapted to his/her physiological and psychological capabilities. This could include female hostels being built to deal with the challenge of transport problems for women and the life-threatening risks they face when waiting for transport in the early hours.

- Ablution facilities should be improved in the underground and they should be placed so that employees do not have to walk long distances.

- Chemical toilets should be replaced with mobile flushing toilets to prevent urinary tract infections.

- Sanitary bins should be placed in every department and should be changed regularly. This will give women the opportunity to live a healthy lifestyle.

- The mine should consider development programmes for women that identify women in the lower levels to be mentored by experiences colleagues in senior levels for future promotions. Recruitment and selection policies should be revisited to accommodate women and should be put in practice.

- Forums for women should be established in order to empower women to feel free to talk about sexual harassment issues without fear of victimisation. In these forums, experts should educate women on sexual harassment policies and protocols to follow.

- The mine should explore mechanisms to accommodate women. This may mitigate risk factors, such as absenteeism, stress, substance abuse, underground accidents and fatalities. Stress can also affect the performance, safety and morale of the employee. Such mechanisms may include the

establishment of an on-site EAP unit in order for women to debrief whenever necessary.

4.5.2   Recommendations for future research

The following areas of study are recommended for future research:

- The evaluation of the effectiveness of the Mine Health and Safety Act (No. 29 of 1996) in the underground mine. Many women still face health and safety challenges despite the governance of the legislation and compliance with the governing bodies. Health and Safety challenges should be eliminated to ensure healthy lifestyles for women in the underground mine.
- Future research should also focus on mechanisms for addressing gender-based discrimination in the mining industry. Gender discrimination in the mining industry remains an issue. Women are still treated unfairly in the male-dominated environment despite the equal rights enshrined by the Employment Equity Act (No. 55 of 1998).

4.6   CONCLUSION

Based on the findings of this study, it is evident that women do find working in male-dominated areas challenging, but they are eager to face the challenge and prove to the world and men in particular, that they are capable. It is also evident that women can find ways to deal with all situations they find challenging in the mining industry and cope irrespective of the extent of the challenge. Women are capable of applying different skills for survival. The mine should make sure that in the process of incorporating women in the mine, the rights, health and safety of women are taken into account and are prioritised.

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Appendix 1: Ethical clearance letter

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Research Ethics Committee

20 August 2014

Dear Prof Lombard

Project:	**The coping mechanisms of women in the mining industry**
Researcher:	**RD Mokotong**
Supervisor:	**Dr CE PRinsloo**
Department:	**Social Work and Criminology**
Reference number:	**12159086**

Thank you for your response to the Committee's correspondence of 12 August 2014.

I have pleasure in informing you that the Research Ethics Committee formally **approved** the above study at an *ad hoc* meeting held on 19 August 2014. Data collection may therefore commence.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should your actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

The Committee requests you to convey this approval to the researcher.

We wish you success with the project.

Sincerely

Prof. Karen Harris
Acting Chair: Research Ethics Committee
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: karen.harris@up.ac.za

Research Ethics Committee Members: Dr L Blokland; Prof M-H Coetzee; Dr JEH Grobler Prof KL Harris(Acting Chair); Ms H Klopper; Dr C Panebianco-Warrens; Dr C Puttergill; Prof GM Spies; Dr Y Spies; Prof E Taljard; Dr P Wood

Appendix 2: Organisational permission letter

HERNIC
FERROCHROME

11 February 2014

Ms R. M. Mokotong
453 Nuiwenhuizen Street
Elardus Park/EXT 1
Pretoria
0181

ATTENTION:

Student name	: **Ms R. M. Mokotong**
Student number	: **12159086**
Institution	: **University of Pretoria**
Year of study	: **2014**

Dear Rose-Darling

RE: RESEARCH PROJECT ON THE COPING MECHANISMS OF WOMEN IN MINING

Hernic Management has noted the objective of your studies and research and would like to grant you the permission to do your research investigations at Morula Shaft. We also note that the use of the results will be for sole purpose of this study and will remain confidential.

It is also our understanding that:

- The research is being conducted for the completion of Masters in Social Work (EAP) with the University of Pretoria.
- The results are to be consolidated and published in the form of a Master's Thesis, without any reference to any of the responding persons.

We also appreciate the interest shown in our organisation and the behaviour of our employees that will contribute positively in the Mining industry.

Yours sincerely,

Per: Lemogang Pitsoe
HERNIC FERROCHROME (PTY) LTD
General Manager Mining

Sent electronically and therefore unsigned, signed copy to be provided on request.

Faculty of Humanities
Department of Social Work & Criminology

08/02/2016

INFORMED CONSENT

1.   NAME OF RESEARCHER
Rose-Darling Mokotong
Tel: 0761603207

2.   RESEARCH TITLE
The coping mechanisms of women in the mining industry.

3.   PURPOSE OF THE RESEARCH STUDY
The purpose of the research is to explore the experiences faced by women in the underground mine and how they cope with daily labour, health and occupational challenges on a daily basis.

4.   DESCRIPTION OF PROJECT
The aim of the research is to explore the coping mechanisms of women in the mining industry. The researcher will conduct one-to-one interviews, guided by a semi-structured interview schedule, with the selected participants. The researcher will explore the challenges faced by women in the underground mine and how they cope with them. The interview will take between 45 minutes to an hour. Every interview will be recorded with a digital recorder for the researcher to be able to transcribe the content and analyse the research data. Participants are guaranteed of confidentiality and their responses will be anonymous in the final research report.

5.   NUMBER OF PARTICIPANTS
Twelve (10) to fifteen (15) participants will be selected to take part in the research project.

6.   RISKS INVOLVED IN THE RESEARCH STUDY
The participants will not be subjected to any harm and the researcher will make every effort to conduct this research in a manner that will minimize possible harm,

however, should the researcher perceive any participants to be negatively affected by the research a debriefing session would be conducted.

7. BENEFITS OF THE RESEARCH STUDY

There are no economic benefits for participating in this research project. However, the long-term benefits are that by talking about their experiences and challenges will motivate management to improve systems currently in place to best provide for women in the mining industry. This will contribute towards the recommendations the research findings will propose to the Mining GM and as a result, strategies may be developed to address them.

8. VOLUNTARY PARTICIPATION

Although the researcher seeks my permission to be part of the research, it does not obligate me to do so. My participation is voluntary. I will be free to withdraw my participation at any point, and will experience no negative consequences.

9. RECORDS OF PARTICIPATION IN THIS RESEARCH

The information provided will be protected and my responses will be kept confidential. Recordings and transcripts will be stored in a locked cabinet. The only individuals who will have access to this information will be those directly involved with this research project that have been trained in methods to protect confidentiality. The research information will be safely stored at the Department of Social Work and Criminology, University of Pretoria for a period of fifteen years. The results of this research may appear in publications but participants will not be identified.

10. CONTACT PERSONS

If I want more information about this research, I may contact the researcher as indicated at the beginning of this document.

11. AGREEMENT TO PARTICIPATE IN THE RESEARCH STUDY

My signature indicates that I have read, or listened to, the information provided above and that I received answers to my questions. I have freely decided to participate in this research and I know I have not given up any of my legal rights.

I hereby freely give my permission to participate in this research project.
This document was signed at _____ on the _____day of _____ 2014.

NAME: …………………………………………………………………………………

SIGNATURE: …………………………………………………………………………

SIGNATURE OF RESEARCHER: ………………………………………………

Appendix 4: Interview schedule
SEMI-STRUCTURED INTERVIEW SCHEDULE
The coping mechanisms of women in the mining industry
RD Mokotong: 12159086
MSW (EAP)
Department of Social Work and Criminology

- What are your experiences as a woman of working underground in the mine?

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- What are the challenges that you face on a daily basis as a women with regard to labour, safety, health and occupational challenges?

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- What coping mechanism/s do you use? (What do you do to cope with the challenges mentioned above?)

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- What support systems do you think should be put in place to benefit women working underground?

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BIOGRAPHICAL INFORMATION

Age	
Relationship status	
Children (number and ages)	
Highest educational qualification	
Current employment position	
Years of experience working underground	
Other	