

Exploring the relationship between self-managed work teams and work engagement in a gold processing plant

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ABSTRACT

Title

Exploring the nature of the relationship between self-managed work teams and work engagement in a gold processing plant.

Key terms

Engagement, Work Engagement, Self-managed Teams, Psychological Meaningfulness, Psychological Safety, Psychological Availability, Empowerment, Team Work.

The general aim of this study was to determine the nature of the relationship between self-managed work teams and work engagement in a gold processing plant as compared to that of employees within the same company with less freedom to manage themselves and their levels of engagement. The value of this investigation lies in determining if there is a favourable difference in the levels of work engagement of members of self-managed work teams as compared to their counterparts and if so, how these findings could be used in mining organisations to effect higher levels of employee performance through increased work engagement, empowerment and teamwork.

The study was conducted on two groups of individuals within the same mining organisation. One group consisted of individuals who worked within self-managed work teams and the other group consisted of individuals who functioned in their traditional hierarchical structures. Three previously validated questionnaires were used to administer and obtain data from employees. Firstly, The Utrecht Work Engagement Scale (Schaufeli & Bakker, 2003) was used to measure work engagement. Secondly, The Psychological Meaningfulness, Safety and Availability questionnaire designed by May (May *et al.*, 2004) was used to measure the participants' perceptions about themselves, their jobs and co-workers. Thirdly, The Empowered Teamwork questionnaire was used to measure the participants' perceptions regarding Empowerment and Teamwork (Slocum & Hellriegel, 2011:352). Using the data from the above questionnaires, a statistical analysis was done to determine relationships.

The study concluded that there is a positive relationship between self-managed work teams and work engagement as well as other constructs measured, like empowerment and teamwork. Recommendations were made to organisational managers and future researchers.

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LIST OF ABBREVIATIONS

CWR – Co-Worker Relations

MSAS – Meaningfulness, Safety and Availability Scale

PA – Psychological Availability

PM – Psychological Meaningfulness

PS – Psychological Safety

R – Resources

SMT – Self Managed Team

TWE – Team Work Engagement

UWES – Utrecht Work Engagement Scale

WE – Work Engagement

WRF – Work Role Fit

CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

1.1 BACKGROUND

The mineral rich African continent provides mining organisations with unprecedented opportunities to create value for its stakeholders; however, the continent provides its own unique challenges. The mining industry in South Africa has been the foundation of the South African economy for many decades. Mining firms make an important contribution to employment opportunities, the gross domestic product and export earnings in the South African economy (Van der Walt, 2008:1); however, an international study done by Gallup in 2011-2012 indicated that South Africa had the highest percentage of actively disengaged employees in the world with one factor in particular contributing to this state, namely the destabilising labour unrest in the mining sector (Rothmann, 2017:324).

This study dealt with self-managed work teams and work engagement in the South African mining industry, specifically on lower organisational levels. The aim was to establish if there was a relationship between self-managed work teams and work engagement in a gold processing plant and what the nature of this relationship was.

1.2 PROBLEM STATEMENT AND CORE RESEARCH QUESTION

Not much conclusive research has been done on the relationship of self-managed / cross-functional work teams and work engagement in gold mining firms, especially in gold processing plants.

Declining mining resources along with unstable commodity prices, a struggling developing economy and an unstable labour force, make the South African gold mining industry a difficult place for business. Once the world capital for gold production as a proportion of world production (excluding that of the U.S.S.R.), South Africa's production peaked in 1971 at 79.1 percent of the global production (Janisch, 1986:273). The situation has changed dramatically and the South African gold mining industry is currently facing enormous challenges to stay afloat. But are these challenges only limited to uncontrollable external factors?

Traditionally, South African gold mining organisations have large hierarchical based structures with multiple functional/discipline-based levels and layers. Max Weber, a German sociologist,

developed bureaucracy, a concept by which people in large organisations can be managed (Strydom, 2002:93). This concept has seen very little change over the last couple of centuries in South African mining firms as organisational structures have remained unchanged for decades (Strydom, 2002:97). Although traditional structures remain at the heart of most operations, there are still some examples of multi-disciplinary teams and self-directed work teams that can be found in the gold mining industry. These teams have had some success in South Africa but, have struggled and will keep on struggling to survive in industries where Max Weber's bureaucracy still has the upper hand (Strydom, 2002:97).

Decisions are often taken on the highest levels and empowerment throughout the organisations is low. Reporting within line function is mostly preferred and self-directed, self-managed and cross-functional teamwork discouraged. Miners tend to silo operations and maintenance, which leads to a downward spiral of accusations and counter accusations when an item of equipment fails to meet expectations (Strydom, 2002:94). Cross-functional communication and decision making is halted by these silo structures and frameworks as communication tends to go either upwards or downwards in organisations. All of these factors, frameworks and historical structures often lead to less desirable business behaviours, like a business disconnect, low empowerment, no teamwork, low accountability and proactivity, specifically on lower operational levels. With the passing of the decades, all these behavioural frameworks have led to an extremely unique mining culture - a culture that's often demoralising, disempowering and leads to poor work engagement and section performance.

For South African companies to cope with pressures and remain competitive, they need new and improved practices and processes that encompass employee participation, empowerment, teamwork, decision-making power and democracy (Nel & Pienaar, 2006:180). Changes in South Africa's political and economic sphere demand the democratisation of the workplace, participation and empowerment of the workforce. Flatter hierarchical structures, as a result of downsizing, enhance involvement but also demand that workers function in a more autonomous manner (Coetzee, 2003:3). The key to production effectiveness lies in the optimal utilisation of the organisation's own employees (Strauss, 2005:7). Work teams need to be multi-skilled, self-directed/managed and as small as possible in order to maximise efficiency and productivity levels and to minimise costs (Strauss, 2005:2). According to Nel and Pienaar (2006:179), a self-managed/directed work team can be defined as a group of employees who have day-to-day responsibility for managing themselves and the work they do with a minimum of direct

supervision. Members of self-managed/ directed teams typically handle job assignments, plan and schedule work, make production and/or service-related decisions and act on problems (Nel & Pienaar, 2006:180).

Some researchers have paid attention to characteristics of an effective self-managed work team in the gold-mining industry (Nel & Pienaar, 2006:179). Others have focussed on causes of dysfunctional behaviour within self-directed work teams (Strauss, 2005:1) in the mining industry, whilst still others focused on dispositional factors, experiences of team members and effectiveness in self-managing work teams (Coetzee, 2003:1). None of this past research shows conclusive evidence of a relationship between that of self-directed/managed work teams and work engagement in the mining industry and processing environment. None of the previous studies were done focussing on a processing plant, as most of them were aimed at underground operations.

The 21st century work environment calls for team members to be more engaged in their work and to exhibit more creativity in completing their job tasks (Zhang *et al.* 2017:235). Currently a poor understanding of the relationship between self-managed teams and work engagement exists in society. No studies could be identified that compared the levels of work engagement within self-managed work teams with the levels of engagement of traditional groups, namely employees that functioned in a more hierarchically structured line of reporting with less discretionary power within the same broader work context. In contrast then, this study offered the unique opportunity to contrast the work engagement levels of two groups due to the historical nature of the organisation. *The organisation in study was quite unique, due to the fact that it had recently been through a behavioural change intervention. This intervention was aimed at establishing self-managed / cross-functional teams at lower levels within the organisation. Due to the tremendous size of the organisation, only certain members and individuals were made part of these teams in the initial intervention. This led to a situation where there were still some individuals who remained in their traditional functional groups and line authority. This provided the researcher with the opportunity to study two groups of individuals in the same organisation within the same time period.*

This research dealt with the influence of self-managed work teams on work engagement levels of employees working at lower levels of reporting, in a processing plant within a mining environment. More specifically, this study aimed to establish if self-managed work teams

experienced higher levels of work engagement than their counterparts who were employed within the same work context but not as members of self-managed work teams. The term lower-levels, for the purpose of this study, is defined as employees, who operate within in the so-called lower to middle section of the traditional hierarchical mining organisations. This include individuals from assistant to supervisory levels.

The findings of this research could show the value of self-managed work teams for increased effectiveness and productivity, specifically in terms of higher levels of work engagement.

1.3 RESEARCH QUESTIONS / OBJECTIVES

1.3.1 Primary research question

- What is the nature of the relationship between self-managed work teams and work engagement in a gold processing plant?

1.3.2 Secondary research questions

- What relationship exists between the traditional group, the self-managed team group in terms of levels of work engagement?
- What relationship exists between self-managed teams and sub-dimensions of work engagement namely, vigour, dedication and absorption?
- What relationship exists between self-managed teams and psychological meaningfulness, work role fit, psychological safety, co-worker relations, psychological availability and resources?
- What relationship exists between the two groups; teamwork and empowerment?

1.4 IMPORTANCE AND BENEFITS OF THE STUDY

On completion, the study should be able to objectively testify to individuals, organisations, the industry and research facilities, if there is a relationship between self-managed / cross-functional teamwork at lower levels and work engagement in the workplace.

1.4.1 Individuals

Leaders and managers in the gold mining and processing industry face a challenging task when it comes to human resources and human capital. The history, diversity and cultures of

individuals within the mining industry have over time incentivised some very unique behaviours between individuals, their peers, departments and their organisations. It was envisaged that the study would be able to objectively testify to individuals, specifically in leadership and management positions if a positive relationship exists between self-managed teams and work engagement and also if these teams can be used to enhance the levels of engagement within the workplace.

1.4.2 Organisations

Organisations in the gold mining and processing industry face some unique and challenging tasks. Not only is the mining itself a tough, demanding and vigorous environment, but they are also faced with volatile market conditions, an unstable labour force and poor governmental support. Taking the above into consideration, it's critical that mining organisations use all means necessary to combat these challenges. On completion, the research should be able to objectively testify if self-managed teams can be used to increase levels of engagement and add value to organisations in practice.

1.4.3 Research

Not much research has been done on the relationship between self-managed teams and work engagement, specifically in the gold mining and processing environment. This study adds to the existing literature base, as it compared levels of engagement between self-managed teams and traditional line authority groups. The study thereby established initial proof of potential ways to obtain higher levels of engagement within the mining sector.

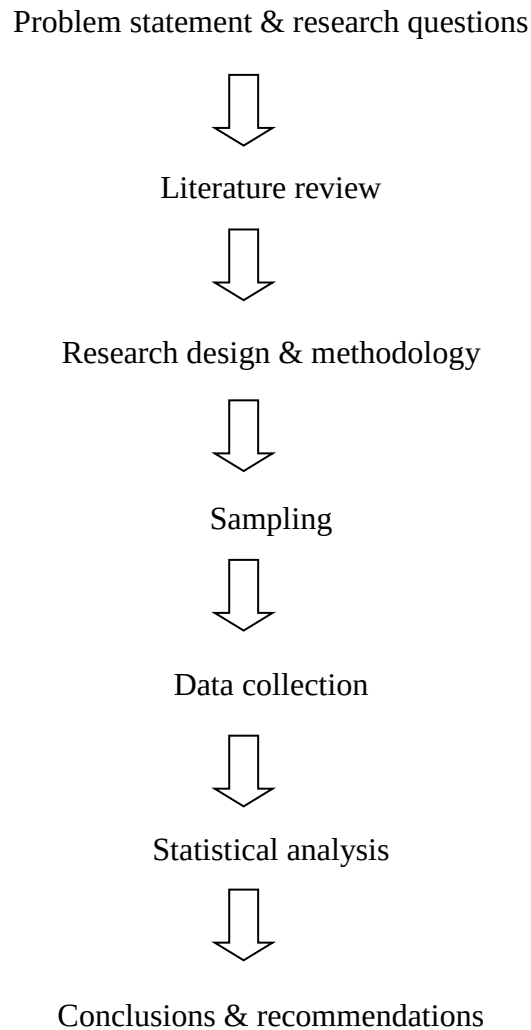
1.4.4 Overview

The rest of the document focusses on the research that has been done, the principles and overviews of the constructs, the definitions of the constructs, the previous literature done on the constructs and how these are to be measured. It also discusses the description of the research design and method in more detail. These include the population, sampling, data collection, data analysis, the quality and rigour of the study and the ethicality of the research to be done. The results are explored and conclusions and recommendations are made in the final chapter.

1.5 DESCRIPTION OF OVERALL RESEARCH DESIGN

Figure 1, provides a graphic summary of the overall research design and the step-by-step process followed to complete the study:

Figure 1 – Research design:



Source: Author Self

1.6 POPULATION / SAMPLING

The study was done within the African gold mining industry. It was aimed at lower to middle operational levels in the organisation and more specifically at two groups of individuals. Both groups were measured using the same measuring instruments. One group was individuals who operated within self-managed work teams within the organisations, whilst the second group of individuals was made up of individuals who was not part of a self-managed team and functioned within their traditional hierarchical structures.

The sample size aimed at was between 80 to 120 individuals, consisting of both groups (n = 80 to 120).

The sampling process followed a non-probability sample, using a purposive sampling method. The goal of purposive sampling is to sample cases/participants in a strategic way, so that those sampled are relevant to the research questions (Bryman *et al.*, 2014:186). The research aimed to test all the self-managed team members and a similar number of traditional respondents.

The unit of analysis was found in South Africa, in the Gauteng province, towards the east. This meant that the study took place at the property of a gold mining/reclamation and processing organisation.

Although traditional structures remain at the heart of most operations, there are still some examples of multi-disciplinary teams and self-directed work teams that can be found in the gold mining industry (Strydom, 2002:97). These teams have been setup at lower operational levels to achieve specific objectives. To answer the primary research question, the researcher needed to question specific individuals in the organisation. Testing the levels of work engagement of these employees in two groups allowed the researcher to obtain objectified results. This made it possible to do a comparison between the two groups in terms of levels of engagement, empowerment and teamwork.

1.7 DATA COLLECTION

1.7.1 Method / Approach

Data for the research was collected using hand written questionnaires. These were existing, previously validated questionnaires as outlined in paragraph 1.8.3 to measure the constructs, namely Work Engagement, Psychological Meaningfulness, Safety and Availability and Empowered Teamwork. The questionnaires were distributed by hand to the respondents and respondents were given a reasonable time to complete.

1.7.2 Reason for Approach

The primary reason for collecting data by means of hard copies that were distributed and completed by hand, was because lower-level employees mostly did not have access to computers

and were not always computer literate. Written questionnaires are economical and the risks associated with them are minimal. An initial briefing was done with all respondents and self-managed team leaders. Context was given by the researcher and management on the purpose of the study and how respondents were expected to complete questionnaires. The researcher was present during the completion of most of the questionnaires by respondents and was able to answer questions if required.

1.7.3 Questionnaires

The questionnaires used in the study were the:

- Utrecht Work Engagement Scale (Schaufeli & Bakker, 2003);
- The Psychological Meaningfulness, Safety and Availability Scale questionnaire designed by May (May *et al.*, 2004) to measure the participants' perceptions about themselves, their jobs and co-workers;
- The Empowered Teamwork questionnaire was used to measure the participants' perceptions regarding Empowerment and Teamwork (Slocum & Hellriegel, 2011:352).

1.7.4 Reliability

All the existing questionnaires that were used to gather data were designed by previous well-known and established researchers from well-known and reliable international institutions. The research was published by international academic institutions, reputable in the fields of Management & Psychology.

1.8 DATA ANALYSIS

Data for the research was captured and analysed by the North-West University's Statistical Consultation Services. The data was analysed using the SAS System (2016) for Windows Release 9.4 TS Level 1M3.

Firstly, the demographic information of the respondents was analysed. Next, the reliability of the instruments within the targeted population was established by means of the Cronbach's alpha method. Following this, basic descriptive statistics and correlations were made between the different constructs through analysis to determine frequencies, means and standard deviations of

Work Engagement, Psychological meaningfulness, Safety and Availability, Empowerment and Teamwork for the two groups.

Lastly, effect sizes were done to indicate practical significance between the constructs and the two groups (Steyn & Ellis, 2009:107).

1.9 RESEARCH ETHICS

The ethical principles that applied to this study included the following:

- Organisation:

Organisational consent was obtained from the relevant organisation where the study took place. This meant obtaining written permission from the relevant Human Resources department, as well as the General Manager of the organisation.

- Individuals:

Voluntary individual consent was obtained from every participant in the study. This included a consent form completed by every participant in the study. The consent form provided participants with the following context and information regarding the study:

- The name of the study
- The nature of the study
- The duration of the study
- The aim of the study
- The method and way in which the study was conducted
- Discomfort and risks that were reasonably be expected
- The contribution that the study will have on individuals, organisations and academic research

The study was presented to the NWU School of Business and Governance ethical committee and the ethical clearance number obtained was: **EMSPBS17/03/06-01/24**

1.10 DELIMITATIONS (SCOPE)

The discipline of this study can be classified under the subject field of Human Resources within the business and organisational field. This study focussed on the relationship between self-managed work teams and engagement in a South African gold mining firm. The mining organisation where the study took place, operates within the Gauteng province in South Africa and is a world leader in gold tailings mining and processing.

1.11 DEFINITION OF KEY TERMS

- Engagement:

“Engagement is a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication, and absorption. Rather than a momentary and specific state, engagement refers to a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behaviour” (Schaufeli *et al.*, 2002:74).

- Gold:

Gold is a rare and valuable natural commodity. Because of its scarcity and value, gold has been used for trade by individuals, colonies and countries for ages.

- Gold Mining:

Mining is the extraction of ore that contains natural resources from the earth. Gold mining is the extraction of gold bearing ore from the earth through the use of various means and methods.

- Gold Processing:

Gold processing is the processing of gold bearing ore/materials for the purpose of gold extraction from the ore.

- Self-Managed Team:

A self-managed team is a team of individuals who have the ability, authority and who are empowered to make decisions and manage themselves on a daily basis within certain frameworks and boundaries.

1.12 CHAPTER DIVISIONS

The chapters in the mini-dissertation are presented in the following way:

Chapter 1: Introduction and problem statement

Chapter 1 provided some context and background to the study itself. This included the introduction, problem statement and general overview of the study.

Chapter 2: Literature review

For Chapter 2, a literature review was done to provide an understanding of the theoretical aspects of the study, to explore definitions of the constructs and to have a look at previous applicable studies already done.

Chapter 3: Empirical research

In Chapter 3, the overall research approach is addressed. Included in this chapter are the research design, participants, measuring instruments, procedure, statistical analysis and the research objectives.

Chapter 4: Empirical results & analysis

Chapter 4 details the analysis done on the data obtained. This include demographics, reliability and a detailed discussion on the results and findings.

Chapter 5: Conclusion & recommendations

In Chapter 5, a conclusion on the study is provided, as well as some recommendations to management and for future studies.

1.13 CHAPTER SUMMARY

Chapter 1 presented an introduction to the study, the problem statement, a broad overview of the study in general and finally a layout of the chapters included in the study. For the next chapter (2), a literature review is done on previous applicable literature related to the study.

2 CHAPTER 2 – LITERATURE REVIEW

The literature review highlights the most significant findings as discussed by previous researchers on the applicable topic (Welman *et al.*, 2011:250). The researcher should clearly demonstrate in the literature review how previous studies relate to one another and how the proposed research ties in with similar research (Welman *et al.*, 2011:41).

Sources for the research must be credible & trustworthy. The sources included, but were not limited to, the following:

- Articles in accredited academic journals
- Textbooks, dictionaries and reference material
- Dissertations, mini-dissertations, research reports and theses
- Scientific databases, such as EBSCOhost, JSTOR and Science Direct

2.7 ENGAGEMENT

2.7.2 Engagement overview

Terms like engagement, work engagement and employee engagement have become somewhat familiar phrases in organisations and the business world. The term engagement has become as attractive for organisations as it is for the professional societies and consulting groups who promote it (Shuck & Wollard, 2010:90). The constant needs of businesses to maximise the inputs of their labour forces and employees have contributed to the interest in engagement (Rothmann, 2010:1). Business needs are often driven by intense global competition, which is increasing the need for employees to be emotionally and cognitively committed to their company, their customers and their work (Rothmann, 2010:1).

According to Schaufeli & Bakker (2003:3), it seems that times and things have changed. Since the beginning of the century, more attention has been paid to what is seen as positive psychology, the scientific study of human strength and optimal functioning. Various theories and models of engagement include dimensions of well-being (Rothmann, 2017:321). However, most of what has been written about employee engagement can be found in practitioner journals where it has its basis in practice rather than theory and empirical research (Saks, 2006:601). The

gap in knowledge between the needs of organisations and the ability for professionals to respond effectively are problematic for HRD scholars, researchers, practitioners, and organisations that employ these people (Shuck & Wollard, 2010:91). Although there is a great deal of interest in engagement, there is also a rather big deal of confusion. Currently, there is no consistency in definition, with engagement having been operationalised and measured in many different ways (Kular *et al.*, 2008:1). Because of the existence of different definitions, it makes the state of knowledge of employee engagement difficult to determine as each study examines employee engagement under a different protocol (Kular *et al.*, 2008:1).

According to Maslach *et al.* (2001:416), engagement is distinct from established constructs in organisational psychology, such as organisational commitment, job satisfaction, or job involvement. Engagement provides a more complex and thorough perspective on an individual's relationship with work. Because of the emergence of positive organisational psychology, it is not surprising that positive aspects of health and well-being are increasingly popular in occupational health psychology (Schaufeli & Bakker, 2003:3). One of these positive aspects is work engagement, which is considered to be the antipode of burnout (Schaufeli & Bakker, 2003:3). Work engagement is the assumed opposite of burnout, contrary to those who suffer from burnout, engaged employees have a sense of energetic and effective connection with their work activities and they see themselves as able to deal well with the demands of their job and environment (Schaufeli & Bakker, 2003:4).

2.7.3 Defining engagement

According to Macey & Schneider (2008:4), numerous definitions of engagement can be derived from the practice and research driven literatures. For the purposes of this study and orientation of the reader, the researcher thought it best to start with the earlier definitions of engagement. William Kahn is a professor of organisational behaviour at the Boston University in the USA. To many, Kahn is known as the founding father of engagement. Kahn (1990:694) defined personal engagement as: 'The harnessing of organisation's members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances'.

According to Kahn (1990:694), the cognitive aspect of employee engagement concerns employees' beliefs about the organisation, its leaders and working conditions. The emotional

aspect concerns how employees feel about each of those three factors and whether they have positive or negative attitudes toward the organisation and its leaders. The physical aspect of employee engagement concerns the physical energies exerted by individuals to accomplish their roles (Kular *et al.*, 2008:3).

Schaufeli *et al.* (2001:74) defined engagement as: ‘a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication, and absorption. Rather than a momentary and specific state, engagement refers to a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behaviour’. Following up on this, Schaufeli & Bakker (2003:4), described engagement as: ‘the assumed opposite of burnout. Contrary to those who suffer from burnout, engaged employees have a sense of energetic and effective connection with their work activities and they see themselves as able to deal well with the demands of their job’.

Common to these definitions are the notion that employee engagement is a desirable condition, has an organisational purpose and connotes involvement, commitment, passion, enthusiasm, focussed effort and energy. Therefore, it has both attitudinal and behavioural components (Macey & Schneider, 2008:4).

2.7.4 Constructs of engagement

Work engagement

According to Schaufeli & Bakker (2003:3), whilst burned-out workers feel exhausted and cynical, their engaged counterparts feel vigorous and enthusiastic about their work. In contrast to previous positive approaches, such as the humanistic psychology, that was largely unempirical. The current positive psychology is empirical in nature. This implies the careful operationalisation of constructs, including work engagement (Schaufeli & Bakker, 2003:3). Although employees experience work engagement and burnout as being two opposite psychological states, the former has a positive quality and the latter a negative quality. Both need to be considered as principally independent of each other (Schaufeli & Bakker, 2003:4). Based on the Schaufeli & Bakker (2003:5) definition of engagement, a self-report questionnaire,

called the Utrecht Work Engagement Scale (UWES), was developed that includes the three constituting aspects of work engagement, namely vigour, dedication and absorption.

- *Vigour* is characterised by high levels of energy and mental resilience while working, the willingness to invest effort in one's work and persistence even in the face of difficulties (Schaufeli *et al.*, 2001:74).
- *Dedication* refers to being strongly involved in one's work and experiencing a sense of significance, enthusiasm, inspiration, pride and challenge (Schaufeli *et al.*, 2001:74).
- *Absorption* is characterised by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work (Schaufeli *et al.*, 2001:75).

Psychological meaningfulness, safety and availability

In Kahn's study, he focussed on how peoples' experience of themselves and their work contexts influenced moments of personal engagement and personal disengagement (Kahn, 1990:702). Kahn analysed conditions of each reported moment of engagement and induced three psychological conditions that generalised across the moments (May *et al.*, 2004:13). He argued that people asked themselves three fundamental questions in each role situation: how meaningful is it for me to bring myself into this performance; how safe is it to do so?; and how available am I to do so? From an analysis of his interviews, he generated the determinants for these psychological conditions (May *et al.*, 2004:14). These experienced psychological conditions are meaningfulness, availability and safety and they lie at the heart of many engagement models (Crawford *et al.*, 2014:59). The three psychological conditions, namely meaningfulness, safety and availability are theorised to influence the degree to which an employee engages in his/her role at work (May *et al.*, 2004:19). An understanding of the contribution of psychological conditions to personal engagement is important because employee engagement varies among individuals in the same job and from task to task (Rothmann & Baumann, 2014:517).

- *Psychological meaningfulness*. Meaningfulness can be seen as a feeling that one is receiving a return on investments of oneself in a currency of physical, cognitive or emotional energy (Kahn, 1990:704). Meaningfulness is also defined as the value of a work goal or purpose,

judged in relation to an individual's own ideals or standards (May *et al.*, 2004:14). The significance and purposefulness of tasks contribute to experiences of psychological meaningfulness (Rothmann, 2017:331). There are certain sub-constructs that contribute to psychological meaningfulness:

- *Job enrichment.* Kahn maintained that the characteristics of one's job could influence the degree of meaningfulness an employee experiences at work (May *et al.*, 2004:14). Based on previous research, it's expected that job enrichment will be positively related to psychological meaningfulness (May *et al.*, 2004:14).
 - *Work role fit.* A perceived 'fit' between an individual's self-concept and his/her role will lead to an experienced sense of meaning due to the ability of the individual to express his/her values and beliefs (May *et al.*, 2004:14-15). People seek out work roles that allow them to behave in a way that expresses their authentic self-concepts (May *et al.*, 2004:15). According to Rothmann (2017:330), human beings are creative and self-expressive and therefore they will look for work roles that will help them express their true self.
 - *Co-worker relations.* When individuals are treated with dignity, respect and value for their contributions and not simply as the occupant of a role, they are likely to obtain a sense of meaningfulness from their interactions (May *et al.*, 2004:15). Individuals also derive meaning from the social identities they receive from salient group memberships (May *et al.*, 2004:15). To the extent that co-worker interactions foster a sense of belonging, a stronger sense of social identity and meaning should emerge (May *et al.*, 2004:15).
- *Psychological safety.* Safety is defined as feeling able to show and employ oneself without the fear of negative consequences to self-image, status or career (Kahn, 1990:708). Psychological safety is concerned with relationships and norms in one's work role and career. According to Palo & Rothmann (2016:222), social connections with co-workers and supervisors are necessary for workplace belongingness. There are certain sub-constructs that lead to psychological safety:
- *Supervisor relations.* The relations with one's immediate manager can have a dramatic impact on an individual's perceptions of the safety of a work environment (May *et al.*, 2004:16). If the leader is supportive, coaching-oriented and has non-

defensive responses to questions and challenges, members are likely to conclude that the team constitutes a safe environment (Edmondson, 1999:356). Trustworthy supervisory behaviours are expected to lead to feelings of psychological safety and a willingness to invest themselves at work (May *et al.*, 2004:16).

- *Co-worker relations.* Interpersonal relations among employees that are supportive and trusting should also foster psychological safety (Kahn, 1990:708). Co-workers who support each other during tough times at work, have mutual respect for one another and value each other's contributions engendering trust and heightened perceptions of psychological safety and engagement (May *et al.*, 2004:16-17). Unacknowledged characters or unconscious roles that individuals assume at work, also influence psychological safety (Kahn, 1990:709).
- *Co-worker norms.* Norms are set up to govern organisational and group behaviour. According to Hackman, group norms support self-regulation (Hackman, 1987:329). Normative rules in teams that employees feel they must follow should lead to feelings of less psychological safety than when employees feel they have more flexibility in their behaviours (May *et al.*, 2004:17)
- Psychological availability. Availability is the sense of having the physical, emotional or psychological resources to personally engage at a particular moment (Kahn, 1990:714).
 - *Resources.* Individuals bring their physical, emotional and cognitive resources to bear on role-related tasks when they engage themselves at work (May *et al.*, 2004:18).
 - *Work role security.* According to Kahn, security in one's work influences self-consciousness (Kahn, 1990:716). Individuals can become pre-occupied with the impression they leave on others or they monitor the social environment and adapt their behaviours accordingly (May *et al.*, 2004:18).
 - *Outside activities.* Outside activities away from work have the potential to draw an individual's attention away from work and make them less psychologically available (May *et al.*, 2004:18). These can include the memberships of other outside organisations that are likely to distract an individual, so that he/she is psychologically unavailable and cannot focus on the task or role at hand (May *et al.*, 2004:18).

2.8 TEAMWORK

2.8.2 Teamwork overview

In 1997, Cohen and Bailey (1997:242) concluded that substantial knowledge about teams had been accumulated, yet they predicted that much more would be learned in the future. Like they anticipated, there has been an explosion of work in the last few decades since their review. Literally hundreds of primary studies have been conducted, several meta-analyses have been performed and numerous reviews of the literature have been published (Mathieu *et al.*, 2008:410-411). According to Kozlowski & Bell (2001:4), increasing global competition, consolidation and innovation create pressures and are influencing the emergence of teams as basic building blocks of organisations. These pressures drive a need for diverse skills, expertise and experience. They necessitate more rapid, flexible, adaptive and quicker responses. Kozlowski and Bell (2001:4) have established that teams enable these characteristics within organisations and according to them, this ongoing transformation in the basic organisation of work has captured the attention of researchers and is reflected by new theories of team functioning, a rapid growing number of empirical studies and numerous literature reviews written on the research of teams.

The surge of interest in the use of teamwork has mostly been focussed on improving performance outcomes within business processes (Cooney, 2003:678). According to Cooney, optimising the performance of employees and of the core operational systems of the enterprise, has been the clear objective of many team interventions (Cooney, 2003:678). The contemporary search for new ways of organising work and production in order to improve performance is observed in the use of a variety of teamwork practices, to achieve different outcomes, along with the frequent coupling of teamwork and other new operational practices (Cooney, 2003:678).

This change in focus for the use of teamwork has led to the creation of new performance-based teamwork concepts (Cooney, 2003:678). Work teams and groups come in a variety of types and sizes, cutting across different contexts, functions, internal processes and external linkages (Kozlowski & Bell, 2001:6).

2.8.3 Defining team, teamwork & teamwork concepts

Team

Various definitions for a team have been developed by various researchers over the years. Probably one of the most recognised is the definition by Katzenbach & Smith in 1994.

They defined a team as:

- “a small group of people with complementary skills committed to a common purpose and set of specific performance goals” (Katzenbach & Smith, 1994:21).

Teamwork

Various definitions for teamwork have also been developed by various researchers over the years. Seeing that this research is based within a business-driven organisation, a suitable definition of a team is the one developed by Kozlowski & Bell (2003:334).

They defined teamwork as:

- “collectives who exist to perform organisationally relevant tasks, share one or more common goals, interact socially, exhibit task interdependencies, maintain and manage boundaries, and are embedded in an organisational context that sets boundaries, constrains the team, and influences exchanges with other units in the broader entity” (Kozlowski & Bell, 2003:334).

Teamwork concepts

Uhl-Bien & Graen (1998:341) note that there are two very distinct organisational teamwork concepts. According to them, functional and cross-functional situations pose different requirements for self-managing. Functional units, with their additive and cumulative work processes backed by competent technical supervisors, allow for individual self-managing, whereas cross-functional teams, with their requirements for teamwork and integrative efforts, require people to self-manage as committed team players (Uhl-Bien & Graen, 1998:341).

Functional teams

Functional work units are organised according to similarity in the skills, expertise and resource use of members so as to permit economies of scale and efficient resource use. Within these units,

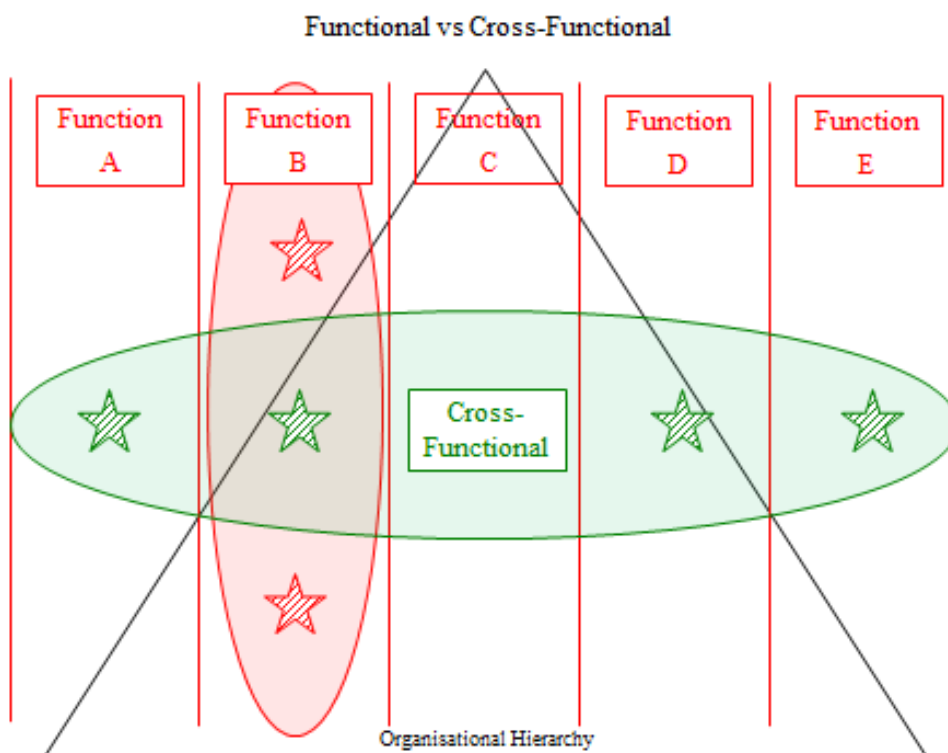
spans of control may be wider and the units may be larger because of common technical expertise (Uhl-Bien & Graen, 1998:341).

Cross-functional teams

Cross-functional teams are often temporary project teams composed of members from multiple functional areas (Uhl-Bien & Graen, 1998:341). They note that cross-functional teams offer integrated multifunctional definitions and solutions to problems and regularly generate innovative products and services (Uhl-Bien & Graen, 1998:341). In order to enhance competitive positions and to benefit from different viewpoints, organisations today increasingly rely on cross-functional teams composed of members from different functional backgrounds (Randel & Jaussi, 2003:763). Cross-functional teams however offer their own unique challenges. Because of the varying functional backgrounds of the members, traditional management models often will not work in these teams and organisations need to adjust the way they operate (Uhl-Bien & Graen, 1998:342).

Figure 2, conceptually illustrates the functional vs cross-functional team approaches.

Figure 2 – Functional vs Cross-functional



(Metworx Pty. Ltd., 2016)

Self-managed teams

According to Uhl-Bien & Graen (1998:341), self-management by individuals is different from team self-management. In team situations, members work collaboratively to determine problem solving approaches. Members have greater responsibility, but as a collective rather than as individuals. Uhl-Bien & Graen (1998:341) also note that self-managing activities at team level involve interdependent behaviours, rather than individual focussed behaviours. Previous research has identified that the concept of self-managed teams was/is divided into two design constructs:

- *Autonomous or composite work group*
- *Empowered team*

Despite the continuity of autonomous self-managing group concepts with empowered self-management, the two take different positions on the question of the operational independence of the group (Cooney, 2003:684). The empowerment concepts focus on the way in which the team and team members interpret and self-manage their work role within the organisation, whilst the autonomy concepts focus upon the way in which the group and group members self-regulate work tasks (Cooney, 2003:684). More recently, self-managed teams have been described as a concept where members share accountability for the work, authority over how goals are met, discretion over resource use and ownership of information and knowledge related to the work (HBR, 2016:41).

2.8.4 Constructs of teamwork & empowerment

All types of teams and groups need the degree of empowerment that will help them achieve their goals and objectives (Slocum & Hellriegel, 2011:352). According to Proenca (2010:339), a self-managed team can be envisaged as an empowerment technique aiming at extracting human resource value, according to the organisation or management perspective. Kirkman & Rosen (1999:59) defined team empowerment as having four dimensions: Potency, Meaningfulness, Autonomy and Impact. Team empowerment refers to the degree to which its members perceive the group as: being competent and able to accomplish work-related tasks (*Potency*); performing important and valuable tasks (*Meaningfulness*); having a choice in how they carry out their tasks (*Autonomy*); and experiencing a sense of importance and significance in the work performed and goals achieved (*Impact*), (Slocum & Hellriegel, 2011:352).

- **Potency.** Potency parallels the individual level empowerment construct of competence or self-efficacy. It is seen as the collective belief of a team that it can be effective. Potency is different from self-efficacy in three ways: (1) self-efficacy refers to individual performance and potency refers to team performance; (2) self-efficacy experiences are private but potency experiences develop collectively; and (3) self-efficacy relates to specific task performance but potency refers to generalised effectiveness (Kirkman & Rosen, 1999:59)
- **Meaningfulness.** Meaningfulness refers to a team's experiencing its tasks as important, valuable and worthwhile. Team members collectively develop and share the meaningfulness of their tasks. Thus, team members have direct effects on the experiences of meaningfulness of other members (Kirkman & Rosen, 1999:59).
- **Autonomy.** Autonomy is the degree to which team members experience substantial freedom, independence and discretion in their work. Important decisions are made and executed by teams. Thus, high levels of team autonomy may actually decrease individual autonomy as important decision making is shared rather than carried out alone and responsibility is diffused rather than granted to a single individual (Uhl-Bien & Graen, 1998:342).
- **Impact.** Team members experience impact when a team produces work that is significant and important for an organisation (Hackman, 1987:329). Team members seek out, share and collectively understand feedback from other organisation members (Kirkman & Rosen, 1999:59).

2.9 TEAMWORK & ENGAGEMENT

Lately, research over the past couple of years has pointed to a newer construct or phenomenon. Up until recently, engagement was studied only at individual levels, but according to Costa *et al.*, (2014:34), work engagement is likely to collectively exist in teams, as previous research has shown that people working together present similar patterns of mood. In teams, individuals are able to perceive and observe the behaviour of their co-workers and emotional contagion occurs (Costa *et al.*, 2014:34).

Costa *et al.* (2014:41) have found that team-work engagement is a valid construct and independent of that of individual work engagement. The term team-work engagement refers to a shared, positive, fulfilling, motivational emergent state of work-related well-being (Costa *et al.*, 2014:35). Team-work engagement is considered an emergent state of which collective structure is shaped by the nature of their members' interactions during team processes and dynamics (Costa *et al.*, 2014:35). For the purposes of this study, the focus was on individual engagement in a team environment.

2.10 CONCLUSION

When doing research of this nature, it is important to understand the literature behind the concepts and to understand the different concepts and constructs that previous researchers focussed on. The above literature review gave a thorough and in-depth overview of the concepts of engagement and teams. What is important to note from the above review, is the fact that there are different types of engagement, with different definitions and different constructs that measure each. It is also essential to note that teamwork in general has different meanings, there are different concepts of teamwork and different constructs that measure these concepts. Lastly, it is critical to note that engagement as a concept occurs within individuals as well as in teams and can be measured as a separate construct.

2.11 CHAPTER SUMMARY

In summary, this chapter provided the necessary context and understanding to the reader to know what the concepts and constructs being focussed on in the rest of the study are. This chapter also provided the reader with the opportunity to make a link between the problem statement discussed in Chapter 1 and the concepts and constructs previously investigated in the literature. In the next chapter, empirical research is explained. This includes headings like the research approach, research design, measurements and objectives.

3 CHAPTER 3 – EMPIRICAL RESEARCH

3.7 INTRODUCTION

The previous chapter investigated the constructs of engagement and teamwork as captured by previous applicable literature. The literature was used to create and enable a clear understanding of the constructs and to indicate previous possible theoretical relationships in different settings and environments. The purpose of this chapter is to explain the research process that was used, by presenting a thorough description of the research approach, design and methods etc. that were used. The chapter offers detailed descriptions of all the necessary steps that were followed in the research approach. Chapter 3 is further intended to provide information to enable any future replication of the research (Welman *et al.*, 2011:250).

3.8 RESEARCH APPROACH

The study followed a quantitative approach. The study was done to establish an objective conception of the social reality regarding the relationship between self-managed work teams in the mining processing environment and employee engagement. According to Welman *et al.* (2011:8), quantitative studies tend to provide a more objective reality of the social reality at study. The mere purpose of quantitative research is to evaluate objective data consisting of numbers (Welman *et al.*, 2011:8). Taking into consideration the units of analysis, sample size and time constraints, the best option for this specific study was a quantitative approach. All the existing questionnaires that were used to gather data were designed by previous well-known and established researchers from well-known and reliable international institutions. The research and questionnaires were previously published by international academic institutions that are reputable in the fields of Management & Psychology.

3.9 RESEARCH DESIGN

The study employed a cross-sectional survey design. The reason for this approach was because data was collected on more than one case and at a single point in time. Researchers using a cross-sectional design are interested in variation, which occurs only when more than one case is being examined (Bryman *et al.*, 2014:106). This study aimed to obtain objectified quantitative data to establish a variation between the two groups and to examine the associations between the constructs.

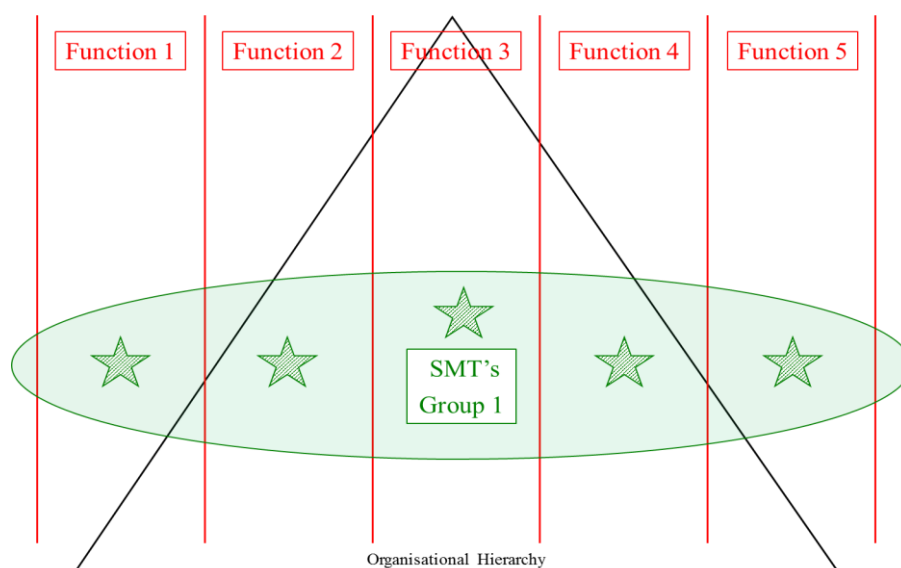
3.10 RELIABILITY

Reliability itself is concerned with the findings of the research and relates to the credibility of the findings (Welman *et al.*, 2011:145). According to Streiner (2003:103), reliability is the degree to which measurements of individuals on different occasions or by different observers, or by similar or parallel tests, produce the same or similar results. To ensure reliability of constructs, Cronbach's Alpha values were calculated and used in the study. Field (2009:678) proposes that Cronbach's alpha values must be above a minimum acceptable level in order to be deemed reliable. Pallant (2010:100) on the other hand notes that Cronbach's alpha values are sensitive to the number of items on a scale. Pallant (2010:100) notes that, when a scale has only a few items (less than ten), it is to be expected that values would be low.

3.11 PARTICIPANTS

The study was done within the South African gold mining industry and within a gold mining and processing organisation. The core purpose of the organisation in study is to reclaim and process previously mined gold bearing ore materials. The study was aimed at middle and lower operational levels within the organisation and at two groups of individuals, consisting of individuals on different hierarchical levels as well as functions within the same organisation. Both groups were measured using the same measuring instruments over a short period of time. The first group of individuals measured, consisted of individuals that operate within a self-managed, cross functional team in the organisation. As Figure 6.1 illustrates, these teams are made up of individuals from different functional departments in the organisation.

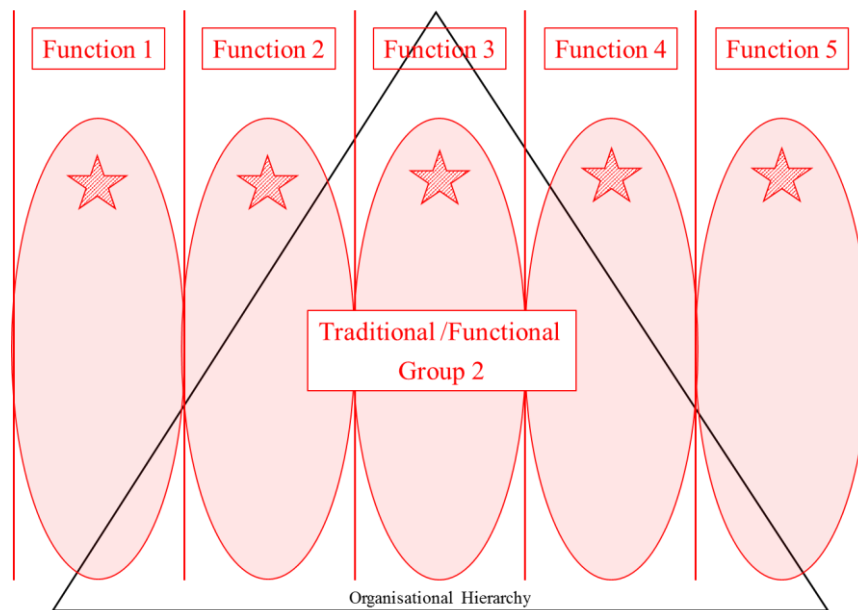
Figure 3 – SMT group



Source: Metworx Pty (Ltd)

As Figure 6.2 illustrates, the second group of individuals measured consisted of individuals that do not operate within a self-managed, cross functional environment but rather in the traditional function-based environment within the organisation. Traditionally, these employees perceive their “team” not as self-managed or cross-functional but rather their own line of function with traditional hierarchical leadership involved.

Figure 4 – Traditional group



Source: Metworx Pty (Ltd)

3.11.2 Sample selection

The sampling process followed a non-probability sample, using a purposive sampling method. The goal of purposive sampling is to sample cases/participants in a strategic way, so that those sampled are relevant to the research questions (Bryman *et al.*, 2014:186).

The sample size that was aimed to be measured was 80 to 120 individuals, consisting of both groups ($n = 80$ to 120). The main reason for the limited size of the sample, was that, at the time of the study, only a few (5) self-managed teams, consisting of 8 to 12 members each were already established and fully functional in the organisation. This meant that the study was limited to these individuals at that specific point in time. The research thus aimed to test as many of the self-managed team members as possible, together with a similar number of traditional respondents.

3.12 MEASURING INSTRUMENTS

The questionnaire used to compile data consisted of five sections and took approximately twenty minutes to complete. The first section of the questionnaire consisted of a letter of introduction and informed consent. This included the study title, an overview of the intended purpose, anonymity and confidentiality agreement, researcher and supervisor contact details and some general rules and guidelines.

The second section of the questionnaire consisted of a demographic questionnaire that was designed to gather biographical data of the respondents. Biographical data included information like gender, age, language, industry experience and role in organisation. *Question 10*, in the biographical questionnaire was developed to distinguish the respondents between self-managed team members or traditional respondents.

The third and fourth sections consisted of two previously validated questionnaires measuring constructs of engagement.

The fifth section consisted of a previously validated questionnaire measuring teamwork and empowerment.

3.12.2 Engagement questionnaires

To measure engagement, two different measuring instruments were used, measuring different constructs of engagement. Both measuring instruments are the work of renowned employee and work engagement specialists in the field. They are the Utrecht Work Engagement Scale and the Psychological Meaningfulness, Safety and Availability Scale.

The Utrecht Work Engagement Scale is based on the work of Schaufeli & Bakker from the Utrecht University's – *Occupational Health Psychology Unit*, 2003 (Schaufeli & Bakker, 2003). The scale formed part of Section A in the questionnaire and consisted of a seven-point rating scale that ranged from 0 (Never) to 6 (Always every day). It measured three constructs of engagement, namely Vigour, Dedication and Absorption with a total of 17 questions. vigour was measured by six (6) individual questions, dedication was measured by five (5) individual questions and absorption was measured by six (6) individual questions, all in random sequence.

The Psychological Meaningfulness, Safety and Availability Scale is based on the work of William A. Kahn from the Boston University and published in the - *The Academy of Management Journal*, 1990 (Kahn, 1990) and was designed by May *et al.* from the Universities of Nebraska-Lincoln, Northern Kentucky and Ohio in the USA and published in - *Journal of Occupational and Organizational Psychology*, 2004 (May *et al.*, 2004). The scale formed part of Sections B, C and D in the questionnaire and consisted of a five-point rating scale that ranged from 1 (Strongly disagree) to 5 (Strongly agree). The scale had six sections, measuring different constructs and sub-constructs of Engagement. These were Psychological Meaningfulness with Work-Role fit as a sub-construct; Psychological Safety with Co-Worker relations as a sub-construct; and Psychological Availability with Resources as a sub-construct. Psychological Meaningfulness and Work-Role fit were measured with six (6) and four (4) individual questions distinctively. Psychological Safety and Co-Worker relations were measured with three (3) and ten (10) individual questions distinctively. Psychological Availability and Resources were measure with five (5) and eight (8) individual questions distinctively.

3.12.3 Teamwork & empowerment questionnaire

To measure Teamwork, the Teamwork Empowerment Questionnaire was used. The questionnaire is based on the work of Kirkman & Rosen (1999) in their study, beyond self-management. The questionnaire used was developed by Winter (2000) in his book *Organisational Dynamics* (2000:48). The scale used consisted of a five-point scale rating that ranged from 1 (Strongly disagree) to 5 (Strongly agree). The scale had four sections and measured different constructs for teamwork and empowerment. These were Potency, Meaningfulness, Autonomy and Impact. Each of these constructs were measured by five (5) individual questions.

3.13 PROCEDURE

3.13.2 Preparations

Initially, verbal discussions were held with the relevant HR department and management on the purpose of the intended study. Once this was completed and verbally agreed to, e-mails were sent out to the relevant management members containing a written explanation on the purpose and objectives of the study, the questionnaires to be used and how the proceedings would take

place. The HR department then had a discussion and explanation session with relevant stakeholders and union members. Once the above had been completed, written email confirmation was given and a signed letter was obtained from the organisation's management to continue with the study.

3.13.3 Ethical considerations

In the initial discussions with the HR department, ethical considerations regarding confidentiality and privacy of the respondents were addressed and discussed. Participants were informed that the completion of the questionnaires was voluntary and anonymous. An explanation of the ethical considerations accompanied the questionnaire to act as an introduction to the exercise and to provide an explanation of the purpose of the research. Included in the introduction, was a surety that the responses would be held strictly confidential at all times.

3.13.4 Administration of questionnaires

A cover letter was compiled and presented with each copy of the questionnaire. This letter detailed the purpose of the study and requested the respondents' assistance in completing the questionnaire. The administration and subsequent collection of the completed questionnaires were managed by the researcher, SMT leaders, the plant foreman and HR department. The researcher availed himself for a number of days at the organisation's premises, to assist with any queries during the completion.

3.13.5 Data capturing and feedback

The completed questionnaires were obtained at the organisation by the researcher from relevant SMT leaders, the foreman and the participants themselves. Questionnaires were taken to and captured by the North-West University's Statistical Consultation Services for accuracy purposes. Feedback of the overall results were given along with a copy of the mini-dissertation to the relevant HR department.

3.14 STATISTICAL ANALYSIS

Statistical analysis was done by the North-West University's Statistical Consultation Services. Questionnaires were taken to the consultation services and data was captured by the relevant personnel for accuracy purposes. The data was analysed by a statistical consultant using the SAS System (2016) for Windows Release 9.4 TS Level 1M3.

An analysis was done on the biographical data of the respondents, to determine the relevant biographical information of the participants and to distinguish participants into the two groups.

Cronbach's alpha values were used to determine internal consistency and to measure the reliability of constructs and sub-constructs. Cronbach's alpha measures how well each individual item in the measuring instrument correlates with the sum of the remaining items (Streiner, 2003:101).

Means, standard deviations and correlation coefficients were calculated. The means are able to indicate the central tendency and the standard deviations indicate how the values are distributed around the mean (Welman *et al.*, 2011:233). A correlation coefficient is used to measure ordinal rank orders of variable correlation, also known as Spearman's rho (Welman *et al.*, 2005:229). A correlation coefficient analyses the significance of the linear association between two variables. A low correlation does not imply that there is any relationship between the measured variables. It confirms that the relationship is not perfectly linear and an observed statistical relationship (Wagner, 2007:418).

As part of the analysis, t-tests were done. This provided an indication of the number of standard errors. It is symptomatic of the differentiation of the sample mean from the population mean (Albright *et al.*, 2009:435). Effect sizes between the two groups were calculated. Effect sizes indicate practical significance – that is the extent to which a difference is large enough to have an effect in practice (Steyn & Ellis, 2009:107). When the mean groups are compared, reflective in the effect size, Cohen's d-values are used as measurement (Field, 2009:57).

3.15 RESEARCH OBJECTIVES

1.1.1 General objective

- The general objective of this study was to determine the nature of the relationship between self-managed work teams and work engagement.

3.15.2 Specific objectives

- To formulate an in-depth theoretical framework surrounding the core elements of engagement, work engagement and self-managed work teams.
- To source documented and validated instruments to measure work engagement and teamwork.
- To empirically test the relationship between work engagement and self-managed teams by gathering data from an appropriate sample and statistically analyse it.
- To testify to the industry and management of gold mining organisations if self-managed teams (the experimental group) could be used to enhance work engagement by comparing the engagement levels of this group with the engagement levels of a traditional group (the control group) in order to determine if any practically significant differences could be observed.
- To give recommendations to management in the selected gold mining organisation based on the findings of the research.

3.16 CHAPTER SUMMARY

In this chapter, a thorough and detailed description of the empirical research was represented to the reader, to obtain critical knowledge on how the research was conducted and what methods and steps were followed during the process.

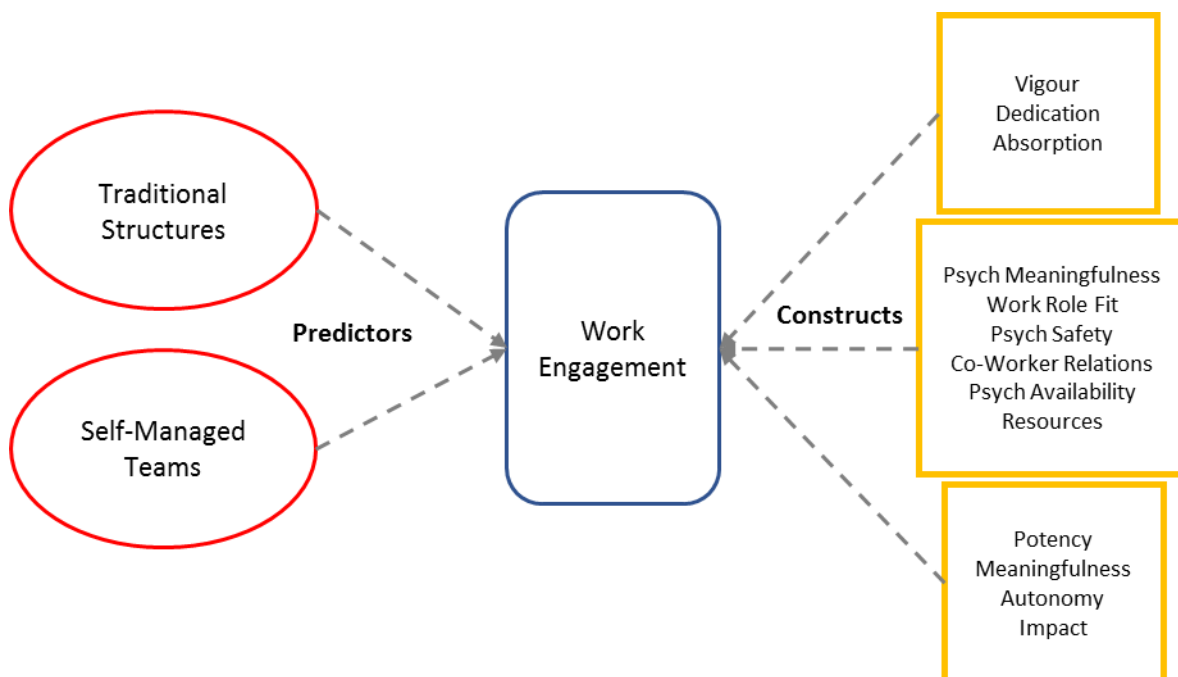
The chapter included the research approach, design, reliability, participants, measuring instruments, procedure, statistical analysis and in summary the research objectives.

4 CHAPTER 4 – EMPIRICAL RESULTS & ANALYSIS

4.7 INTRODUCTION

Chapter 3 of the study mainly provided the methodology and research steps applied during the research for the intended study. The following chapter provides results on the demographics of the respondents and secondly focusses on the descriptive results of the concepts work engagement, psychological meaningfulness, safety, availability and teamwork. Lastly, the chapter also provides a data survey of relationships between the two groups and the above-mentioned constructs. Figure 4.1 gives a conceptual overview of the different predictors and constructs tested during the study to establish empirical results

Figure 5 – Predictors & constructs of work-engagement



Source: Author Self

4.8 FINDINGS: RESPONSE RATE

Questionnaires were distributed to respondents and they were given a reasonable time-frame to complete and hand back the questionnaires. In total, 120 questionnaires were distributed to employees in both groups and 79 usable questionnaires were completed within the allowed time-frame. This translates to a 66% response rate.

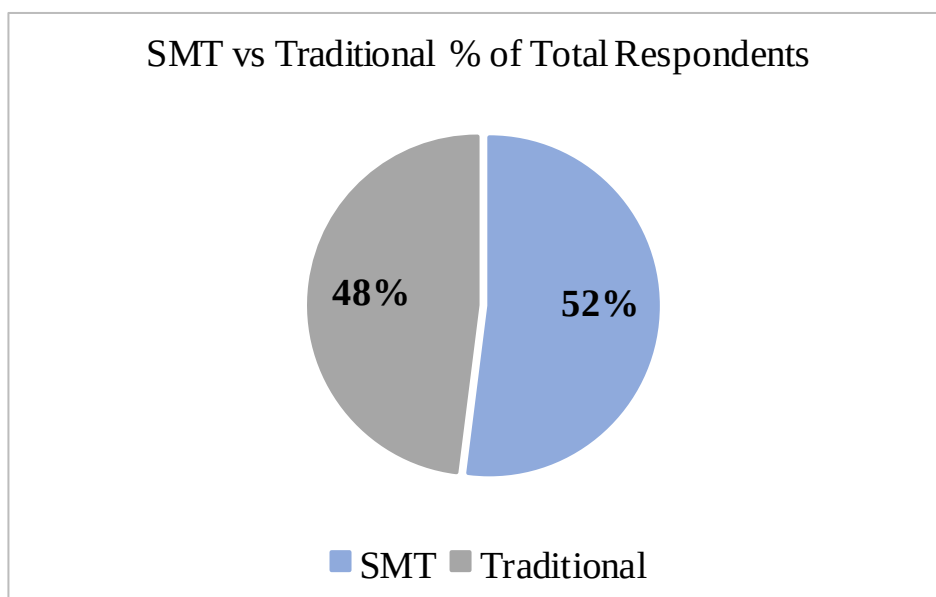
4.9 RESPONDENT DEMOGRAPHIC INFORMATION

In the following section, the demographical information of the respondents is dealt with. This section focusses broadly on the characteristics of the total respondent group, but in more detail according to the demographical information for the two separate groups tested.

4.9.2 Respondents' – part of SMT or Traditional Functional Line Authority

In Figure 6, a chart shows the distribution percentage of the respondents part of a SMT in the organisation and respondents not part of a SMT in the organisation. It notes the following: 52% of respondents were part of a self-managed team while 48% of respondents were not part of a self-managed team and remained in traditional structures within the organisation. For the purposes of this study, a more or less equal number of respondents were required per group. By means of a purposive sampling method, this objective was achieved and the percentage respondents per group was very similar, with a 4% variance.

Figure 6 – SMT vs Traditional % of total respondents:



4.9.3 Respondent's gender distribution

In Figures 7 & 8, charts show the distribution of gender among the respondents in each group. Data shows that 73.08% of the total respondents were male and 26.92% female. In the SMT group, 85% of the respondents were male and 15% female. In the traditional group, 61% of the respondents were male and 34% female. Traditionally, the mining environment has always been more representative of males than females. A study done by Palo (2015) in the South African

platinum mining industry indicated that, from his much bigger sample of 564 employees, 64.9% were male and 35.1% female (Palo, 2015:46). Through analysing the numbers, it could be established that both groups are fairly, to well representative of the industry when compared to previous mining industry studies. Something to note is the fact that the SMT group was more representative of males than females, compared to the traditional group, keeping in mind that almost all SMT members at the time of the study were measured. This indicates that the SMT group proportionally had a higher percentage male than females when compared to the traditional group, which is a more organisation representative sample.

Figure 7 - SMT group gender %

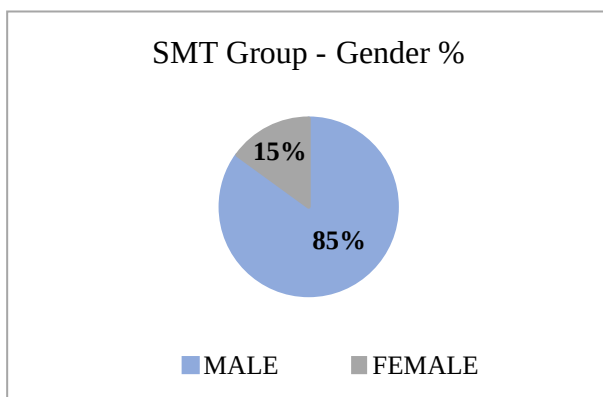
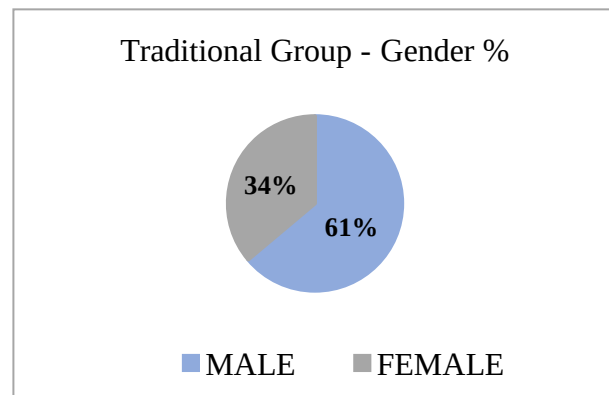


Figure 8 - Traditional group gender %



4.9.4 Respondents' age

In Figures 9 & 10, the graphs show the distribution of the respondents' age in each group. It notes the following: none of the respondents were younger than 20 years. In the SMT group, 15% of the respondents were between 21 to 30 years, whilst in the traditional group, 21% of the respondents were between 21 to 30 years. In the SMT group, 30% of the respondents were between 31 to 40 years, whilst in the traditional group, 42% of the respondents were between 31 to 40 years. In the SMT group, 45% of the respondents were between 41 to 59 years, whilst in the traditional group, 32% of the respondents were between 41 to 59 years. In the SMT group, 10% of the respondents were 60 years and above, whilst in the traditional group, 5% of the respondents were aged 60 years and above.

Through analysing the numbers, it could be established that the age categories for both groups were fairly similar, when compared to each other and to previous mining industry studies. Comparing this study to a study done by Palo (2015) in the South African platinum mining industry consisting of a much bigger sample (564 employees), the results are fairly similar with Palo's (2015) study, showing 19.5% of respondents aged 21 to 30, 36.7% of respondents aged

31 to 39 and 38% of respondents aged 40 to 55 (Palo 2015:46). Noteworthy is the fact that the bulk of the traditional respondents (42%) was aged between 31 to 40 years compared to the bulk of the SMT respondents (45%) being aged between 41 to 59 years. In summary, the SMT group respondents were aged higher compared to the traditional group, which made out a more organisation representative sample.

Figure 10 – Age % SMT group

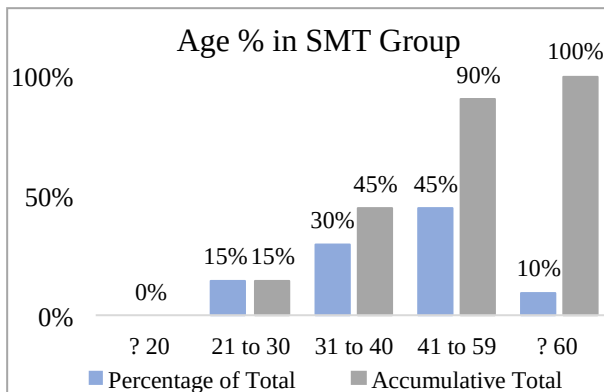
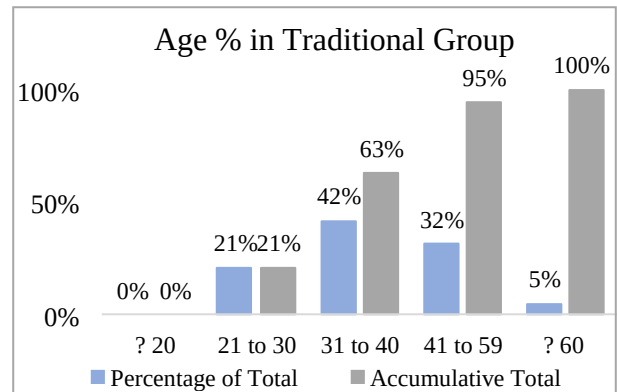


Figure 9 – Age % Traditional group



4.9.5 Respondent's race

In Figures 11 & 12, the graphs show the distribution of the respondents' race in each group. It notes the following: in the SMT group, 70% of the respondents were black and in the traditional group, 71% of the respondents were black. In the SMT group, 23% of the respondents were white and in the traditional group, 16% of the respondents were white. In the SMT group, 5% of the respondents were coloured and in the traditional group, 11% of the respondents were coloured. In the SMT group, 3% of the respondents were Indian and in the traditional group, 0% was Indian. In the SMT group, 0% of the respondents were other and in the traditional group, 3% of the respondents were other. With South Africa being an African country and Africa historically and traditionally mainly consisting of black races, it was fair to assume that the majority of the race in mining organisations would be black, as black citizens make out the majority of the population. Through analysing the numbers, it could be established that both groups made out a fair representation of race, compared to the country in general as well as other mining organisations.

Figure 11 – Race % SMT group

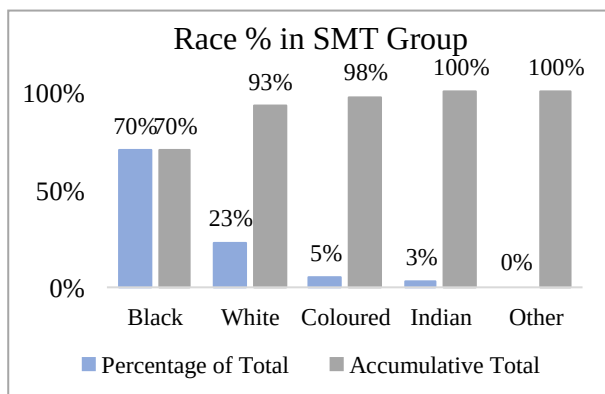
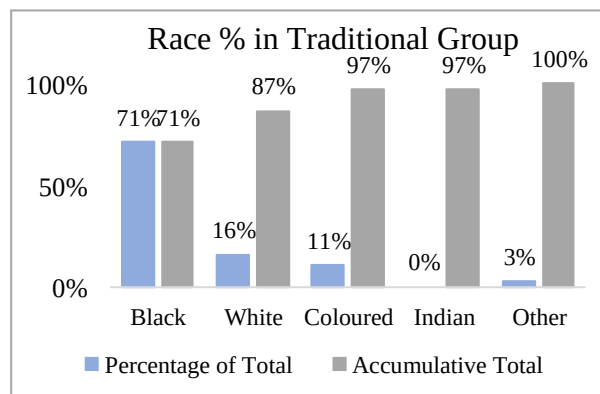


Figure 12 – Race % Traditional group



4.9.6 Respondents' home language

In Figures 13 & 14, the graphs show the distribution of the respondents' home languages in each group. It notes the following: in the SMT group, 24% of the respondents' home language was Afrikaans and in the traditional group, 11% of the respondents were Afrikaans. In the SMT group, 5% of the respondents' home language was English and in the traditional group, 3% of the respondents were English. In the SMT group, 10% of the respondents' home language was Tswana and in the traditional group, 5% of the respondents were Tswana. In the SMT group, 7% of the respondents' home language was North Sotho and in the traditional group, 19% of the respondents were North Sotho. In the SMT group, 20% of the respondents' home language was Sotho and in the traditional group, 16% of the respondents were Sotho. In the SMT group, 10% of the respondents' home language was Xhosa and in the traditional group, 5% of the respondents were Xhosa. In the SMT group, 12% of the respondents' home language was Zulu and in the traditional group, 35% of the respondents were Zulu. In the SMT group, 2% of the respondents' home language was Venda and in the traditional group 0% of the respondents were Venda. In the SMT group, 5% of the respondents' home language was Ndebele and in the traditional group, 3% of the respondents were Ndebele. In both groups, 0% of the respondents were Swazi. In the SMT group, 5% of the respondents' home language was Tsonga and in the traditional group, 3% of the respondents were Tsonga. With South Africa being an African country with various cultures and eleven official languages, it was fair to assume that employees would be well-represented with regard home language. Both groups are well-represented with various official languages. Noteworthy is that Afrikaans (24%) was indicated as the home language spoken by the majority in the SMT group, whilst Zulu (35%) was the home language of the majority in the traditional group. When comparing the percentage whites in the SMT group with 23%, it was to be expected that the Afrikaans language would be well-represented in

the group. Interesting is the vast diversity of home languages spoken in the SMT group, compared to the traditional group, where Zulu, North and South Sotho made out the majority. In summary and all fairness, both groups represented most of the official languages well, except for Swazi and Venda.

Figure 14 – Language % SMT group

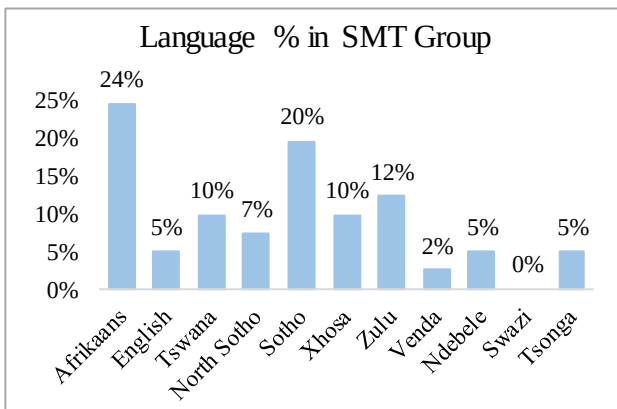
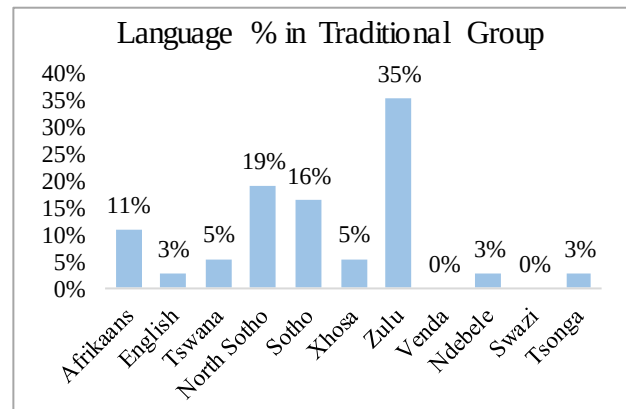
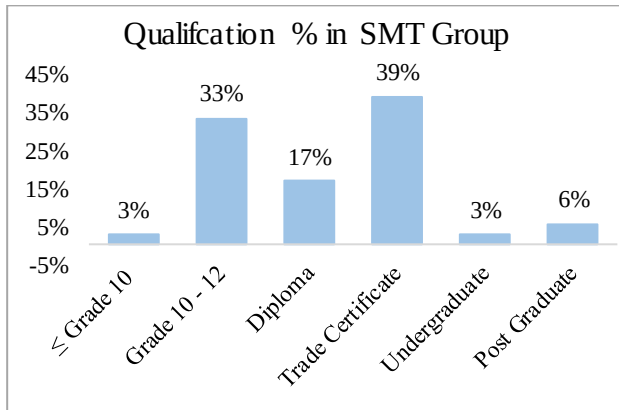
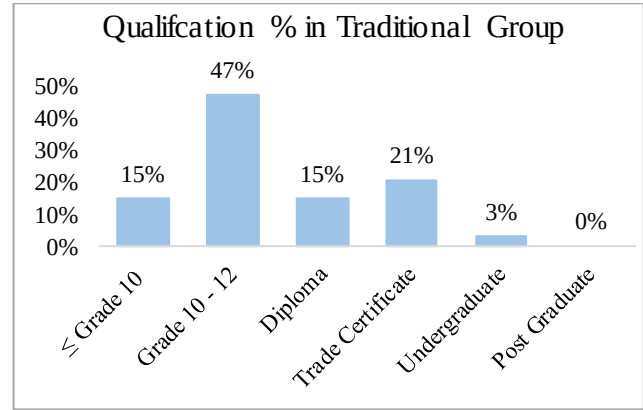


Figure 13 - Language % Traditional group



4.9.7 Respondents highest qualification

In Figures 15 & 16, the graphs show the distribution of the respondents' highest qualifications in each group. It notes the following: in the SMT group, 3% of the respondents had Grade 10 or lower and in the traditional group, 15% had Grade 10 or lower. In the SMT group, 33% of the respondents had Grade 11 to 12 and in the traditional group, 47% had Grade 11 to 12. In the SMT Group, 17% of the respondents had a Diploma and in the traditional group, 15% had a Diploma. In the SMT group, 39% had a Trade certificate and in the traditional group, 21% had a trade certificate. In both groups, 3% had an Undergraduate qualification. In the SMT group, 6% had a Post-graduate qualification and in the traditional group 0%. In comparison to some modern and first world countries, the South African society and population in general is not as qualified. According to Nel and Pienaar (2006:180), the mining industry and its workforce in general possesses low levels of literacy. Through analysing the numbers, it became evident that the bulk of the employees tested in both groups had a qualification of Grade 10 – 12, a diploma or a trade certificate. In general, the SMT group was higher qualified compared to the traditional group, with respondents having more diploma's, trade certificates, undergraduate and post graduate degrees.

Figure 16 – Qualification % SMT group**Figure 15 – Qualification % Traditional group**

4.9.8 Respondents' years' experience in industry

In Figures 17 & 18, the graphs show the distribution of respondents in terms of years in experience within the industry as a percentage in each group. It notes the following: in the SMT Group, 2% of the respondents had 0-2 years' experience and in the traditional group, none of the respondents had 0-2 years' experience. In the SMT group, 22% of the respondents had 3-5 years' experience and in the traditional group, 24% of the respondents had 3-5 years' experience. In the SMT group, 22% of the respondents had 6-10 years' experience and in the traditional group, 34% of the respondents had 6-10 years' experience. In the SMT group, 29% of the respondents had 11-20 years' experience and in the traditional group, 26% of the respondents had 11-20 years' experience. In the SMT group, 15% of the respondents had 21-30 years' experience and in the traditional group, 8% of the respondents had 21-30 years' experience. In the SMT group, 10% of the respondents had 31-35 years' experience and in the traditional group, 8% of the respondents had 31-35 years' experience. Through analysing the numbers, it was evident that both groups had similar years of experience, with the bulk of respondents having between 3 and 20 years' experience in the industry. Interestingly, the bulk of the SMT group's experience was between 11-20 years, compared to the bulk of the Traditional group's experience being between 6-10 years. This can be linked to the qualification levels in the previous section and indicates that not only was the SMT group more qualified than the traditional group, but they also possessed more industry experience.

Figure 18 – Years’ experience % SMT group

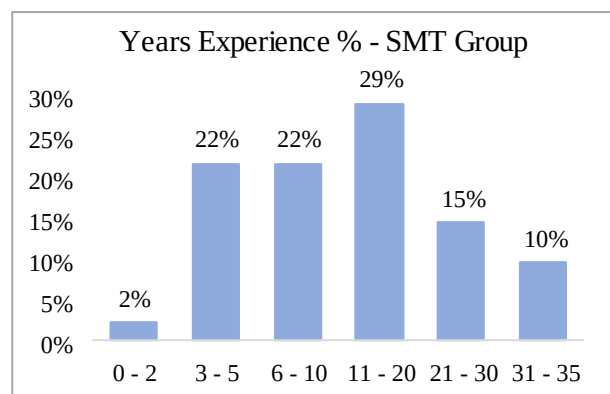
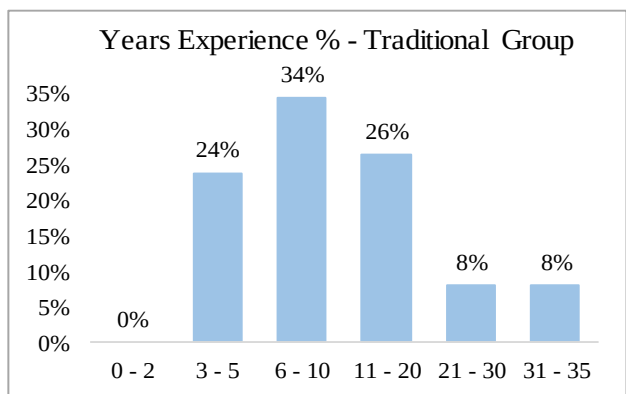


Figure 17 – Years’ experience Traditional group



4.9.9 Respondents’ - functional line authority

In Figures 19 & 20, the charts show the percentage respondents per functional line authority in each group. It notes the following: in the SMT group, 64% of the respondents were employed in an Engineering role and 36% of the respondents in a Process role. In the traditional group, 47% of the respondents were employed in an Engineering role and 53% of the respondents in a Process role. The SMT groups were not only self-manged but also cross-functional of nature. Teams were made up of engineering and processing team members. It’s important to note that, although these members were part of SMTs, they still reported to managers in their functional line. Interestingly, the SMT group had much more engineering respondents compared to the traditional group that was fairly balanced between the two. This can be linked back to qualifications as seen in the amount of trade certificates in the SMT group.

Figure 19 – Functional authority SMT group

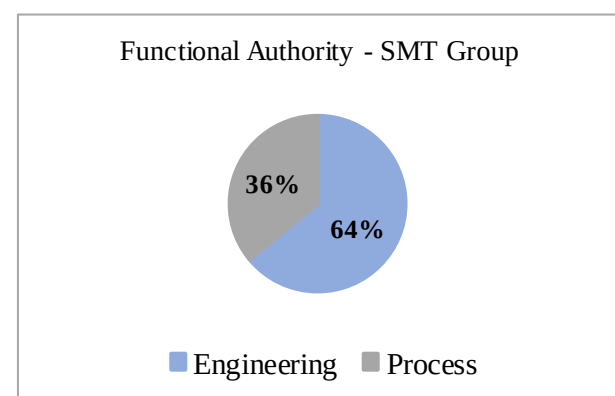
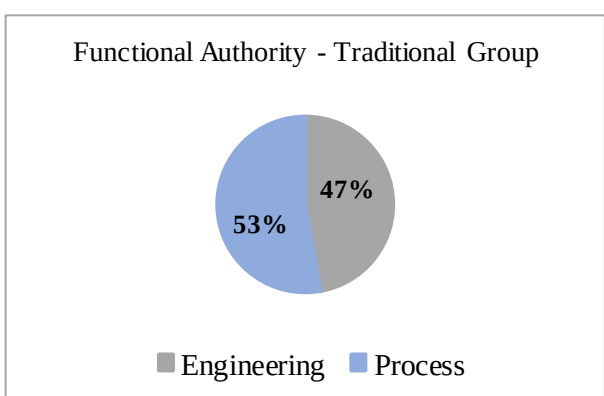


Figure 20 – Functional authority traditional group



4.9.10 Respondents' - organisational employee or contractor

In Figures 21 & 22, the charts show the percentage respondents employed as full-time mine employees and the percentage respondents employed as contractors in each group. It notes the following: in the SMT group, 82% of the respondents were mine employees and 18% were contractors. In the traditional group, 86% of the respondents were mine employees and 14% of the respondents were contractors. The organisation does make use of some contractors and most of these contract employees are employed full time. Their duties are different to those of mine employees. The amount of mine employees vs contractors were very similar in both groups, which for the sake of the study was positive, due to the fact that the research required fairly balanced and similar respondents from both groups to thoroughly test the nature of relationships.

Figure 21 – Mine employee vs contractor SMT group

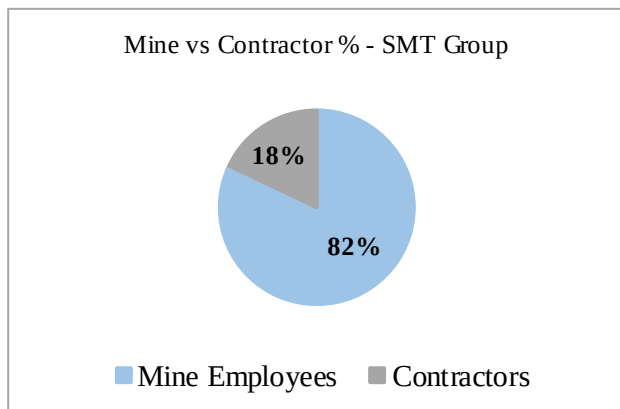
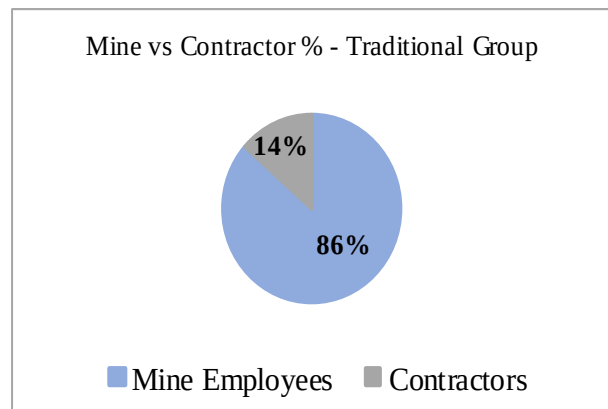


Figure 22 – Mine employee vs contractor Traditional group



4.9.11 Respondents' role in organisation

In Figure 23 & 24, the graphs show the distribution of respondents in a percentage with regard to their roles in the organisation. It notes the following: in the SMT group, 5% of the respondents were assistants and in the traditional group, 30% of the respondents were assistants. In the SMT group, 3% of the respondents were aides and in the traditional group 5% of the respondents were aides. In the SMT group, 36% of the respondents were Artisans and in the traditional group, 27% of the respondents were Artisans. In the SMT group, 3% of the respondents were operators and in the traditional group, 11% of the respondents were operators. In the SMT group, 8% of the respondents were team leaders and in the traditional group, 14% of the respondents were team leaders. In the SMT group, 3% of the respondents were shift foremen and in the traditional group none. In the SMT group, 15% of the respondents were foremen and in the traditional

group none. In the SMT group, 28% of the respondents were other and in the traditional group 14% (*Other* mostly included supervisors & shift operations foreman). Through analysing the numbers, it became evident that, in terms of organisational roles, the teams did differ somewhat. The SMT group was more balanced than the traditional group, with respondents from all hierarchical levels and functions compared to the traditional group that did not have any shift foremen or foremen. The main reason for this scenario was the fact that almost all foremen were initially made part of the SMTs. It was evident that there was a slight imbalance between the two groups with the SMT respondents being slightly higher up on the traditional hierarchical levels than traditional respondents. This could not really be avoided and is discussed in the demographic conclusion in the next section.

Figure 24 – Organisational role SMT group

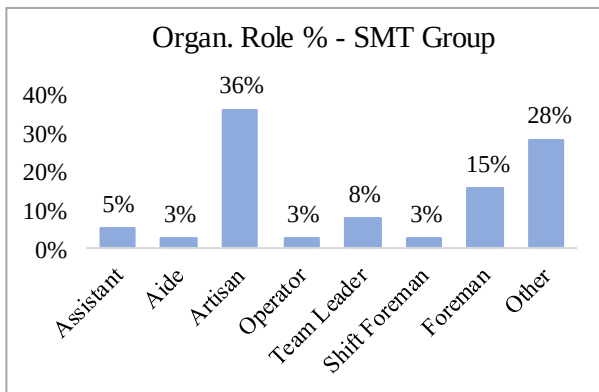
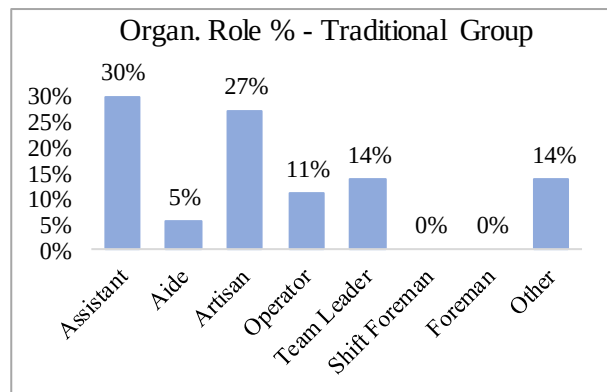


Figure 23 – Organisational role Traditional group



4.9.12 Demographic conclusion

In conclusion, it is evident that that the two groups were fairly balanced in terms of most of the demographic factors, but there were some imbalances noted. Importantly, the imbalances between the two groups, specifically in terms of qualifications, experience and hierarchical levels could not be avoided during the study. When the SMTs were initially setup through the intervention, the “stronger” candidates (hierarchical levels, qualifications and experience were taken into consideration) were made part of these teams for the sake of organisational and company benefit. In theory, this meant that there was always going to be a slight imbalance between the two groups on some grounds and factors, but for the sake of this study would not be deemed a significant issue.

4.10 RELIABILITY

As discussed in Chapter 3, Cronbach's alphas were calculated to measure reliability.

Table 1, indicates the overall Cronbach's alpha values for work engagement, psychological safety, meaningfulness & availability as well as for the team empowerment questionnaire.

Table 1– Cronbach's alpha values overall

Surveys & dimensions:	Result
Work & Well-being Survey (UWES)	0.92
Psychological Meaningfulness, Safety & Availability	0.68
Psychological Meaningfulness & Work Role Fit	0.95
Psychological Safety & Co-Worker Relations	0.92
Psychological Availability & Resources	0.72
Team Empowerment Questionnaire	0.95

Table 2, indicates the Cronbach's alpha values for the constructs and dimensions in the study.

Table 2– Cronbach's alpha values sub-scales

Surveys & dimensions:	Result
Work & Well-being Survey (UWES)	0.92
Vigour (VI1, VI2, VI3, VI4, VI5, VI6)	0.87
Dedication (DE1, DE2, DE3, DE4, DE5)	0.90
Absorption (AB1, AB2, AB3, AB4, AB5, AB6)	0.85
Psychological Meaningfulness, Safety and Availability Scale	0.68
Psychological Meaningfulness (PM1, PM2, PM3, PM4, PM5, PM6)	0.94
Work Role Fit (WRF1, WRF2, WRF3, WRF4)	0.94
Psychological Safety (PS2, PS3)	0.56
Co-Worker Relations (CWR1, CWR2, CWR3, CWR4, CWR5, CWR6, CWR7, CWR8, CWR9, CWR10)	0.95
Psychological Availability (PA1, PA2, PA3, PA4, PA5)	0.92
Resources (R2, R3, R5, R6, R7, R8)	0.82
Team Empowerment Questionnaire	0.95
Potency (P1, P2, P3, P4, P5)	0.93
Meaningfulness (M1, M2, M3, M4, M5)	0.96
Autonomy (A1, A2, A3, A4, A5)	0.95
Impact (I1, I2, I3, I4, I5)	0.92

From Table 2, it is evident that all the dimensions measured showed relatively high values. psychological safety measured the lowest value with 0.56 and meaningfulness the highest, with

0.96. In effect, this means that the dimensions measured are perceived as reliable as almost all values are higher than 0.70 which is perceived as acceptable, according to Field (2009:678). Although the total value measured for the psychological meaningfulness, safety and availability Scale was just below 0.70 at 0.68, it could still be deemed acceptable for the purposes of this study. It is to be noted that an adopted version of the psychological safety & resources scales was used, due to some items, (PS1, R1 & R4's) values being too low to be deemed acceptable. Although psychological safety received a value of 0.56, it could still be deemed acceptable because the scale deals with a psychological construct in which case values below 0.7 can be expected (Field, 2014:709) and which is further supported by Pallant (2010:100), as discussed in Chapter 3. The main reason for this was the fact that the scale used had less than ten items, which in most cases would initialise a low value. During the statistical analysis, some items were left out to establish if a higher value could be obtained, but unfortunately, even despite these attempts, a lower value was still produced. Taking the above view of Pallant (2010:100) into consideration and after the deletion of one item (PS1), the score of 0.56 obtained for psychological safety could be deemed acceptable for the purposes of this study, but the interpretation of the results for this scale should be treated with caution.

4.11 FREQUENCY ANALYSIS AND DESCRIPTIVE STATISTICS

4.11.2 Overall group

Table 3 shows the descriptive statistics for the overall respondents' answers for the sub-sections of the three questionnaires. The mean of a set of values measures the central tendency, or average. It is calculated by adding all the scores and dividing them by the total number of scores. The mean of a set of values is usually reported together with the standard deviation. The standard deviation is a measure of the spread of scores around the mean (Welman *et al.*, 2011:233).

Table 3– Descriptive statistics – means and standard deviations Overall group

Variable	N	Mean	Std. Deviation	Median
VIGOR	79	4.32	1.10	4.50
DEDICATION	79	4.64	1.22	4.80
ABSORPTION	79	4.19	1.08	4.17
UWES TOTAL	79	4.38	1.05	4.38
PSYCHOLOGICAL MEANINGFULNESS	79	4.24	0.82	4.33
WORK ROLE FIT	79	3.85	1.11	4.00

PSYCHOLOGICAL SAFETY 2&3	79	3.30	1.17	3.00
CO-WORKER RELATIONS	79	3.93	0.88	3.90
PSYCHOLOGICAL AVAILABILITY	79	4.24	0.80	4.40
RESOURCES	79	3.30	0.94	3.33
MSAS TOTAL	79	3.87	0.65	3.94
POTENCY	79	3.69	1.09	4.00
MEANINGFULNESS	79	3.75	1.16	4.00
AUTONOMY	79	3.46	1.22	3.80
IMPACT	79	3.77	1.03	4.00
TEAM TOTAL	79	3.67	1.04	4.00

When analysing and making conclusions based on the above values, it is important to keep in mind that the UWES questionnaire (vigour, dedication and absorption) had a 7-point scale and the psychological meaningfulness, safety and availability questionnaire (Sub-constructs – work role fit, co-worker relations and resources) as well as the team empowerment questionnaire (potency, meaningfulness, autonomy and impact) had 5-point scales.

Taking Welman *et al.* (2011:233) into consideration and calculation, it can be seen in Table 3 that most of the responses on the constructs and sub-sections fall between the 3.30 to 4.64 mark, with psychological safety (PS 2 and 3) being the lowest and dedication being the highest.

4.11.3 SMT group

Table 4 shows the descriptive statistics for the SMT respondents' answers for the sub-sections of the three questionnaires.

Table 4 - Descriptive statistics – means and standard deviations SMT group

Variable	N	Mean	Std. Deviation	Median
VIGOR	41	4.74	0.84	4.83
DEDICATION	41	5.00	1.01	5.40
ABSORPTION	41	4.45	0.90	4.50
UWES TOTAL	41	4.73	0.79	4.82
PSYCHOLOGICAL MEANINGFULNESS	41	4.56	0.61	5.00
WORK ROLE FIT	41	4.20	0.96	4.25
PSYCHOLOGICAL SAFETY 2&3	41	3.44	1.28	3.50
CO-WORKER	41	4.21	0.79	4.30

RELATIONS				
PSYCHOLOGICAL AVAILABILITY	41	4.60	0.52	5.00
RESOURCES	41	3.54	0.92	3.67
MSAS TOTAL	41	4.17	0.55	4.16
POTENCY	41	4.14	0.92	4.20
MEANINGFULNESS	41	4.16	1.05	4.40
AUTONOMY	41	4.00	0.97	4.00
IMPACT	41	4.30	0.65	4.40
TEAM TOTAL	41	4.15	0.79	4.30

Taking Welman *et al.* (2011:233) into consideration and calculation, it can be seen in Table 4 that most the responses on the constructs and sub-sections fall between the 3.43 to 5.00 mark, with psychological safety (PS 2 & 3) being the lowest and dedication being the highest.

4.11.4 Traditional group

Table 5, shows the descriptive statistics for the SMT respondents' answers for the sub-sections of the three questionnaires.

Table 5– Descriptive statistics – means and standard deviations Traditional group

Variable	N	Mean	Std. Deviation	Median
VIGOR	38	3.86	1.17	4.00
DEDICATION	38	4.24	1.31	4.50
ABSORPTION	38	3.90	1.19	3.83
UWES TOTAL	38	4.00	1.17	4.17
PSYCHOLOGICAL MEANINGFULNESS	38	3.89	0.89	4.00
WORK ROLE FIT	38	3.48	1.14	3.75
PSYCHOLOGICAL SAFETY 2&3	38	3.16	1.04	3.00
CO-WORKER RELATIONS	38	3.63	0.88	3.65
PSYCHOLOGICAL AVAILABILITY	38	3.86	0.88	3.90
RESOURCES	38	3.03	0.88	3.00
MSAS TOTAL	38	3.54	0.59	3.61
POTENCY	38	3.21	1.06	3.20
MEANINGFULNESS	38	3.31	1.02	3.00
AUTONOMY	38	2.88	1.25	2.80
IMPACT	38	3.20	1.06	3.20
TEAM TOTAL	38	3.15	1.04	2.80

Taking Welman *et al.* (2011:233), into consideration and calculation, it can be seen in Table 4.5 that most of the responses on the constructs and sub-sections fall between the 3.15 to 4.24 mark, with psychological safety (PS 2 & 3) being the lowest and dedication being the highest.

4.11.5 Comparison – SMT vs Traditional respondents

Looking at the above numbers, it is evident that there is a significant difference between the responses of the respondents of the two groups.

Mean. The UWES total, measuring vigour, dedication and absorption, indicated that the SMT group had a higher mean with 4.73 than the traditional group with 3.99. The MSAS total, measuring psychological meaningfulness, safety and availability noted that the SMT group had a higher mean with 4.16 than the traditional group with 3.53. The team-empowerment total, measuring potency, meaningfulness, autonomy and impact, noted that the SMT group had a higher mean with 4.15 than the traditional group with 3.15. This meant that the SMT group in all three questionnaires and sub-constructs scored higher mean scores than the traditional group. In other words, the SMT group consistently reported higher levels of engagement, ^ and empowerment than the traditional group.

Standard deviation. The standard deviations for both groups were within reasonable numbers. The UWES total number for the SMT group was at 0.79, whilst the traditional group was at 1.17. The MSAS total number for the SMT group was at 0.54, whilst the traditional group was at 0.58. The team-empowerment total number was at 0.79 for the SMT group, whilst the traditional group was at 1.03. Looking at these numbers, it is clear that the respondents in both groups were relatively consistent with their responses to answers in the questionnaires. This provided the mean and overall study with more supportive evidence that higher numbers were recorded by the SMT group in all three questionnaires.

Interestingly in both groups, psychological safety (PS 2&3) measured the lowest and dedication the highest, according to the mean.

4.12 CORRELATION ANALYSIS

Correlations can be calculated in order to determine the relationship between two variables (Hinkle *et al.* 2003:97). Hinkle *et al.* (2003:114) state that, although correlations can indicate a relationship between two variables, it does not necessarily mean that one variable is caused by the other. The purpose of this section is thus not to determine the cause and affect between the different variables, but to explore the possible relationships between these variables. Interpretations of the practical significance of associations were made using the phi-coefficient and Pearson correlation coefficient as effect sizes. The correlation coefficient (r) is used to determine the linear relationship between two variables. Two aspects of r need to be considered.

1) The sign, which indicates the direction of the relationship:

- “+” indicates a positive linear relationship and
- “-“ indicates a negative linear relationship.

2) The size, which indicates the significance of the linear relationship (Field, 2009:170):

- $r \approx \pm 0.1$ - Small correlation; no practically significant relationship
- $r \approx \pm 0.3$ - Medium correlation; practically visible relationship
- $r \approx \pm 0.5$ - Large correlation; practically significant relationship

4.12.2 Overall group

Table 6, shows the values of the correlations between the major constructs and dimensions of work engagement, psychological meaningfulness, safety, availability and team-empowerment for the overall group measured.

Table 6– Correlations for - Overall group on sections and sub-sections

	Utrecht Work Engagement Total	Psychological Meaningfulness, Safety & Availability Total	Team Empowerment Total
Utrecht Work Engagement Total	1	0.68 *	0.59 *
Psychological meaningfulness, Safety & Availability Total	0.68 *	1	0.66 *
Team Empowerment Total	0.59 *	0.66 *	1

*Correlation is significant at the 0.05 level (two-tailed).

By analysing Table 6, it is evident that a positive relationship existed between the major variables and constructs measured for the overall respondents, with most of the correlations being significant. Taking Field (2009:170) into consideration, it is evident that there is a large correlation and practically significant relationship between all the major constructs measured. A practically significant relationship existed between work engagement and psychological meaningfulness, safety and availability, $r=0.68$, $p=0.001$ (two-tailed) <0.05 . A practically significant relationship existed between work engagement and team empowerment, $r=0.59$, $p=0.001$ (two-tailed). A strong and practically significant relationship existed between psychological meaningfulness, safety, availability and team empowerment, $r=0.66$, $p=0.001$ (two-tailed).

4.12.3 SMT group

Table 7, shows the values of the correlations between the major constructs and dimensions of work engagement, psychological meaningfulness, safety, availability and team-empowerment for the SMT group measured.

Table 7– Spearman Rho correlations for - SMT group on sections and sub-sections

	Utrecht Work Engagement Total	Psychological Meaningfulness, Safety & Availability Total	Psychological Meaningfulness & Work-Role Fit	Psychological Safety & Co-Worker Relations	Psychological Availability & Resources	Team Empowerment Total
Utrecht Work Engagement Total	1	0.60 *	0.67 *	0.39 *	0.40 *	0.34 *
Psychological Meaningfulness, Safety & Availability Total	0.60 *	1	0.69 *	0.86 *	0.84 *	0.49 *
Psychological Meaningfulness & Work Role Fit	0.67 *	0.69 *	1	0.41 *	0.40 *	0.42 *
Psychological Safety & Co-Worker Relations	0.39 *	0.86 *	0.41 *	1	0.68 *	0.37 *
Psychological Availability & Resources	0.40 *	0.84 *	0.40 *	0.68 *	1	0.38 *
Team Empowerment Total	0.34 *	0.49 *	0.42 *	0.37 *	0.38 *	1

*Correlation is significant at the 0.05 level (two-tailed).

By analysing Table 7, it is evident that a positive relationship existed between the major variables and constructs measured for the SMT respondents, with most of the correlations being significant. Taking Field (2009:170) into consideration it is evident that there is a medium to large correlation and practically visible to significant relationship between all the major constructs in the SMT Group. A practically significant relationship existed between work engagement and psychological meaningfulness, safety and availability, $r=0.60$, $p=0.001$ (two-tailed). A practically significant relationship existed between work engagement and psychological meaningfulness & work role fit, $r=0.67$, $p=0.001$ (two-tailed). A practically visible relationship existed between work engagement and team empowerment, $r=0.34$, $p=0.030$ (two-tailed).

4.12.4 Traditional group

Table 8, shows the values of the correlations between the major constructs and dimensions of work engagement, psychological meaningfulness, safety, availability and team-empowerment for the traditional group measured.

Table 8– R values - Traditional group on sections and sub-sections

	Utrecht Work Engagement Total	Psychological Meaningfulness, Safety & Availability Total	Psychological Meaningfulness & Work-Role Fit	Psychological Safety & Co-Worker Relations	Psychological Availability & Resources	Team Empowerment Total
Utrecht Work Engagement Total	1	0.69 *	0.80 *	0.37 *	0.46 *	0.63 *
Psychological Meaningfulness, Safety & Availability Total	0.69 *	1	0.85 *	0.56 *	0.69 *	0.71 *
Psychological Meaningfulness & Work Role Fit	0.80 *	0.85 *	1	0.40 *	0.51 *	0.66 *
Psychological Safety & Co-Worker Relations	0.37 *	0.56 *	0.40 *	1	0.16	0.50 *
Psychological Availability & Resources	0.46 *	0.69 *	0.51 *	0.16	1	0.29
Team Empowerment Total	0.63 *	0.71 *	0.66 *	0.50 *	0.29	1

*Correlation is significant at the 0.05 level (two-tailed).

By analysing Table 8, it's evident that a positive relationship exists between the major variables and constructs measured for the traditional respondents, with most of the correlations being significant. Taking Field (2009:170) into consideration it is evident that there is a small to large correlation all the major constructs in the traditional group. A practically significant relationship existed between work engagement and psychological meaningfulness, safety and availability, $r=0.69$, $p=0.001$ (two-tailed). A practically significant relationship existed between work

engagement and psychological meaningfulness & work role fit, $r=0.80$, $p=0.001$ (two-tailed). A practically significant relationship existed between work engagement and team empowerment, $r=0.63$, $p=0.001$ (two-tailed). No practically significant relationship existed between psychological safety & co-worker relations, and psychological availability & resources, $r=0.16$, $p=0.333$ (two-tailed).

Discussion

The above correlation analysis proved that significant relationships exist for almost all variables and constructs measured. In conclusion, it is evident that the relationships in the SMT group was more significant than those in the traditional group.

4.12.5 Effect sizes

An interpretation of comparisons between group means was also done according to Cohen's d-values as guideline for the interpretation of effect sizes, (Cohen, 1988:) to confirm the tendencies as observed in Section 4.6.3 above. Effect sizes indicate practical significance – that is the extent to which a difference is large enough to have an effect in practice (Steyn & Ellis, 2009:107).

Interpretation guidelines for Cohen's d-values (Ellis & Steyn, 2003:52) are as follows:

- $d \approx 0.2$ - Small effect; no practically significant difference.
- $d \approx 0.5$ - Medium effect; practically visible difference.
- $d \approx 0.8$ - Large effect; practical significant difference.

The p-value of the T-test is now reported on for completeness, because of the fact that a random sample was done. For interpretation purposes, emphasis is placed on practical significant differences as indicated by the effect sizes. A p-value smaller than 0.05 is considered as sufficient evidence that the result is statistically significant on a 5% significance level (Steyn & Ellis, 2003:51). An interpretation of comparisons between group means was done according to Cohen's effect sizes, d (Cohen, 1988).

Table 9 – Work engagement effect sizes

		N	Mean	Std. Deviation	P. Values	Effect Sizes
						SMT with TRAD.
VIGOUR	SMT	41	4.74	0.84	0.003	0.75
	TRAD.	38	3.86	1.18		
DEDICATION	SMT	41	5.00	1.01	0.006	0.58
	TRAD.	38	4.24	1.31		
ABSORBTION	SMT	41	4.45	0.90	0.022	0.47
	TRAD.	38	3.89	1.18		

All the p-values for the Utrecht work engagement scale measured below the 0.050 significance point, indicating that there were statistically significant differences in the way the two groups responded to the various questions. Moreover, when d-values were examined to establish whether statistically significant relationships would also be evident on a practical level on the shop-floor, it was clear that these differences between the groups were of considerable magnitude so that they were likely to influence work performance of the groups in ways that matter.

The difference between the groups for vigour approached a large and practically significant effect ($d=0.75$), indicating that the SMT group had higher levels of energy, mental resilience, willingness and persistence in their work roles compared to traditional respondents.

The difference between the groups for dedication surpassed a medium and practically visible effect ($d=0.58$), indicating that the SMT group had higher levels of enthusiasm, inspiration, pride in their work roles compared to traditional respondents. SMT members also perceived their work roles as more significant and challenging compared to traditional respondents.

The difference between the groups for absorption approached a medium and practically visible effect ($d=0.47$), indicating that the SMT group had higher levels of concentration at work, were happier at work and found it more difficult to detach them from their work roles compared to traditional respondents.

To be fair, one needs to recognise that the traditional respondents did not show really poor levels of engagement, but according to the analysis, their levels of engagement were visibly lower compared to the SMT respondents. The findings should provide leadership and management with a solid understanding as to what can be done in future, to ensure higher levels of engagement in the workplace.

Table 10 – Psychological meaningfulness, safety & availability effect sizes

		N	Mean	Std. Deviation	P. Values	Effect Sizes
						SMT with TRAD.
PSYCHOLOGICAL MEANINGFULNESS & WRF	SMT	41	4.38	0.75	0.006	0.74
	TRAD.	38	3.68	0.93		
PSYCHOLOGICAL SAFETY & CO- WORKER RELAT.	SMT	41	3.82	0.86	0.011	0.50
	TRAD.	38	3.39	0.60		
PSYCHOLOGICAL AVAILABILITY & RESOURCES	SMT	41	4.07	0.61	0.001	1.02
	TRAD.	38	3.44	0.57		

All the p-values for the psychological meaningfulness, safety & availability scale measured below the 0.050 significance point, indicating that there were statistically significant differences in the way the two groups responded to the various questions. Again, the d-values were examined to establish whether statistically significant relationships would also be evident on a practical level on the shop-floor, it was clear that these differences between the groups were of considerable magnitude so that they were likely to influence work performance of the groups in ways that matter.

The difference between the groups for psychological meaningfulness and work role fit, approached a large and practically significant effect ($d=0.74$), indicating that the SMT group attached a feeling of higher meaning and value to their work goals compared to the traditional respondents. SMT members also perceived their daily efforts and activities as being more valuable and felt a sense of return for their daily emotional, cognitive and physical energies spent. SMT members also felt that their work roles “fit” them better and were able to express their values and beliefs more in the work place than traditional respondents.

The difference between the groups for psychological safety and co-worker relations was a medium and practically visible effect ($d=0.50$), indicating that the SMT group felt more at ease while performing their tasks and activities, having less fears of negative consequences to their self-image, status or careers, compared to traditional respondents. SMT members also perceived their relationships among their peers as more supporting and trustworthy.

The difference between the groups for psychological availability and resources was a large and practically significant effect ($d=1.02$), indicating that the SMT group was more readily available to use their physical, emotional and psychological resources and to engage in the work place compared to traditional respondents.

Again, to be fair one needs to recognise that the traditional respondents did not show really poor levels of psychological meaningfulness, safety and availability, but according to the analysis, they did not attach the same levels of meaningfulness to their work roles, did not feel as safe in the work place and were not as readily available to employ their physical, psychological and emotional resources as the SMT respondents. These findings should provide leadership and management with a further understanding as to what can be done in future, to ensure higher levels of meaningfulness, safety, availability and ultimate engagement in the work place.

Table 11 - Team empowerment effect sizes

		N	Mean	Std. Deviation	P. Values	Effect Sizes
						SMT with TRAD.
POTENCY	SMT	41	4.14	0.92	0.001	0.87
	TRAD.	38	3.21	1.06		
MEANINGFULNESS	SMT	41	4.16	1.05	0.005	0.81
	TRAD.	38	3.31	1.02		
AUTONOMY	SMT	41	4.00	0.92	0.001	0.89
	TRAD.	38	2.88	1.25		
IMPACT	SMT	41	4.30	0.65	0.001	1.04
	TRAD.	38	3.19	1.06		

All the p-values for the team empowerment questionnaire measured below the 0.050 significance point, indicating that there were statistically significant differences in the way the two groups responded to the various questions. Again, the d-values were examined to establish

whether statistically significant relationships would also be evident on a practical level on the shop-floor. It was clear that these differences between the groups were of considerable magnitude so that they were likely to influence work performance of the groups in ways that matter.

The difference between the groups for potency was a large and practically significant effect ($d=0.87$), indicating that the SMT group showed a collective higher sense of belief that they could be effective in the work place, along with higher levels of individual empowerment compared to traditional respondents. The SMT group also perceived their effectiveness as a team important to the success of the organisation.

The difference between the groups for meaningfulness (similar to the psychological meaningfulness construct) was a large and practically significant effect ($d=0.81$), indicating that the SMT group perceived and experienced their tasks as more important, valuable and worthwhile compared to traditional respondents.

The difference between the groups for autonomy was a large and practically significant effect ($d=0.89$), indicating that the SMT group experienced higher levels of freedom, independence and discretion in their work roles compared to traditional respondents. In practice, this meant that SMT respondents were more autonomous when it came to things like decision making etc. which in turn meant that they were more behaviourally empowered in the work place than traditional respondents.

The difference between the groups for impact was a large and practically significant effect ($d=1.04$), indicating that the SMT group believed and perceived that their activities and work done had a significant impact and was important to the success of the organisation. In effect this meant that they had a better understanding of their daily contributions to the success of the organisation.

Again, to be fair one needs to recognise that the traditional respondents did not show poor levels of teamwork and empowerment, but according to the analysis, they did not attach the same levels of potency, meaningfulness, autonomy and impact to their work roles as the SMT respondents. These findings should provide leadership and management with a greater and

further understanding as to what can be done in future, to ensure higher levels of teamwork and empowerment in the organisation.

4.13 DISCUSSION WORK ENGAGEMENT AND TEAMWORK

Business needs are driven by intense, often global, competition, which is increasing the need for employees to be emotionally and cognitively committed to their company, their customers and their work (Rothmann, 2010:1). The needs of businesses to maximise the inputs of employees have recently contributed to the interest in engagement (Rothmann, 2010:1). Engagement, teamwork and empowerment are constructs often mentioned together in psychological and organisational literature. Empowered individuals and teams are motivated to perform well because they believe they have the autonomy and capability to perform meaningful work that can impact their organisation (Chen *et al.* 2007:332). To maintain sustained performance and reduced employee turnover, management needs to focus on enhancing aspects of the job that would result in employees feeling hopeful, optimistic, resilient, competent and engaged in their work (Palo, 2015:2). According to Rothmann (2017:331), the organisation itself, specifically its goals and values, can be a source of engagement. Based on the findings of previous research, a more engaged and empowered workforce will ultimately have some sort of positive impact on its organisation, whether it is effectiveness, efficiency or financially. The above findings and results confirm that self-managed teams consisting of empowered individuals can contribute towards more engaged employees and overall higher levels of organisational work engagement.

4.14 CONCLUSION

In conclusion, the results for the three questionnaires, constructs and variables measured showed some real significant statistical differences between the two groups, as well as some significant positive relationships between the constructs and variables. This can be deemed as some important findings for future researchers as not much conclusive evidence had previously been found on the inter-relationship of self-managed teams and work engagement. These findings allow academics and future researchers to further investigate this relationship as well as inter-relationships with other different variables and constructs.

4.15 CHAPTER SUMMARY

In Chapter 4, a detailed analysis of the results was done. This included the response rate to the questionnaires, the demographic information of the two groups, the reliability of the data collected, a frequency analysis and descriptive statistics for the overall group, as well as the two individual groups and a correlation analysis for the overall group, as well as the two individual groups. This chapter also included a comparison of work engagement between the two individual groups and a comparison for team empowerment between the two individual groups. In the next Chapter (5), the study is concluded with a summary and some recommendations.

5 CHAPTER 5 – CONCLUSION & RECOMMENDATIONS

5.7 INTRODUCTION

The previous chapter (4) focussed on the results and analysis of the study. In this chapter (5), a summary is made of the main findings as well as a final conclusion and some recommendations to the organisation management and future researchers.

5.8 SUMMARY OF MAIN FINDINGS

The objectives and the results of the main findings are summarised below:

5.8.2 Primary research question

What is the nature of the relationship between self-managed work teams and work engagement in a gold processing plant?

- The study found that a positive relationship existed between self-managed work teams and work engagement in the processing plant.

5.8.3 Secondary research questions

What relationship exists between the traditional group, the self-managed team group and levels of work engagement?

- The study found that SMT members statistically showed higher levels of work engagement than traditional respondents.

What relationship exists between self-managed teams and sub-dimensions of work engagement namely, vigour, dedication and absorption?

- The study found that SMT members showed statistically significant higher levels on all the sub-dimensions of work engagement than traditional respondents.

What relationship exists between self-managed teams and psychological meaningfulness, work role fit, psychological safety, co-worker relations, psychological availability and resources?

- The study found that SMT members showed statistically significant higher levels of psychological meaningfulness, work role fit, psychological safety, co-worker relations, psychological availability and resources than traditional respondents.

What relationship exists between the two groups; teamwork and empowerment?

- The study concluded and found that SMT members showed statistically higher levels of teamwork and empowerment than traditional respondents.

5.9 LIMITATIONS OF THE STUDY

During the research, some limitations were identified.

Sample. Firstly, the size of the sample. Due to the fact that only a limited amount of SMT's was fairly established and functional at the time of the research, only a certain number of respondents could be measured as part of SMTs during the study. Although the sample size can be seen as a limitation, it should be kept in mind that this specific scenario provided the researcher with the opportunity to study two different groups in the same organisation at the same period in time and to conclude with comparisons.

Secondly, the balance of the sample should not be forgotten, as there was a slight in-balance with the make-up of the two groups in terms of hierarchical levels, qualifications and experience and this could have had an impact on the results of the research.

Thirdly, the questionnaires used to gather data was only provided in English. The majority of the respondent's first language was not English and it is likely that this may have had a measure of influence on the interpretation and thus subsequent answering of some of the questions.

Fourthly, self-report measures were relied upon as all the instruments were evaluated based on rating scales. Self-report measures are inherently biased and self-centred which could have an impact on the overall results. Recommendations on this to future researchers are made further on in this chapter.

Lastly, although the confidentiality of the survey responses was made clear to respondents, it is possible that some respondents may have had concerns regarding this and might thus not have fully disclosed their most honest responses when completing the questionnaires.

5.10 RECOMMENDATIONS TO MANAGEMENT AND FUTURE RESEARCH

5.10.2 Management

In this section, some recommendations are made to the management of the studied organisation based on the findings of the research.

Work engagement

Engaging employees is an important strategy for modern day organisations (Rothmann & Baumann, 2014:515). Shuck *et al.* (2011:301) have confirmed that, in order to drive business goals and objectives, organisational culture has to be aligned to drive engagement by creating an engagement-encouragement culture facilitated by leadership. The findings of this research manifest that SMTs can be used to facilitate and improve levels of work engagement within the organisation. Human resource practices play an active role in the enhancement of employee and work engagement (Shuck *et al.* 2011:319). Based on the findings, the researcher would advise the relevant HR team and management to continue with the installation of more SMTs across the organisation. Research reveals consistent, statistically significant relationships between higher levels of engagement and the organisation's financial performance (Aon, 2015:1). The installation of more SMTs will lead to a workforce with higher levels of engagement and could be of substantial benefit to the organisation in the long-term to ensure sustainability and profitability.

Psychological meaningfulness, safety and availability

The three psychological conditions, namely meaningfulness, safety and availability, are theorised to influence the degree to which one engages in his/her role at work (May *et al.*, 2004:19). Meaningfulness has to do with how valuable a work goal is in relation to an individual's own ideals or standards. Safety reflects one's belief that he/she can employ him/herself without fear of negative consequences. Availability has to do with an individual believing that he/she has the necessary physical, emotional and cognitive resources to immerse themselves in their roles (May *et al.*, 2004:19). According to Bakker (2009:5), engaged employees create their own positive feedback. They do feel tired after a long day, but describe their tiredness as a rather pleasant state because it is associated with positive accomplishments and they work hard because working is fun for them. By looking at previous research, it is evident that the above conditions do have an impact on engagement levels. This research itself found and concluded that SMTs respondents had statistically significant higher levels of

psychological meaningfulness, safety and availability than the traditional group. Based on the findings, the researcher would again advise the relevant HR team and management to continue with the installation of more SMTs across the organisation for the purposes of higher engagement levels. This could be of substantial benefit to the organisation in the long-term to ensure sustainability and profitability.

Teamwork & Empowerment

According to Spreitzer & Doneson (2008:311), organisations are faced with competitive demands for lower costs, higher performance and more flexibility. Thus, organisations have increasingly turned to employee empowerment to enhance their performance. Focus is aimed at overcoming the debilitating psychological effects of traditional bureaucracies through the creation of high-involvement organisations (Spreitzer & Doneson, 2008:311). A self-managed work team is a work design embedded in the recurring attempt to align individual motivation with organisational objectives (Proenca, 2010:338). By adopting a unitary approach of the workplace context, management can anticipate productivity performance improvements and employees can expect empowerment (Proenca, 2010:338). The definition commonly used for a self-managed work team draws on enriched job design and autonomy (Proenca, 2010:338). According to Chen *et al.* (2007:334), it is important for managers to empower both individuals and teams, given that empowerment enables and motivates them to perform well. The findings of the research indicated that a positive relationship existed between SMTs, teamwork and empowerment. The research concluded that there was a statistically significant difference between the teamwork and empowerment levels of the SMT respondents and the traditional group. Taking this into consideration, the researcher would advise the relevant HR department and management to continue with the installation of more SMTs across the organisation, as this will lead to higher levels of teamwork and empowerment within the organisation. As previous research had indicated, empowered individuals and teams could be of substantial benefit to the organisation in the long-term to ensure sustainability and profitability.

5.10.3 Future research

In this section, some recommendations are made to future researchers:

Measurement

The research design allowed for respondents to complete individual questionnaires. The problem with this approach is that it is self-centred and self-biased. People tend to perceive

themselves differently to how others perceive them and their behaviours. Future research needs to take an alternative approach when measuring the relationship between work engagement and self-managed teams. An alternative approach would be to design the future research from a different angle and possibly have leadership/management measure the work-engagement of individuals in combination with a self-measurement from individuals. This will provide a better and more compelling overview from different perspectives and will assist to explain the nature of this relationship.

Sample

The sample used during this research was limited due to some constraining factors like the limited amount of established SMTs in the organisation. This meant that only a limited number of respondents could be measured as part of SMTs. Future research needs to look for opportunities in the sector and organisations with a bigger number established SMTs and conduct further research with a bigger number of respondents.

Design

The research done during the study was limited to one processing plant. Future research needs to look for opportunities in the sector where research can be conducted on more than one processing plant in time. A possible example would be to measure a single organisations' employees, but on different processing plants at the same time, as most of the mining organisations in South Africa have more than one plant. It would be of great value to determine if different environments enable different levels of engagement.

5.11 CONTRIBUTION TO ACADEMIC KNOWLEDGE

The contribution made by this study towards academic knowledge includes the findings of a positive relationship between SMTs and work-engagement and a comparison with a group in traditional hierarchical structures in a gold mining plant. This study adds valuable information and knowledge to academics and institutions studying self-managed teams, work engagement, teamwork, empowerment and the relationships between the constructs.

5.12 CHAPTER SUMMARY:

In this chapter (5), the research was concluded with the main findings, along with recommendations to management and future researchers, the identification of limitations and finally the contribution made towards academic knowledge.

5.13 CONCLUSION

This research set-out to primarily establish what type of relationship exists between self-managed teams and work engagement. The researcher identified a unique and challenging problem in a unique and challenging environment. In the end, the research proved significant results for both the primary and secondary objectives, thereby opening new pathways for improved effectiveness, efficiency and productivity for mining organisations in future.

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7 APPENDICES:

7.7

Appendix A - Data collection instrument(-s)

Biographical Information:

The following information is needed to enable meaningful data analysis. I appreciate your help in providing this important information:

Mark the applicable block with an “X”. Please complete all information:

Bio1	Gender:	1. Male	2. Female
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Bio2	Age group	1. ≤ 20	2. 21 - 30	3. 31 - 40	4. 41 - 59	5. ≥ 60
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Bio 3	Race:	1. Black	2. White	3. Coloured	4. Indian	5. Other
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Bio4	Home Language:	1. Afrikaans	2. English	3. Tswana	4. North Sotho	5. Sotho	6. Xhosa
		7. Zulu	8. Venda	9. Ndebele	10. Swazi	11. Tsonga	

Bio5	Highest Qualification:	1. Grade 10 or lower	2. Grade 10 - 12	3. Diploma	4. Trade Certificate	5. Undergraduate	6. Post Graduate
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Bio6	Years in Mining:	1. 0-2	2. 3-5	3. 6-10	4. 11-20	5. 21-30	6. 31-35
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Bio7	Process or Engineering Role:	1. Process	2. Engineering
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Bio8	Mine employee or contractor:	1. Mine Employee	2. Contractor
------	------------------------------	------------------	---------------

Bio9	Role in Organisation:	1. Assistant	2. Aide	3. Artisan	4. Operator
		5. Team Leader	6. Shift Foreman	7. Foreman	

Work & Well-being Survey (UWES)

The following 17 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the '0' (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by crossing the number (from 1 to 6) that best describes how frequently you feel that way.

	Almost Never	Rarely	Sometimes	Often	Very Often	Always
0	1	2	3	4	5	6
Never	A few times	Once a month	A few times	Once a	A few times	Every
	a year or never	or less	a month	week	a week	day

Place an X in the appropriate block to indicate your answer:

	Section A	0	1	2	3	4	5	6
[VI1]	At my work, I feel bursting with energy.							
[DE1]	I find the work that I do full of meaning and purpose.							
[AB1]	Time flies when I am working.							
[VI2]	At my job, I feel strong and vigorous.							
[DE2]	I am enthusiastic about my job.							
[AB2]	When I am working, I forget everything else around me							
[DE3]	My job inspires me.							
[VI3]	When I get up in the morning, I feel like going to work.							
[AB3]	I feel happy when I am working intensely.							
[DE4]	I am proud of the work that I do.							
[AB4]	I am immersed in my work.							
[VI4]	I can continue working for very long periods at a time.							
[DE5]	To me, my job is challenging.							
[AB5]	I get carried away when I am working.							
[VI5]	At my job, I am very resilient, mentally.							
[AB6]	It is difficult to detach myself from my job.							
[VI6]	At my work, I always persevere, even when things do not go well.							

Source: Schaufeli and Bakker (2003).

Note: Section A - VI = vigour scale; DE = Dedication scale; AB = Absorption scale.

Psychological Meaningfulness, Safety and Availability Scale

The following 17 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you strongly disagree with a statement answer the question with a 1. If you strongly agree with a statement answer the question with a 5.

Strongly Disagree

Strongly Agree

1

2

3

4

5

Place an X in the appropriate block to indicate your answer:

	Section B	1	2	3	4	5
[PM1]	The work I do on this job is very important to me.					
[PM2]	My job activities are personally meaningful to me.					
[PM3]	The work I do on this job is worthwhile.					
[PM4]	My job activities are significant to me.					
[PM5]	The work I do on this job is meaningful to me.					
[PM6]	I feel that the work I do on my job is valuable.					

	Section B1	1	2	3	4	5
[WRF1]	My job fits how I see myself.					
[WRF2]	I like the identity my job gives me.					
[WRF3]	The work I do on this job helps me satisfy who I am.					
[WRF4]	My job fits how I see myself in the future.					

	Section C	1	2	3	4	5
[PS1]	I am not afraid to be myself at work.					
[PS2]	I am afraid to express my opinions at work.					
[PS3]	There is a threatening environment at work.					

	Section C1	1	2	3	4	5
[CWR1]	My interactions with my co-workers are rewarding.					
[CWR2]	My co-workers value my input.					
[CWR3]	My co-workers listen to what I have to say.					
[CWR4]	My co-workers really know who I am.					
[CWR5]	I believe that my co-workers appreciate who I am.					
[CWR6]	I sense a real connection with my co-workers.					
[CWR7]	My co-workers and I have a mutual respect for one another.					
[CWR8]	I feel a real 'kinship' with my co-workers.					
[CWR9]	I feel worthwhile when I am around my co-workers.					
[CWR10]	I trust my co-workers.					

	Section D	1	2	3	4	5
[PA1]	I am confident in my ability to handle competing demands at work.					
[PA2]	I am confident in my ability to deal with problems that come up at work.					
[PA3]	I am confident in my ability to think clearly at work.					
[PA4]	I am confident in my ability to display the appropriate emotions at work.					
[PA5]	I am confident that I can handle the physical demands at work.					

	Section D1	1	2	3	4	5
[R1]	I feel mentally sharp at the end of the workday.					
[R2]	I can't think straight at the end of the workday.					
[R3]	I feel overwhelmed by the things going on at work.					
[R4]	I feel emotionally healthy at the end of the workday.					
[R5]	I feel like I'm at the end of my rope emotionally					
[R6]	I feel emotionally drained from my work.					
[R7]	I feel tired before my workday is over.					
[R8]	I feel physically used up at the end of the workday.					

Note: Psychological Meaningfulness [Section B - PM]; Work role fit [Section B1 – WRF]; Psychological Safety [Section C – PS]; Co-worker relations [Section C1 – CWR]; Psychological Availability [Section D – PA]; Resources [Section D1 – R]

Source: (May *et al.*, 2004).

The three psychological conditions explored here – meaningfulness, safety and availability – are theorized to influence the degree to which one engages in his/her role at work (ES; May *et al.*, 2004).

Team Empowerment Questionnaire

Instructions: Think of a team that you are (or have been) a member of in a work setting. Respond to each statement below by indicating the degree to which you agree or disagree with it in terms of the team identified. If you strongly disagree with a statement answer the question with a 1. If you strongly agree with a statement answer the question with a 5.

Strongly Disagree

Strongly Agree

1

2

3

4

5

Place an X in the appropriate block to indicate your answer:

	Potency Items	1	2	3	4	5
[P1]	The team has confidence in itself.					
[P2]	The team believes that it can be very good at producing high-quality work.					
[P3]	The team expects to be seen by others as high performing.					
[P4]	The team is confident that it can solve its own problems.					
[P5]	The team views no job as too tough.					

	Meaningfulness Items	1	2	3	4	5
[M1]	The team cares about what it does.					
[M2]	The team thinks that its work is valuable.					
[M3]	The team views its group goals as important.					
[M4]	The team believes that its projects are significant.					
[M5]	The team considers its group tasks to be worthwhile.					

	Autonomy Items	1	2	3	4	5
[A1]	The team can select different ways to do its work.					
[A2]	The team determines how things are done.					
[A3]	The team has a lot of choice in what it does without being told by management.					
[A4]	The team has significant influence in setting its goals.					
[A5]	The team can rotate tasks and assignments among team members.					

	Impact Items	1	2	3	4	5
[I1]	The team assesses the extent to which it makes progress on projects.					
[I2]	The team has a positive impact on other employees.					
[I3]	The team has a positive impact on customers.					
[I4]	The team accomplishes its goals.					
[I5]	The team makes a difference in the organisation.					

Source: Adapted from Kirkman, B. L., and Rosen, B. Beyond self-management: Antecedents and consequences of team empowerment. *Academy of Management Journal*, 1999, 42, 58-74; Kirkman, B. L., and Rosen, B. Powering up teams. *Organizational Dynamics*, Winter 2000, 48-65.

7.8

Appendix B - Informed consent form

Letter of Introduction and Informed Consent

NWU School of Business and Governance

Title of the study:

Exploring the nature of the relationship between self-managed work teams and employee engagement in a gold processing plant?

Research conducted by:

Mr. E. du Plessis, (21698732)
Cell: 0833953036

Date:

Dear Participant

You are invited to participate in an academic research study conducted by Edward du Plessis, Masters Student from the SCHOOL OF BUSINESS AND GOVERNANCE at the North- West University- Potchefstroom.

The purpose of the study is to explore the nature of the relationship between self-managed work teams and employee engagement in a gold processing plant.

Please note the following:

This is an anonymous study survey as your name will not appear on the questionnaire. The answers you give will be treated as strictly confidential as you cannot be identified in person based on the answers you give.

- Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take more than 20 minutes of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
 - Please contact my study leader, Dr. M. Heyns on /or via e-mail at marita.heyns@nwu.ac.za if you have any questions or comments regarding the study.

Please indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis. (Please tick) .

Date of consent:

YES

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7.9

Appendix C - Ethical clearance



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Prof CJ Botha

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16 March 2017

ETHICAL CLEARANCE

This letter serves to confirm that the research project of **DU PLESSIS, E** has undergone ethical review. The proposal was presented at a Faculty Research Meeting and accepted. The Faculty Research Meeting assigned the project number **EMSPBS17/03/06-01/24**. This acceptance deems the proposed research as being of minimal risk, granted that all requirements of anonymity, confidentiality and informed consent are met. This letter should form part of your dissertation manuscript submitted for examination purposes.

Yours sincerely

Prof CJ Botha

Manager: Research - NWU Potchefstroom Business School

Original details: Wilma Pretorius(12090298) C:\Documents and Settings\Administrator\My Documents\Briewe MBA\2017\