

The impact of mission-directed work teams on employee engagement within the platinum industry

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SOLEMN DECLARATION

NOTE:

This study was done for the academic fulfilment of the requirement for the degree Masters in Business Administration (MBA) at the (PBS) Potchefstroom Business School – North West University (NWU) and for the benefit of Lonmin as the sponsoring company.

It should be noted that during the period of facilitating the research study – Lonmin as the organization of choice went on unplanned labour unrest that resulted in the 2012 Marikana massacre changing the environment affecting employee wellbeing.

PREFACE

I would like to express my sincere thanks and appreciation to the following, without whom this research would not have been possible:

- To Almighty God, my heavenly Father, for giving me the talent and courage to believe in myself as well as the strength to complete this study.
- To my wife Mpho Twala who endlessly prayed, and supported me throughout my studies.
- To my girls, God given angels who always lift my spirit when I am down (Refilwe, Nomsa, Ntando and Sibusisiwe) for their support and the sacrifice they have gone through for me to succeed in my studies.
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- The PBS Lecturers who imparted not only the knowledge but the urge to seek more knowledge and the application thereof

ABSTRACT

Employee engagement is defined as worker's willingness and ability to contribute to a company's success, the extent to which employees put in discretionary effort into their work (Kennedy and Daim 2010, Hundley *et al.*, 2005) which explains the researchers approach in assessing the impact of mission-directed work teams towards employee engagement.

Lonmin Plc. the third largest producer of platinum registered on both the Johannesburg Stock Exchange (JSE) and London Stock Exchange (LSE) has embarked on integrating its operational activities, with the view of advocating its strategic alignment towards every employee in the organization by implementing the MDWTs initiative on every shop floor level. This programme focused on aligning every activity throughout the organization to facilitate proper defined key performance indicators (KPIs) through the business, to improve the company's competitiveness in the mining sector.

As per the basis of this empirical study, the researcher has chosen to analyse the impact of the MDWTs programme on employee engagement at Lonmin to answer the question "Does the MDWTs programme have a positive impact on employee engagement in the mining industry?"

The targeted group for this study was about 300 shop floor employees of Lonmin within the process division. The research study only managed to achieve 50% of the total targeted group. During the period of the study, 149 participants (129 males and 17 females) participated in the study.

Employees are generally satisfied with the impact of the MDWTs programme on their development, on the communication improvement, and mainly, the involvement of employees towards the organization's strategic goals.

The majority of the employees are of the opinion that the tool may require improvement or growth in order to remain sustainable towards its objective; otherwise, a different programme may be sought in the future should the status quo remain the same.

However, there is a huge discrepancy on different sub-divisions' perception on the maturity level of the MDWTs programme, although the researcher did not open the study for additional suggestions on how to improve the intervention.

The instrument designed and used in this study produced a reliability coefficient (Cronbach's alpha above .80) and the validity analysis of eight factor items.

On the basis of the empirical study conducted, it can be concluded that the mission-directed work teams programme was shown, statistically and practically, to have an impact on employee engagement with Lonmin and that communication, involvement, strategic alignment and employee development improved due to the use of the MDWTs' initiatives.

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LIST OF ACRONYMS

BMR	- Base Metal Refinery
CDI	- Competitive Dynamics International
EE & P	- Employee Engagement and Performance
FMCG	- Fast Moving Consumer Goods
GABP	- Goal Alignment Best Practice
JD-R	- Job demand-resource
KMO	- Kaiser-Meyer-Olkin
KPAs	- Key Performance Areas
KPI	- Key performance Indicators
MDTs	- Mission-Directed Teams
MDW	- mission-directed work team
MDWTS	- Mission-Directed Work Teams
NWU	- North West University
PBS	- Potchefstroom Business School
PGMs	- Platinum Group Metals
PMR	- Precious Metal Refinery
SCS	- Statistical Consulting Service
SET	- Social Exchange Theory
SLA	- Service level agreement
SML	- Smelter
UWES	- Utrecht Work Engagement Scale

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CHAPTER 1

Chapter Summary

This chapter aims to give a short introduction to the study, a discussion of the problem statement that forms the basis for conducting this study, by outlining the research objectives (both primary and secondary), research methodology, and study limitations.

INTRODUCTION

This mini-dissertation attempts to outline the impact of Mission-Directed Work Teams (MDWTs) on employee engagement and performance.

Employees are key factors that ensure the organization survives and is more productive; employee engagement becomes a crucial management tool to be fostered by line managers (Dawal *et al.* 2009:6).

The emergence of self-managing work teams in corporate organizations during the past 25 years has been variously proclaimed a management transformation, a paradigm shift, or corporate renaissance (Millikin & Homa *et al.* 2010:702).

The impact of globalisation on different companies has caused some companies to thrive, whereas others have had to revert to offensive strategies to survive.

In the midst of all this, employees remain the most valuable resource necessary to ensure that business strategy is achieved. In South Africa, retaining employees has been a challenge to most companies, and monetary benefit as the means for retaining employees has seemed to be falling on a low priority scale compared to options of creating an all-inclusive work climate, motivating employees, and rewarding them on their individual performances (engagement) and company's performance (Gruman, 2011:136).

Lin (2006) explains that the level of employee involvement is determined by the degree of employees' participation in decision making by the management team, which affects the individual in his/her role. This is further supported as a key driver of employee

attitude, behaviour, and performance and that of the organizational productivity (Gruman, 2011:136).

Research has shown that there is a correlation between job satisfaction and productivity in the Fast Moving Consumer Goods industry (FMCG) (Vermeulen, 2010:2).

Employee engagement is related to job satisfaction, which could have a positive impact on performance for both the individual employee and the organization.

Central to the success of any mining company is the ability to manage capital investment effectively so as to ensure acceptable stakeholder returns within an overall strategic context (Smith, Pearson-Taylor *et al.* 2006).

Based on this strategy, the management of Lonmin was of the opinion that participation and engagement of stakeholders (employees and Union partners) in organizational key performance areas (KPA's) could help to bring about the shop floor employee improving the business performance of the organization through ownership, understanding and goal alignment.

Lonmin decided to implement Mission-Directed Work Teams (MDWTs) as an integrative tool to align the operational activities of business units and to promote employee engagement.

The decision to launch the programme from one unit to another as a multi-level mini business goal alignment tool was then taken. Learnings from each business unit were used as an implementation improvement to other business units. The roll-out has progressed to cover business units within the processing, smelting and refinery division of the organization.

Thompson and Mathys (2008) claim that the improvement of organizational and employee performance is an ongoing journey, and also reported that researchers have consistently identified effective goal setting as a major factor in the improvement of performance. Sun and Hong (2002) added that strategy plays the role of a linkage between the internal organizational capability and competitive advantage.

This study seeks to understand the impact of the programme of the MDWTs on engaging employees at Lonmin and the subsequent effect it may have on performance.

The aim of this study will seek to focus mainly on evaluating the impact/effectiveness of mission-directed work teams (MDWTs) on performance and employee engagement, and also to provide feedback and recommendations regarding specific interventions required, and identify potential challenges that will require focus from Lonmin management to ensure that employee engagement hindrances are addressed and the positive contribution of the programme is promoted and improved, where necessary, to ensure improved performance.

The related factors on engagement and performance and the method to be used for a formal unbiased assessment to ensure the honest opinions of employees from different occupational level regarding the MDWTs programme and employee engagement will be discussed and summarized in chapter 2.

1.1. PROBLEM STATEMENT

The study addresses the impact that mission-directed work teams have on the level of strategic alignment (through employee engagement) of employees of the Lonmin process division and business unit performance. Lonmin Platinum is the third largest producer of platinum group metals (PGMs) in South Africa. It is striving to improve its process strategies in order to be competitive as the lowest cost producer.

The current state of the multi-level meetings of the MDWTs as the goal alignment tool is more implemented, driven and fast tracked within the operational section of the business line processes. This has meant attention and drive has been less developed to facilitate the same intention in the service departments, like Human Resources, IT, Safety, Security and Projects.

The effectiveness of the mission-directed work team (MDWT) as a tool for goal alignment of stakeholder employees' engagement and performance will be assessed within the business units within the processing, smelting and refinery division of the organization.

This study aims to investigate the impact of the mission-directed work team on employees within the platinum industry specifically for Lonmin employees individually, or in teams between different business units and departments within the company's processing division.

1.2. RESEARCH OBJECTIVES

The research objectives are classified into primary objectives and secondary objectives. The secondary objectives are summarised more specifically.

1.2.1. Primary Objectives

- To evaluate the impact/effectiveness of mission-directed work teams (MDWTs) on performance and employee engagement towards goal alignment within the processing division unit of Lonmin.
- To provide feedback and recommendations regarding specific interventions required, and areas of focus from the programme, to ensure that employee engagement hindrances are addressed and the positive contribution of the programme is promoted and improved where necessary to ensure improved performance.

1.2.2. Secondary Objectives

- To determine the impact of the MDWTs programme amongst employees,
- To determine the impact of MDWTs on employee engagement,
- To determine the impact of MDWTs on individual or team performance,
- To understand the perceived knowledge on the role of the MDWTs programme amongst employees,
- To understand the impact of the MDWTs programme on strategy alignment.

1.3. RESEARCH METHODOLOGY

The research method consists of both a literature survey and an empirical study.

1.3.1. Literature Survey

The literature survey focuses on defining and explaining the MDWTs programme objectives and purpose and its impact on employee engagement, and performance.

1.3.2. Research design

For the purpose of this study, the questionnaire method as the measuring tool for determining the impact of MDWTs on employee engagement and performance is deemed to be the effective tool. A questionnaire will be designed specifically for the employees of Lonmin within its processing division for feedback regarding their perception on the impact of the MDWTs' programme on engagement, performance and alignment.

The questionnaire is designed to have eight sections, which are considered to give a better view of the impact of the programme of the mission-directed work teams on employee engagement and alignment.

Section A relates to participants' demographics. Section B is divided into five subsections (leadership and strategy, supplier–customer focus, employee empowerment, teamwork and communication). Section C deals with the value of the MDWT process, and last, Section D deals with UWES – 17-item questionnaires on work and wellbeing.

The explanation section of the questionnaire outlines the intent of the study. Further explanation will be given about the purpose of the questionnaire in gathering responses on how the employees perceive the impact of mission-directed work teams on their engagement and alignment.

1.3.3. Study boundaries and participants

The participants of the study do not include all the Lonmin employees, but only the employees working in the smelting and refining divisions of the company, where the MDWT programme is fully implemented and has been applied for more than three years. Only employees who are involved in the application of the programme in their day-to-day activities will participate in the survey. The study target is to cover more than 60% of these employees.

The target population for this study will be the front line employees on the shop floor, Supervisors (Front Line Supervisor), and First Line Managers that are responsible for the operation of different business units; the population is considered to have mixed literacy levels, with the majority of shop floor employees having Matric (Grade 12) as the minimum qualification.

1.3.4. Measuring Instrument

Questions are designed on both the five-point Likert scale and six-point scale depending on the response required per identified section. For the purpose of this study, a four-point (force) response is not considered sufficient to give respondents an option of indicating if they are indecisive about the impact of the programme, especially newly appointed participants who are not exposed enough to have a good understanding of the programme, but know only enough to give an indicative response on the extent of exposure, training and/or knowledge of the programme.

The questionnaire excluded any use of names or references to ensure total confidentiality of participants; the comment section of the questionnaire is added to evaluate the added views of the participants about the strengths and weaknesses of the programme as additional information.

1.3.5. Data Analysis

After the data has been collected, it will be summarized and compiled according to the required format as agreed with the statistical Consulting Service of the North-West University (Potchefstroom Campus) for analysis and trending.

Further assistance in data interpretation will be provided by the University's SCS consultant once the data has been analysed using the relevant programmes for data analysis (SPSS, Minitab, statsoft, etc.)

1.4. RESEARCH PROCEDURE

Responses will be gathered from all participants who are active in the MDWTs programme; a clear request will be made to shift workers not to re-distribute the questionnaire to any person who is not actively involved with the application of the MDWTs programme.

1.5. LIMITATIONS

It is anticipated that a small percentage of employees who have a literacy level lower than grade 12 may not participate effectively in the study, as they may not feel comfortable with the assistance of a co-worker or foreman due to the fear of his opinion being misperceived.

This could give a biased response as participants may not be willing to appear to be negative about the programme, and this may limit the number of responses from actively involved participants in the MDWTs programme.

Where possible, the researcher will offer alternative options and assistance to willing participants who might not comprehend the questionnaire. The researcher might not be able to cover all participants due to the locations of different business units; this may be a limiting factor in covering the majority of actively involved participants in the programme.

1.6. SPECIAL ETHICAL CONSIDERATION

The confidentiality of the respondents will be considered and respected. at all time. The questionnaire will be designed in such a way that it does not require the respondent to complete identification details, such as name, or personnel employee number.

An outlined consent letter will form part of the questionnaire send to the respondents to explain the purpose of the study and the questionnaire.

All information collected for this study will be treated with strict confidentiality and the researcher will endeavour to minimise the exposure of the anonymity of respondents during the questionnaire collection, although this may not be the case for respondents who may require assistance. The anonymity of results will be guaranteed as the questions are designed to be reported on in groups based on gender, age, work level, etc.

1.7. MINI-DISSERTATION STRUCTURE

The structure of this research study or mini-dissertation will be covered in the following four chapters:

Chapter 1: Introduction, problem statement, and research objectives.

Chapter 2: Literature Review

Chapter 3: Research method and data analysis

Chapter 4: Conclusion and Recommendations

CHAPTER 2

Chapter Summary

Chapter two consists of a literature study to understand and conceptualize the factors related to employee engagement, performance and alignment and the associated impact of the mission-directed work teams (MDWTs) programme on these factors.

LITERATURE SURVEY

This chapter seeks to explain the literature survey required to study thoroughly the concept of the mission-directed work teams (MDWTs), as well as the literature survey on employee engagement, performance and alignment to form the basis of the research methodology, and for the formulation of the questionnaire to assess the relationship and/or correlations between the impact of MDWTs on employee engagement and performance.

2.1. MISSION-DIRECTED WORK TEAMS (MDWT'S)

The mission-directed work teams tool is the propriety of Competitive Dynamics International® (CDI) and its focus is to assist organizations to become world-class competitors and a great place to work.

The mission-directed work teams programme is defined as the tool that takes recognised world best workplace and leadership practices to the front line, creating a lean, efficient and team based organization.

This programme is focused on fostering key strategies of the value chain in that:

- It focuses on simultaneous improvement of Key Performance Areas.
- It focuses on establishing close links with customers and suppliers.
- It focuses on driving both linear, continuous improvement (Kaizen) as well as non-linear break-through improvements in the workplace.

- It focuses on eliminating all forms of waste and makes value flow, as pulled by the customer.
- It focuses on applying leadership practices that promote teamwork, continuous learning, participation, and flexibility.

The intent of the programmes is to transform the front line of an organization into a productive, participative environment, thereby providing a sense of purpose for people in their place of work. The transformation about the programme is first introduced to management in order to ensure that a supportive environment exists in the organization, as leadership has a critical role to play, both as coach and as master coach.

2.1.1. Aims and key objectives of the MDWT's

The main aim of the MDWTs programme is to improve goal alignment by providing the leaders and their teams with essential skills to achieve high and continuously improving levels of Key Performance Areas (KPA's) (ANON 2012).

The Key Objectives and benefits of the programme are:

- To establish business focus, goal alignment and full employee engagement throughout the organization.
- Simplify the management of business objectives through the creation of a visual workplace.
- Create a work climate characterised by teamwork, participation and continuous learning.
- Create immediate, visible improvements in the workplace.
- To result in fully engaged teams focused on business objectives, aligned throughout the organization.
- To consider communication between team members to be vital for its long-term success. This entails team-on-team, team-on-one and one-on-one reviews and problem solving.
- To establish win-win partnerships through Service Level Agreements (SLAs) between the mini business teams (internal customers and suppliers).

2.1.2. Application Methodology

The MDWTs programme implementation process is classified into three main streams, which encompasses the concept of mini-business of each team, monitoring and reviewing its own clearly defined and aligned key performance objectives through a visual workplace forum. During the coaching and reviewing, the coach reviews the team on ten best practices guidelines, which covers understanding, team participation, member engagement and mini-business alignment towards the overall business unit objectives.

2.1.2.1. Mini-business goal alignment

- Engaging front line employees in the organization through the mini-business concept.
- Aligning goals top-down and bottom-up; creating business focus at the front line.
- Implementing visual management of Quality, Operations, Cost-effectiveness, Safety and People (KPAs).
- Establishing a foundation for problem-solving, continuous improvement and innovation

2.1.2.2. Visual Presentation

The programme mainly uses visual learning and engagement by combining visual presentation, writing and discussion, with the view that visual presentation helps employees:

- To understand the message more easily,
- To retain the message for longer,
- To act as the catalysts for change,
- It is a constant reminder of the organization's mission, vision and values.
- It helps employees to keep focus on the goal (Alignment).

Figure 1 below shows the concept of visual presentation applied by the programme to foster engagement, performance reviews, and goal alignment

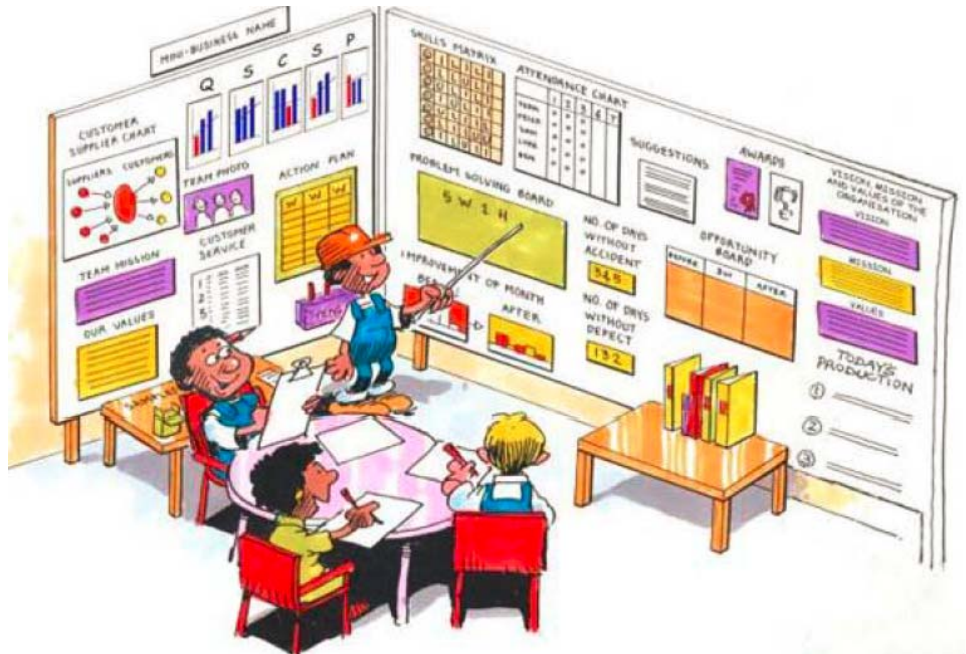


Figure 1: MDWT's Visual Presentation Concept

2.1.2.3. Coaching for Performance

During the coaching session, the team leader or appointed mentor identifies the essential skills and competencies required to attain team goals, while building a multi-skilled and versatile team, and enhancing individual and team-on-team feedback to review and enhance performance.

The programme is also rolled out in a methodical approach where leaders are given a practical, experiential approach to learning, to introduce all leaders to the concepts and tools relating to the programme. Trainers are trained to introduce team members to the programme in a modular manner. The application of the principles and practices is enhanced through on-site, monthly, coaching reviews involving front line teams.

The MDWTs programme views a successful team as a team operating as mini-businesses whose reason for being is to serve their customers, add value, and support their organization to achieve its vision, mission and goals.

The establishment of the MDWT mini-business structure is simplified in figure 2 here-under. The levels of facilitation begin with the supervisor, or foreman who leads a team of operators forming a mission-directed team (MDT) level 1. All leaders of MDT1 form part as members of the MDT level 2 headed by the section manager who in turn becomes the coach and conducts reviews on MDT level 1 team members to assess understanding, engagement and alignment. During the coaching review, the team leader's effectiveness on communication, engagement, problem solving and performance alignment is evaluated based on the ten outlined best practice guidelines in table 1 below.

The structure of mini-business levels is adopted based on the organizational level of responsibility and the hierarchy, and that will depend on how many coaches and master coaches will be established, as well as how many mission-directed teams (MDTs) are created.

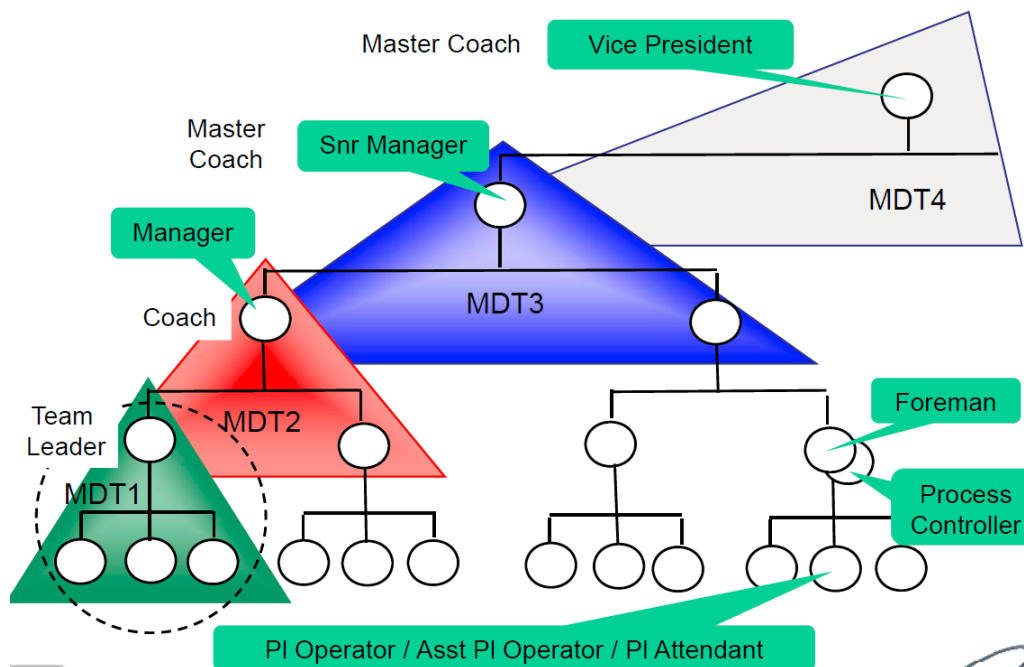


Figure 2: Mini-Business Team Structure Format

These best practice guidelines can be customised based on the focus of the organizational priority and goals on critical identified KPAs.

The table 1 below summarises the model of basic best practices used by the MDT level-2 coach to review the MDT level 1 employees.

Table 1: MDWT’s Basic Model Alignment - Best Practices

# MDT1 – Best Practices	
1	Our organizations vision, values and goals are communicated. Every member knows how the organization is performing in terms of business results
2	A team functions like a mini-business, team name and purpose are defined and displayed, customer – supplier relationship is clarified and supplier performance is tracked
3	Team, team leader and coach agrees on key KPA’s (Operations, Quality, Cost, Safety and People) targets and trigger levels, graphs showing performance are displayed and updated, Problem solving are initiated where trigger levels are activated.
4	Team, team leader and coach agrees on key KPA’s (Operations, Quality, Cost, Safety and People) targets and trigger levels, graphs showing performance are displayed and updated, Problem solving are initiated where trigger levels are activated.
5	Team, team leader and coach agrees on key KPA’s (Operations, Quality, Cost, Safety and People) targets and trigger levels, graphs showing performance are displayed and updated, Problem solving are initiated where trigger levels are activated.
6	Team, team leader and coach agrees on key KPA’s (Operations, Quality, Cost, Safety and People) targets and trigger levels, graphs showing performance are displayed and updated, Problem solving are initiated where trigger levels are activated.
7	The team meet daily for the morning meeting to clarify work planned for the day, review performance and identify improvement opportunities.
8	Innovation is encouraged improvement project are implemented and presented at the Multi-Level Meeting (MLM) as prescribed
9	The mentor is selected and attends the meeting as prescribed to advise
10	The team leader presents the mini-business results in the MLM as prescribed

2.2. EMPLOYEE WORK ENGAGEMENT

Employee engagement is defined as worker's willingness and ability to contribute to the success of a company; the extent to which employees put in discretionary effort into their work (Kennedy and Daim 2010), (Hundley *et al.*, 2005).

According to Men (2012), employee engagement means being psychologically present when occupying and performing an organizational role, and implies that it deals with how individuals employ themselves while performing their jobs, and involves the active use of cognitions, emotions, and behaviours. From this definition and others that explain work engagement, they have a common thread of positive attitude displayed by the employee while performing his/her task.

Rasli *et al.* (2012:209), Bakker *et al.* (2012:556), Demerouti *et al.* (2010:210), and Brummelhuis, *et al.* (2012:114) all agree with the same explanation and definition of work engagement as a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication, and absorption, while Mark Attridge (2009:1) also concurs with this definition by describing work engagement as the extent to which workers are involved with, committed to, and passionate about their work.

According to Tuckey *et al.* (2012:15), leadership plays an influential role in how employees experience their work and in facilitating the motivational processes that underpin follower work engagement.

Mark Attridge (2009:3) further explains that there are three groups of employees in terms of engagement, those that are highly engaged, those that are less or not engaged, and another group that lies in the middle of the distribution and has the moderate level of engagement.

Vigour refers to high levels of energy and resilience while working. Dedication is characterised by being strongly involved in one's work and experiencing a sense of significance and enthusiasm; absorption is the state of being fully concentrated and happily engrossed in one's work (Brummelhuis *et al.* 2012:120). Brummelhuis (2012) further explains that engaged employees have high levels of energy and are enthusiastically involved in their work.

The bigger question to be asked would be how companies can design workplaces that are great to work in and that stimulate employees' engagement.

According to Bakker (2010:229), job resources are important facilitators of employee engagement, particularly under conditions of high job demands (Bakker & Demerouti 2008), and that engagement, in turn, has a positive impact on job performance (Bakker 2009).

Furthermore, engagement is explained to be important for organizations since it contributes to the bottom line (Demerouti & Cropanzano 2010; Macey & Schneider 2008).

Three aspects identified by Vazirani (2007:4) are: 1) the employees and their own unique psychological makeup and experience, 2) employers and their ability to create the conditions that promote employee engagement, 3) interaction between employees at all levels. Without the organization creating such a platform conducive to this partnership, the environment would then depend on individual employees own psychological make-up.

There are three different types of people, when explained in the context of engagement (Vazirani 2007:4)

Engaged employees are called 'builders'. They are driven by the desired expectations for their role, so they can meet and exceed them.

Not-engaged employees are called 'wait to be told'. They tend to concentrate on tasks rather than the goals, they want to be told what to do, just so they can do it and say they have finished.

Actively disengaged employees are called 'cave dwellers'. They sow seeds of negativity at every opportunity.

There are numerous listed advantages of engaged employees, including staying with the company, advocating for the company and its products, contributing to bottom line business success, performing better and they are more motivated, passionate, committed and aligned with the organization's strategies and goals and boost business growth. Highly engaged employees will consistently deliver beyond expectations.

According to Ologbo and Saudah (2012:500), employee engagement can be addressed by incorporating the two types of employee engagement.

- Job engagement, which is the level of the employee's commitment and dedication to his job role.
- Organizational engagement, which is the level of employee commitment and loyalty to their organization.

The idea to separate the two types of employee engagement was put forward by Saks (2006:125) who expressed concern over the need for employee engagement to be viewed both as job engagement and organization engagement for strategic understanding of the construct (Ologbo & Saudah 2012:500).

2.2.1. Drivers of Work Engagement

Job resource and personal resource are the two key drivers that are reported to have a direct influence to both work engagement and performance (Bakker 2010, Bakker 2011).

2.2.1.1. Job Resource

Bakker (2010:237) describes the job resource as the consistent element associated with work engagement, and further explains job resources to refer to those physical, social, or organizational aspects of the job that may (a) reduce job demands and the associated physiological and psychological costs, (b) be functional in achieving work goals, or (c) stimulate personal growth, learning, and development. These factors will then be evaluated against the MDWTs tool concept to assess the relationship.

Job resource can intrinsically fulfil basic human needs, such as the needs for autonomy, relatedness and competence. Proper feedback fosters learning, thereby increasing job competence, whereas decision latitude and social support satisfy the need for autonomy and the need to belong (Bakker 2010:231).

2.2.1.2. Personal Resource

Another driver of work engagement is personal resource according to Bakker (2011:266). Bakker explains personal resource as positive self-evaluations that are linked to resiliency and refer to an individual's sense of their ability to successfully control and have an impact on their environment. It has been shown that self-esteem, self-efficacy, locus of control, and the abilities to perceive and regulate emotions are positive predictors of work engagement (Bakker 2011:266).

Bakker (2010:232) explains personal resource as an individual's positive emotional state explained by: 1) having confidence (self-efficacy), 2) making a positive contribution (optimism), 3) persevering toward goals (hope) and (resilience) in order to succeed.

2.2.1.3. Work engagement and trust

According to Hassan and Ahmed (2011:166), the relationship between trust and work engagement is mutually reinforcing, and leads to an upward spiral effect, which is further explained by a climate of trust that leads to wide and diverse benefits for individuals who are engaged in their jobs. Mostly, trust is embedded in the organization's values that define the expected behaviour of all employees of the company.

2.2.1.4. Work engagement and leadership

This relationship is based more on values, especially when leadership "walk the walk, and talk the talk". Employees are easily impacted by the behaviour or their supervisors or managers. According to Hassan and Ahmed (2011:166), there can be an increase in work engagement amongst employees if there is a sound sense of trust in the competence and capability of their immediate supervisors.

Furthermore, supervisory coaching in the form of assisting employees in locating their goals, organizing their work, highlighting drawbacks, taking a keen interest in their professional and career advancement, and offering advice as needed, has been positively related to work engagement (Hassan and Ahmed 2011:170).

The study conducted in Asia-Pacific, Europe, Latin America and North America by the Consulting Talent & Organization (Hewitt 2011) indicated the top three engagement drivers to be career opportunity (61% globally), followed by brand alignment (44% globally) and the third major driver of engagement being recognition (40% globally).

The study conducted by Hewitt (2011:13) indicates career opportunity and recognition to be explained within the ambit of job resource and personal resource as outlined by Bakker (2010), Bakker (2011) and Hassan and Ahmed (2011).

Part of the objective of the MDWT programme aligns with the scope of job resource and personal resource to some degree in promoting task planning and organising, and reviewing performance and using problem-solving methods when the trigger lines are activated, where the leader gives guidance to the team in identifying possible cause and effect and identifying improvement opportunities.

2.2.1.5. Job and Organizational engagement

Job engagement is the level of employee's commitment and dedication to his job role, while organizational engagement is the level of employees' commitment and loyalty to their organization (Ologbo & Saudah 2012:508). Literature review indicates that job and organizational engagement are two concepts underpinned by job resource and personal resource engagement factors.

Job engagement and the association of organizational engagement to job and personal resource factors can be explained as the means for categorising the factors explained by both job and personal resources into job related and organizational related engagement drivers. The individual factor of employee engagement is also known as the driver of employee engagement (Ologbo & Saudah 2012:508).

2.2.2. Engagement Measurement

Mark Attridge (2009:6) believes that employers may want to begin with a companywide assessment process to measure the range of engagement levels in the workforce.

The engagement assessment process, when repeated each year, can serve as a baseline that can be used to gauge the effectiveness and the contribution of management practices and interventions designed to encourage engagement (Attridge 2009:12).

According to Vazirani (2007:10), there are four critical steps to be followed when measuring employee engagement, namely:

- Step 1 - Listening (this is a continuous process)
- Step 2 - Measure the current level of engagement (this should be done at regular intervals to track the contribution of engagement to the success of the business.
- Step 3 - Identify the problem areas (to ensure that the disengaged employees are identified and proper systems are put in place to address it).
- Take action against those problem areas identified in step 3.

To best illustrate (Vazirani 2007) the principle of continuous re-measuring, see figure 3 below:

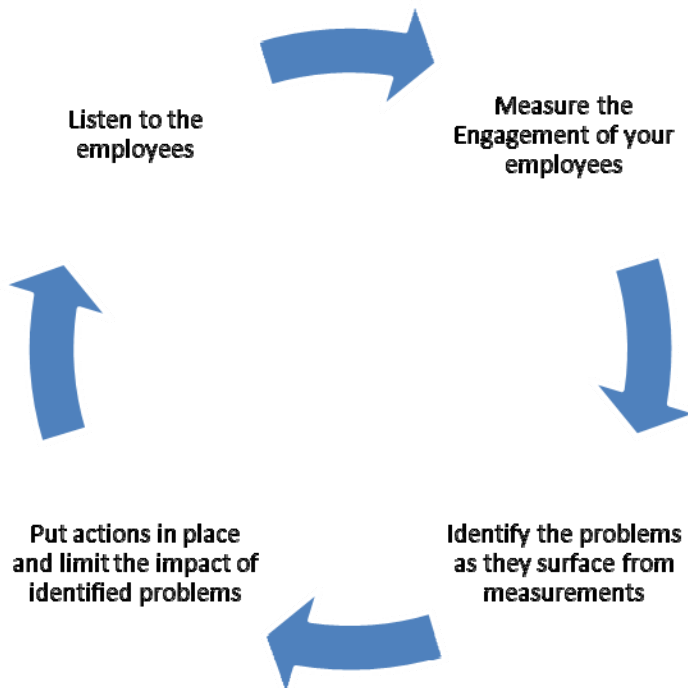


Figure 3: Engagement Measurement cycle

According to Gruman and Saks (2011:132), engagement appraisals provide the additional opportunity to assess the extent to which employees have demonstrated behavioural engagement, and both parties need to demonstrate conformity development agreement.

Measuring employee engagement has become a common element of the annual staff survey, the theory being that engagement "drives organizational performance" (Thornham & Chamorro-Premuzic, 2006). According to Kennedy and Daim (2010:471), Feather (2008) outlined a four-step process engagement measurement that leaders can incorporate in their strategy:

- Use behavioural and emotional outcomes.
- Correlate employee to meaningful outcomes.
- Focus improvement efforts and investment on the high impact/low performing areas.
- Re-measure to assess success.

These four steps as outlined by Feather (2008) compare and agree with the argument of Vazirani (2007:10) that employee engagement is the continuous process of measure, review, act and re-measure.

2.2.3. Engagement barriers

Mark Attridge (2009:8) outlined four engagement barrier practices that organizations should avoid at all costs, namely:

- Inconsistent management styles based on the attitudes of individual managers, which can lead to perceptions of unfairness.
- Reactive decision making by superiors that does not address workplace problems until after it is too late.
- Lack of knowledge sharing within the company due to rigid communication channels, or company culture norms.
- Poor work-life balance for staff due to frequent use of overwork schedules

2.3. PERFORMANCE

Performance is defined by Babin & Boles (1998) as “the level of productivity of an individual employee, relative to his or her peers, on several job-related behaviours and outcomes” (Karatepe *et al.* 2006:548).

While Motowildo and Van Scotter (1994) referred to task performance as in-role performance and explain it as those officially required outcomes and behaviours that directly serve the goals of the organization (Bakker *et al.* 2012:7).

Gruman and Saks (2011), Armstrong (2000), Cardy (2004), Das (2003), Murphy and DeNisi (2008), and Pulakos (2009) all agree that there exist numerous models of performance management processes. Most of them focus on a predictable set of variables involving some variation on establishing performance goals for employees, assessing performance, and providing feedback, few go beyond this general set of factors.

The study conducted by Karatepe *et al.* (2006:548) indicated that trait competitiveness, self-efficacy, and effort are significant predictors of frontline employee performance.

Strategic alignment is defined as the link between the overall goals of an organization and the goals of each of the units that contribute to the success of those overall goals (Andolsen 2007:40).

Furthermore, these alignment best practices are explained to be techniques, methods, processes, activities, or mechanisms used by organizations in order to optimize the result of production or management practices and to minimize the possibility of mistakes (Xu & Yeh 2012:78).

Part of MDWTs objective of employee engagement and business focus there is a strong element of goal alignment throughout the levels of the organization to ensure that there is clear goal alignment and communication both ways top-down and down-up. Figure 4 below illustrates the principle of MDT level goal alignment towards the overall organizational goal as assessed through the best practice #1 as indicated in table 1 above.

The mini-business KPAs performance are aimed at impacting the overall organizational KPAs to be able to add value to the business, and this in turn will translate into proper focus and engagement of employees in turn contributing towards the bottom line performance.



Figure 4: (MDWT's) KPA's Alignment Principle

2.4. ENGAGEMENT – PERFORMANCE LINK

Employee engagement is closely related to the organization's ability to achieve high performance levels and superior business results.

Vazirani (2007:6) explains that there is a significant link between employee engagement, profitability and performance.

To link engagement to performance, Bakker *et al.* (2012:7) explain that there are two critical reasons/concepts that satisfy this link:

- Bindle and Parker, (2010) and Cropanzano and Wright, (2001) explain engaged employees as those who often experience positive emotions. Happy people are more sensitive to opportunities at work, more outgoing and helpful to others, and more confident and optimistic (Bakker *et al.* 2012:7).
- A second reason why engaged workers may perform better is that engaged workers have more physical resources compared to disengaged workers (Bakker *et al.* 2012:564).

The MDWTs programme objectives also indicate this link through the outlined objective in that it fosters employee engagement throughout the organization to make the organization competitive through innovation and continuous improvement of key aligned key performance areas (KPA's).

2.5. TESTED MODELS BY OTHER RESEARCHERS

Models that link various work related variables and situations have been reported by different researchers in an effort to explain the impact of one or several variables on organizational or situational outcomes.

2.5.1. Theoretical review of engagement – performance link models

- **Ologbo and Saudan (2012) Engagement – Performance link model**

According to Ologbo and Saudan (2012:500), the social exchange theory (SET) is the most accepted and widely used theory in recent research on employee engagement.

Ologbo and Saudan (2012:500) tested the social exchange theory model of employee engagement in order to ascertain the influence of individual factors of employee engagement on work performance using variables like job and organization engagements as the measures of employee engagement.

The result of the tested social exchange theory model by Ologbo and Saudan (2012:506) supported the similar findings conducted by Saks (2006) that indicated a high correlation of influence between job and organizational engagement on employee engagement for which both are reported to have different impact on the work outcome.

The attached model in figure 5 below, adopted from Ologbo and Saudan (2012), shows individual factors on employee engagement as tested by Ologbo and Saudan (2012:501) on work outcome.

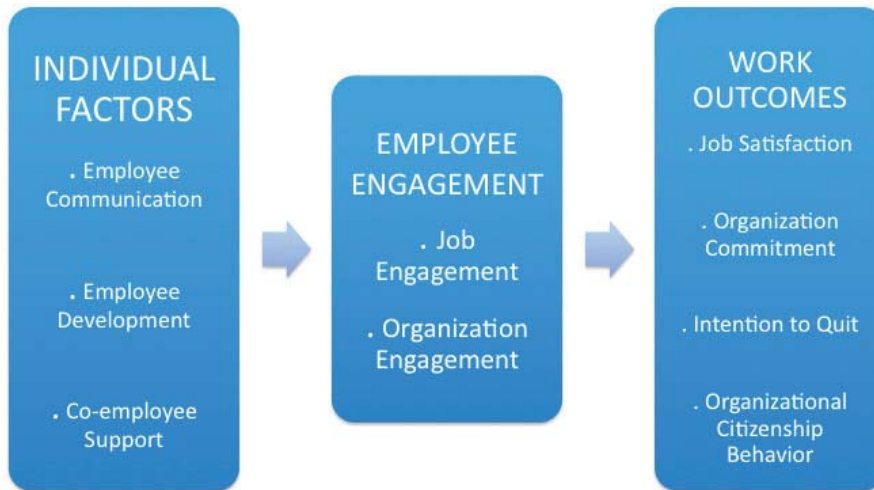


Figure 5: Individual factors - employee engagement model on work outcome

This means that the employees who have perceived support from the co-employees are more likely to reciprocate with greater level of job engagement and organization engagement. Employees who are provided with adequate development (training, skills and learning) are more likely to be more engaged in their job role and organization roles, and would repay with greater organization engagement. Thus, engaged employees have positive behaviours, attitudes, intentions derived from a high-level mutual relationship with their co-employees and their employer.

- **Bakker (2010) Engagement – Performance Link Model**

The antecedents and consequences of work engagement can be organized in an overall model of work engagement. Other research studies were conducted by Demerouti *et al.* (2001) and Bakker and Demerouti, (2007) validating the outlined antecedents on the job demand-resource model (JD-R) application on work engagement as outlined in figure 6 below.

The concept of job resource as the driver for engagement and its importance is explained in this report as a strong correlation to employee engagement among other engagement drivers.

Further, the model is based on the work of Xanthopoulou *et al.* (2007, 2009a, 2009b), who expanded the JD-R model and showed that job and personal resources are

mutually related, and that personal resources can be independent predictors of work engagement (Bakker 2010:239).

As can be seen, the model assumes that job resources and personal resources independently or combined predict work engagement, and work engagement in turn, has a positive impact on job performance.

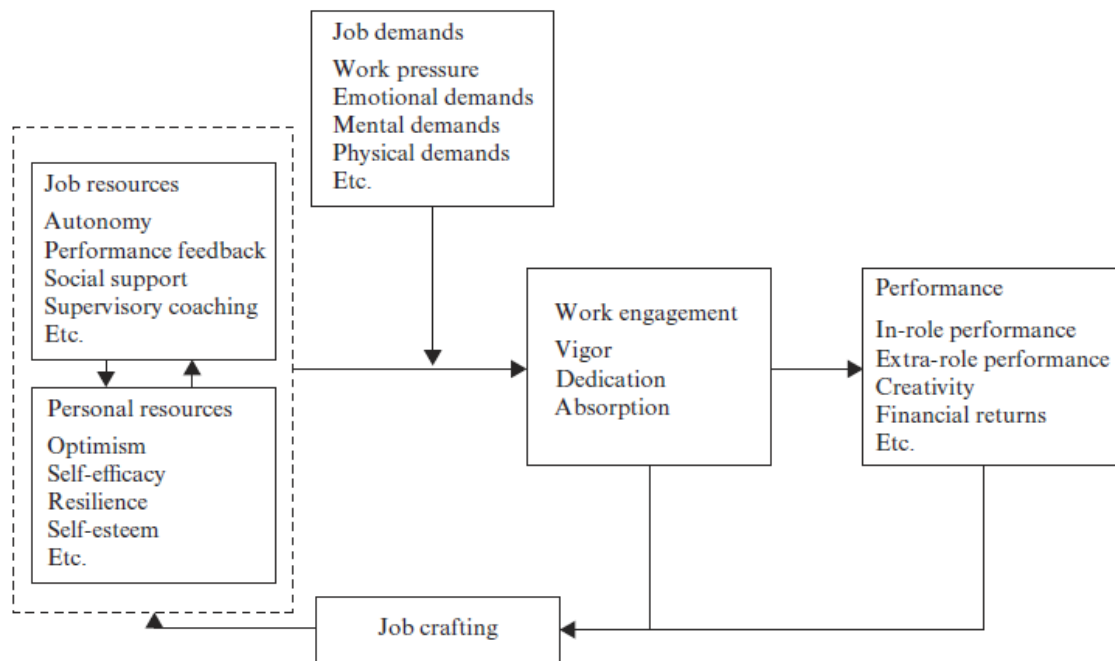


Figure 6: Work engagement model (Source: (Bakker 2010))

The JD-R model studied by Bakker (2010:240) supports the contention that focusing on work engagement offers organizations a competitive advantage.

Since engagement leads to creativity, active learning, and optimal performance, engaged employees create their own great place to work and thus craft and manage job demands (Bakker 2010:241).

Based on these two discussed models and the concepts that explain the relationship between the variables of engagement that leads to performance, a model informed from these studies will be proposed and tested on the company concern mainly within the framework of the MDWTs programmes impact on engagement and performance.

This study will seek to assess the impact of the MDWTs programme on the employees of Lonmin platinum (process division). It will also seek to assess the impact on the engagement of employees and the subsequent impact on performance. The next step will be to put together a questionnaire that will facilitate the test of the model proposed to evaluate the impact the mission-directed work team programme has on employee engagement and the relationship towards performance.

The questionnaire will be developed taking into consideration proven and tested measures previously used by other researchers on engagement, and the variables that explain engagement which can be associated with the objectives of the mission-directed work teams (MDWTs) programme in evaluating its impact on engagement and performance.

The questionnaires will be distributed to ~ 300 employees (selected participants) based on their direct involvement in the mission-directed work teams (MDWTs) programme in their day-to-day activities.

As this study focuses on a specific programme, designed for a specific purpose for the company concerned (Lonmin), the questionnaire will be distributed within the ambit of the company in which the study will be conducted.

2.6. DEVELOPMENT OF THE STUDY QUESTIONNAIRE

Measures

Employees will be asked to respond to all items on a 5-point Likert-type scale (1 = strongly disagree to 5 = strongly agree), to the demographic questionnaire, and to the UWES 17-item work engagement questionnaire.

2.6.1. Employee engagement and performance

Employee engagement has been defined as workers' willingness and ability to contribute to the success of a company (Bakker 2010:229).

A UWES 17 item, six scale used by Schaufeli and Baker (2003:16), Schaufeli *et al.*, (2006) has been adopted in this questionnaire to measure the employee engagement.

According to Bakker (2010:229), job resources are important facilitators of employee engagement, particularly under conditions of high job demands (Bakker & Demerouti, 2008), and that engagement, in turn, has a positive impact on job performance (Bakker, 2009).

2.6.2. MDWT's Impact on engagement and performance on work related variables

As this study will be based on the impact of the mission directed work teams (MDWTs) on engagement and performance, job and personal resource variables, inclusive of the MDWTs programmes variables evaluation will be listed and hypothesized on relationship to form part of the study outcome.

The performance leg of the study will be evaluated based on the impact on the engagement of the MDWTs programmes with the analysis of the ten best practices for mission directed teams coaching reviews scores for maturity.

The individual factors to be looked at are outlined and relevant questions have been formulated to understand how the tool has influenced engagement.

The significance of the MDWTs programme will be evaluated based on its impact on the following:

- Engagement

The engagement-performance link will be evaluated using the following individual factors aiming at giving a comprehensive view of the MDWTs programmes impact.

- Individual factors
 - I. Purpose of the tool (Leadership and Strategy)

- II. Benefit of the tool (Process Improvement)
- III. Acceptance of the tool best practices (Goal alignment)
- IV. Employee communication
- V. Employee development & professional efficacy
- VI. Co-employee support (Team work).

The resultant work outcome (Performance) will be categorised by:

- Internalisation & Change Behaviour (MDWTs programme)
- Programmes Value Add (Maturity Level)
- Goal Alignment and Best Practice Review Scores

2.7. DEVELOPMENT OF THE STUDY HYPOTHESIS

From the literature survey covering employee work engagement and based on the purpose of this study, a hypothesis is developed to be tested and a model that can be used to explain the impact of mission-directed work teams (MDWTs) on employee engagement and the subsequent performance explained in terms of the programmes maturity growth in overall organizational focus and the alignment of the organization as a whole.

This model will only be tested against those employees who are actively involved and applying the principles of the MDWTs programme in their day-to-day working environment.

The following hypotheses are to be tested using the research questionnaire outcome:

H1 – MDWTs Best practices has positive relationship with perceived employee engagement (Strategy).

In that, the objective of the tool is to engage employees and teams to foster organizational focus and goal alignment, and to communicate easier the mission, vision and values of the company.

H2 – MDWTs concept has positive relationship with perceived employee engagement (Development).

In that the objective of the tool is to advocate visual presentation, which is aimed at bringing about change, better focus and understanding of KPA alignment (value chain).

H3 – MDWTs concept has a positive relationship with perceived Employee Engagement (Communication).

In that, the objective of the tool is that through engagement it will promote continuous improvement through problem solving and innovative thinking, creating highly innovative and competitive employees.

H4 – MDWTs concept has a positive relationship with employee engagement (Team alignment and Involvement).

In that, the objective of the tool is to promote team work through visual facilitation, bringing about co-employee support and extending it to supplier and customer understanding.

H5 – MDWTs programme has a positive influence on the overall work engagement factors.

In that, the concept and application of the MDWTs tool takes into account all these key individual factors that have an impact on the overall work engagement.

2.8. PROPOSED MODEL – HYPOTHESIS LINKED

The proposed simplified model is adopted from the concept outlined by Ologbo and Saudah (2012:508) as indicated in Figure 5 above and has been modified to suit the requirements and relevancy of this study as outlined below in the figure 7 schematic diagram of the model:

A detailed hypothesized model structure based on the individual factors is also proposed in figure 8 below showing the proposed relationship of individual factors with the MDWTs tool.

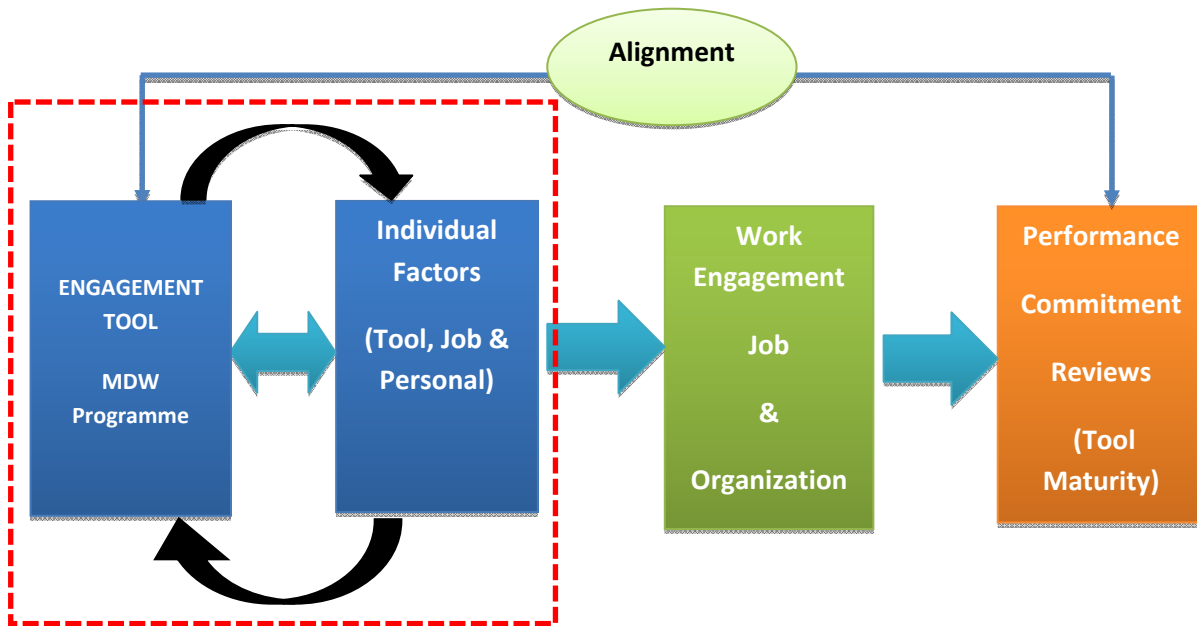


Figure 7: MDWT's Individual factors (Engagement – Performance Link)

The model implies that the MDWTs programme, or tool, is the driver of the individual factors that have a direct impact on engagement, which in turn will affect performance or work outcome, using the alignment-tracking loop to align the programme focus to meet the set expected performance by optimising individual factors.

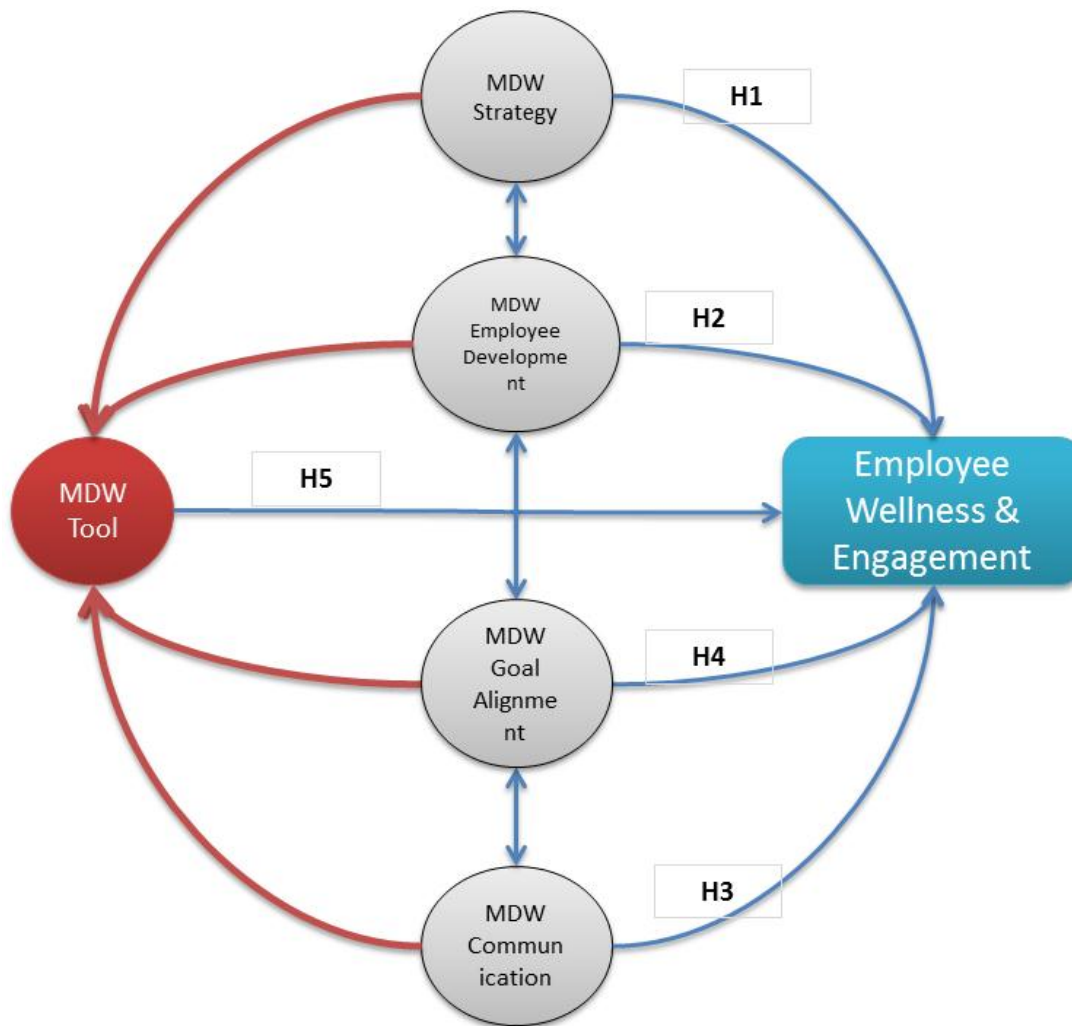


Figure 8: Detail hypothesis of MDWT's impact on Engagement

This detailed hypothesis model indicates the relationship of the individual factors that have an impact on engagement supported by the strategic intent of the mission-directed work teams as the programme that facilitates the overall engagement.

CHAPTER 3

Chapter Summary

The chapter outlines the research design, research instrument, and statistical data analysis including the results discussion of the research. It explains what tests were done in order to clarify the reliability and validity of the study. Statistical Analysis reported was conducted by the Statistical Consultant Service (SCS) of the NWU. Chapter four will discuss the conclusion and recommendations derived from the results of the research.

RESEARCH METHODOLOGY & DATA ANALYSIS

3.1. INTRODUCTION

The main objective of this comparative study is to assess whether there is a definite correlation between the impact of the mission-directed work teams as the tool looking at employee communication, involvement and support, professional efficacy or employee development, the mission-directed work team tool, and employee wellness that are included as individual factors against the level of employee engagement towards his/her position and the organization.

3.2. RESEARCH DESIGN

The main pre-requisite of planning a research study is to have a research question, and it needs to be clearly defined before collecting the data (Walker 2010). Welmann (2010) identifies the threefold purpose of research, which is to describe how things are, to describe why things are the way they are, and to predict the phenomena.

This research purpose is to explain if there is any dependency or independency between factors as outlined in the hypothesis structure in chapter 2 figure 8, in order to

explain why things are the way they are, or why one thing may cause another to change and the relationship between these factors (Welman *et al.* 2005)

De Vos *et al.* (2011:142) define a research design as the set of decisions regarding what topic is to be studied, among what population, and with what research methods, for what purpose.

Research design focuses on the end product and all the steps in the process to achieve the outcome anticipated (De Vos *et al.* 2011:142).

3.2.1. Quantitative Research Designs

There are two main classes of quantitative research designs, experimental design and non-experimental design, and a researcher needs to select a design that is carefully tailored to obtain appropriate data for investigating specific hypotheses (De Vos *et al.* 2011:142).

For the purpose of this study, the non-experimental design, which is one of the most popular and effective measurement tools in descriptive studies, and a research survey to determine the impact of mission-directed work teams on employee engagement in the platinum industry were used.

Therefore, a questionnaire was designed specifically for Lonmin employees to obtain information regarding their perceptions on employee wellness, engagement, communication, involvement, co-employee support and development. A survey questionnaire was developed and divided into four sub-sections.

Section A consisted of seven questions regarding the demographic information. Section B was designed with forty-three questions regarding goal alignment, which was further sub-divided into six sub-sections. Section C consisted of five questions about the value of the mission-directed work team tool. The last section of the questionnaire, Section D consisted of the adopted UWES Utrecht 17-item questionnaire on work engagement and employee wellness.

The participants were informed that the purpose of the questionnaire was to gather responses on how they perceived the impact of the mission-directed work teams tool on employee engagement and performance.

3.2.2. Survey Distribution

Sampling is defined to comprise of elements, or subsets of population considered for actual inclusion in the study, or a subset of measurements drawn from a population of interest (De Vos *et al.* 2011:142).

This study seeks to make such inferences from the sample of interest to explain the population.

The survey distribution is limited to the employees of Lonmin in South Africa within the process division. It was expected that all employees within the smelting and refinery sub-divisions would complete the questionnaires, but due to labour unrest at the company during the study period, not all employees participated as anticipated. Nevertheless, a suitable response was gathered to be able to conduct the statistical analysis on the available responses, thus the sample size will be used to predict the full population.

The population distribution is as follows:

- All employees of the Smelter are situated at Marikana
- All employees of the Base Metal Refinery (BMR) at Marikana
- All employees of the Precious Metal Refinery (PMR) at Brakpan

3.2.3. Population Description

For this study, only the lower level employees to middle supervisory level employees of the smelting and refinery sub-divisions were expected to complete the questionnaire, as the mission-directed work team tool is applied in these levels to bring about alignment to the organizational goal. In all the different sub-divisions (Smelter, BMR, and PMR),

the population of the employees consisted of operators, artisans, foremen, process engineers, and superintendents and supervisors.

These employees are mainly focused on the operational activity of processing and refining platinum group metals (PGMs) from the concentrated slurry into finished saleable products. Employees' skills, age and literacy levels are diverse from sub-division to sub-division.

3.2.4. Research Instrument

For the purpose of this study, only one measuring instrument was used, namely a questionnaire, which was circulated among the three sub-divisions of the process division. The questionnaires were printed and stapled into a booklet and distributed manually to all three sub-divisions by the researcher. The participants were briefed on how to complete the questionnaire. All questionnaires were collected by the researcher at the central point identified by each human resource consultant who assisted in distributing further questionnaires. A collection point was provided where participants were requested to drop completed questionnaires. A few questionnaires were distributed in the form of an email, upon request of participants who preferred to use electronic means of participation.

The researcher visited the Brakpan (PMR) division during the period there was labour unrest in the organization at the Marikana site. The PMR employees were not affected by the labour unrest and thus the majority of them participated in the study.

Although the majority of the employees who embarked on labour unrest were more from the mining division, the attendance of smelter and BMR employees was affected mainly by the risk posed from those who were participating in labour disputes. This resulted in fewer employees from the Smelter and BMR subdivisions participating, compared to the PMR employees.

It was virtually impossible to find an existing questionnaire that consisted of questions relating to the criteria for the mission-directed work teams in addressing the individual factors criteria (communication, employee development, co-employee support) that would explain employee engagement specifically because of the nature of the tool

which is custom made for the specific customers. Therefore, a questionnaire using a 5-point Likert scale was designed specifically for Lonmin employees to obtain information regarding their perceptions and opinions of the tool in relation to these individual factors. In addition to the designed questionnaire, a UWES Utrecht 17-item questionnaire was adopted and also included in the questionnaire as section D.

The questionnaire consisted of four individual sections:

- Section A – Demographic Information
- Section B – Goal Alignment
- Section C – Mission-Directed work teams (Tool)
- Section D – Employee Engagement and wellness

Questions were chosen and constructed for the purpose for this study. Several background studies were conducted that assisted with the structuring of the questions.

All questions in Section B were measured on a 5-point Likert scale, where 1 indicated Strongly Agree, 2 indicated Disagree, 3 indicated Neutral/Undecided, 4 indicated Agree and 5 indicated Strongly Disagree. While Section C was measured on a 4-point scale, 1 indicated Not at all; 2 indicated Smaller Extent; 3 indicated Larger Extent and 4 indicated Definite Extent.

Section D is the UWES Utrecht standard questionnaire with a 6-point scale, 0 Never, 1 Almost never, 2 Not often, 3 Sometimes, 4 Often, 5 Very often and 6 Always.

A copy of the questionnaire is provided in the Appendix A.

3.3. STATISTICAL DATA ANALYSIS

The Statistical Consulting Services (SCS) of the North-West University was consulted to assist with the data analysis using the statistical analysis programme SPSS version 20 (www.spss.com) for categorical data analysis.

The data collection programme EpiData 3.1 was provided by the SCS for recording all responses as per the design of the questionnaire to be submitted back to SCS in an

EpiData or Excel file format for importing to the SPSS analysis programme for data analysis.

All collected questionnaires were captured in the EpiData programme by the researcher who submitted the EpiData and Excel file of all the responses to the Statistical Consulting Services (SCS) of the North-West University – Potchefstroom Campus for analysis.

The statistical analysis was analysed by the SCS as follows:

- Frequency analysis and descriptive statistics
- Factor Analysis and Reliability analysis
- UWES Utrecht Scale analysis
- Pearson's correlation coefficient analysis
- One way ANOVA test and Independent sample's T-Test

3.3.1. Descriptive statistics of individual items

A total of 300 questionnaires were targeted for all three sub-divisions (Smelter, BMR, and PMR). Due to the labour unrest that took place during the time of the study, not all the questionnaires distributed were completed and/or returned. Only a portion from each sub-division was completed, with PMR being the highest respondent at 49% of the total sample of 146 respondents. Figure 9 here-under indicates the distribution of each sub-division.

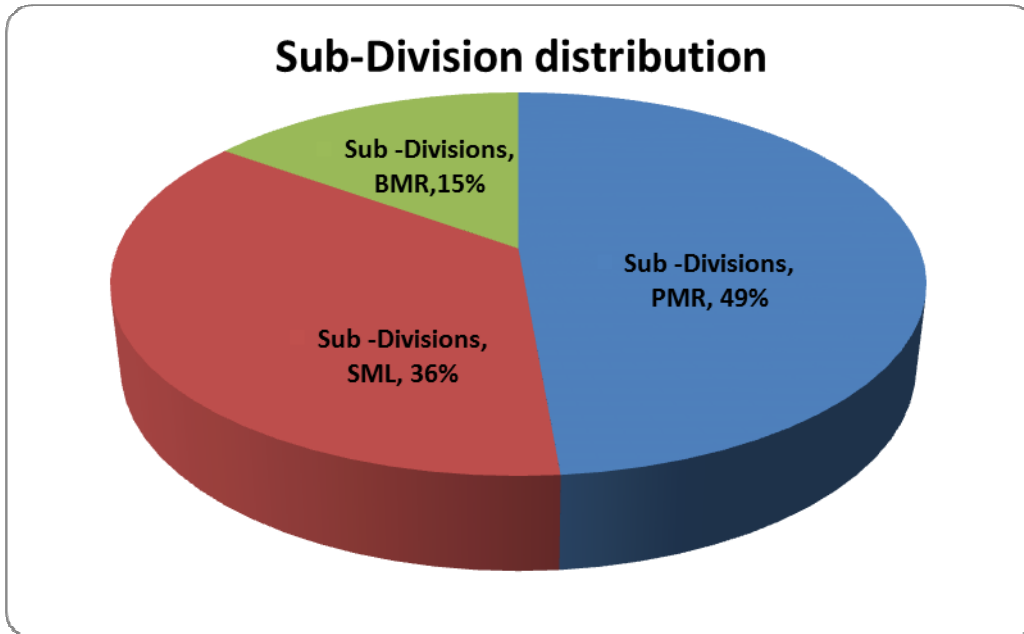


Figure 9: Divisional Distribution

A Frequency Analysis was also done on the population classified according to gender. The majority of the population were males represented by 88.4% against the female respondents who represented 11.6%. There was no missing information on all gender questionnaires. Table 2 below gives a summary table of gender respondents.

Table 2: Gender Distribution

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	129	88.4	88.4	88.4
	Female	17	11.6	11.6	100.0
	Total	146	100.0	100.0	

The Frequency Analysis of section A of the research study questionnaire, which entails the demographic information of each individual item is summarised in each individual table displayed here-under showing both the frequency and percentage of participants under each category, see table 3 through to table 8.

Table 3: Age group distribution

Age Group Distribution					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<= 20	4	2.7	2.7	2.7
	21 - 30	45	30.8	30.8	33.6
	31 - 40	58	39.7	39.7	73.3
	41 - 59	37	25.3	25.3	98.6
	>= 60	2	1.4	1.4	100.0
	Total	146	100.0	100.0	

Table 4: Ethnic group category

Ethnic Group					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Black	108	74.0	74.0	74.0
	White	32	21.9	21.9	95.9
	Coloured	3	2.1	2.1	97.9
	Indian	1	.7	.7	98.6
	Other	2	1.4	1.4	100.0
	Total	146	100.0	100.0	

Table 5: Qualification levels

Qualification Levels					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Matric	12	8.2	8.2	8.2
	Matric	78	53.4	53.4	61.6
	Diploma/Degree	53	36.3	36.3	97.9
	Post Graduate	3	2.1	2.1	100.0
	Total	146	100.0	100.0	

Table 6: Job categories

Job Category					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Operator	73	50.0	50.0	50.0
	Supervisor	39	26.7	26.7	76.7
	Foreman	13	8.9	8.9	85.6
	Engineer	17	11.6	11.6	97.3
	Supt	4	2.7	2.7	100.0
	Total	146	100.0	100.0	

Table 7: Employment duration

Years of Service					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 - 2 years	36	24.7	24.7	24.7
	2 - 5 years	37	25.3	25.3	50.0
	5 - 10 years	33	22.6	22.6	72.6
	> 10 years	40	27.4	27.4	100.0
	Total	146	100.0	100.0	

Table 8: Departmental distribution

Department or Section					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Production	77	52.7	52.7	52.7
	Mechanical	23	15.8	15.8	68.5
	Electrical	22	15.1	15.1	83.6
	Instrument	11	7.5	7.5	91.1
	Laboratory	7	4.8	4.8	95.9
	Technical	6	4.1	4.1	100.0
	Total	146	100.0	100.0	

Sections B, C and D descriptive statistics of the questionnaire are summarised in table 9 below showing mean and standard deviations of the 5-point Likert scale, the 4-point scale, and the 6-point UWES Utrecht Scale for each question.

On item QB1, with a mean of 3.58 and the standard deviation of 1.138, the respondents agree that the MDW sessions help them to know how the business performs. On item QB3, which has a mean of 2.90 and the standard deviation of 1.161, the respondents were neutral or undecided that the MDW closed the gap between management and staff. The same response is observed from the respondents on items QB38 and QB15 with mean and standard deviations of 2.84 (1.224) and 2.99 (1.215) respectively, where respondents are undecided that MDW has encouraged management to visit them frequently, and that MDW helps them to develop their capabilities. All other items in section B were agreed upon by the respondents with the mean >3.0 (see table 9 below).

Table 9: Frequency distribution summary

Descriptive Statistics					
Item	Mean	Std. Deviation	Item	Mean	Std. Deviation
QB1	3.58	1.138	QB33	3.64	1.082
QB2	3.25	1.131	QB34	3.41	1.184
QB3	2.90	1.161	QB35	3.74	1.102
QB4	3.50	1.059	QB36	3.40	1.206
QB5	3.44	1.089	QB37	3.42	1.225
QB6	3.14	1.172	QB38	2.84	1.224
QB7	3.12	1.240	QB39	3.47	1.134
QB8	3.31	1.154	QB40	3.31	1.246
QB9	3.02	1.171	QB41	3.40	1.172
QB10	3.63	1.237	QB42	3.51	1.039
QB11	3.46	1.221	QB43	3.52	1.109
QB12	3.18	1.203	QC1	2.72	.853
QB13	3.49	1.103	QC2	2.18	1.015
QB14	3.36	1.156	QC3	2.41	1.074
QB15	2.99	1.215	QC4	2.36	.989
QB16	3.07	1.235	QC5	2.16	.954
QB17	3.29	1.216	QD1	3.08	1.795
QB18	3.18	1.196	QD2	4.16	1.697
QB19	3.34	1.261	QD3	4.49	1.719
QB20	3.21	1.254	QD4	3.82	1.776
QB21	3.40	1.257	QD5	4.25	1.639
QB22	3.46	1.227	QD6	3.25	1.921
QB23	3.11	1.198	QD7	3.92	1.802
QB24	3.10	1.290	QD8	3.51	1.820
QB25	3.36	1.196	QD9	3.84	1.622
QB26	3.23	1.226	QD10	4.50	1.727
QB27	3.12	1.229	QD11	3.82	1.644
QB28	3.22	1.177	QD12	3.82	1.867
QB29	3.18	1.247	QD13	3.69	1.964
QB30	3.36	1.149	QD14	3.27	1.763
QB31	3.47	1.181	QD15	3.71	1.562
QB32	3.19	1.091	QD16	3.08	1.827
			QD17	4.08	1.762

Section C of the questionnaire indicates that all repondents agree that the MDW has a small to medium extent value addition. Section D is further analysed separately and discussed in table 13 below.

3.3.2. Reliability and Validity

Several authors, like Maree (2010), Breakwell *et al.* (2006), and Walker (2010) agree that reliability has to do with the consistency, repeatability, and/or stability, while validity has to do with an instrument or scale capability to measure what it intends or claims to measure.

It is thus clear that the measure of reliability is the extent to which a test measures something consistently. The researcher has conducted the reliability test on the measures of the impact of mission-directed work teams on employee engagement in the form of a questionnaire.

3.3.2.1. Factor and Reliability Analysis

According to Breakwell *et al.* (2006), factor analysis is one of the approaches for exploring the underlying structures of sets of variables. The factor analysis groups the correlation matrix as a ball of inter-variables variance and extracts such variance chunks to represent each underlying factor sequentially (Breakwell *et al.* 2006)

Type of extraction method used:

- Principal Axis Factoring
- Rotation method: Direct Oblimin
- Factor loadings: Pattern Matrix
- Communalities: Give range of communalities
- Correlation between factors and label them.

The underlying factors as grouped by the factor analysis were validated and reliability analysis was performed to measure internal consistency of each underlying factor by measure of Cronbach's Alpha coefficient.

The attribute statements were then factored into different factors for analysis. Eight factor analysis was done on total attribute statements from table 9 above into the summary table as indicated in table 11 below.

One attribute statement (QC1 – “To what degree do you feel what you do contributes to company’s overall performance?”) did not factor with any other item during factoring analysis and thus it is analysed as an item on its own.

All attribute statements were successfully factored into eight factor items as indicated in table 11 below.

The eigenvalue determines the significant dimension of factors in the set, which should be >1, the factor loading matrix indicated a potential nine factor matrix. On analysis, only eight factors could be loaded and there was no item loaded on the ninth factor, thus an eight factor matrix was considered (Maree 2010). (See Appendix B)

Table 10: KMO & Bartlett's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.929
Bartlett's Test of Sphericity	Approx. Chi-Square	10067.490
	df	2080
	Sig.	0.000

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy varies between 0 and 1, with acceptable values greater than 0.5. A value of zero (0) indicates diffusion in the pattern of correlations (a likely inappropriate factor analysis). A value close to 1 indicates that patterns of correlations are relatively compact and so factor analysis should yield reliable factors (Field 2009). Field (2009) further explains that values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, and values greater than 0.9 are superb.

While Bartlett’s test of sphericity tests the null hypothesis for factor analysis to work a relationship between variables should yield a correlation coefficient of zero.

The Bartlett test is significant if the value of Sig is less than 0.05, to conclude that the R-matrix is not an identity matrix, and that is an indication that there are relationships between the variable in the analysis (Field 2009).

The research results of the Bartlett test in table 10 above report a sig value = 0.000, which indicates that the factor analysis is appropriate.

The KMO sampling adequacy of 0.929 in table 10 above also indicates a superb pattern of correlations which are relatively compact, and fit for reliable factoring.

Table 11: Factor Pattern matrix

	Factor							
	1	2	3	4	5	6	7	8
QB16	.891							
QB23	.836							
QB18	.831							
QB15	.766							
QB24	.757							
QB17	.747							
QB19	.700							
QB27	.672							
QB20	.653							-.299
QB22	.521		.329			-.200		
QB21	.495		.268					
QB26	.396							-.369
QB28	.369		.280					-.277
QB9	.351			-.242		-.245		
QB29	.346				-.215			-.332
QB3	.328				-.317			-.232
QB32	.326				-.207			-.268
QD5		.868						
QD7		.768				.221		
QD2		.746						
QD4		.713						
QD9		.704						
QD10		.664						
QD8		.652				-.375		-.213
QD3		.637				.243	-.342	
QD11		.610						-.343
QD13		.570					-.347	
QD12		.515		-.261			-.317	
QD1		.471				-.253		
QD6		.364					-.288	

Table 11 continues from previous page

	Factor							
	1	2	3	4	5	6	7	8
QB43			.807					
QB42			.764					
QB39			.690	-.207				
QB40			.670					
QB35			.660					
QB41	.249		.610					
QB33			.592					
QB37			.474					-.227
QB34			.429					
QB10	.306		.365			-.240		-.318
QB31	.250		.344					-.308
QB4	.261		.328		-.209			
QB5	.303		.319			-.253	-.226	
QC2				.650				
QC3				.642				
QC5			.240		-.503			
QB38			.202		-.448			-.241
QB2	.264				-.429	-.317		
QC4	.311		.241		-.415			
QB1					-.387	-.210		
QB8	.279				-.346	-.239		
QB36			.321		-.338			-.266
QB6					-.300			-.265
QC1			.293			-.352		
QD16						.295	-.732	
QD14							-.680	
QD15		.236					-.561	
QD17						-.262	-.450	
QB25								-.561
QB13			.340				-.216	-.529
QB11	.243							-.473
QB12	.358		.236					-.362
QB14	.259		.341					-.354
QB30	.274		.217					-.345
QB7	.256			-.205	-.298	-.227		-.304

All factors explain cumulatively 72.853% of the total variance, with factor 1 accounting for 47.5% of the total variance and factor 2 accounting for 11%. All other factors are below 5%.

The eight factor constructs listed here-under describes the item clusters as factors in table 10 above and the solution of this factor analysis is deemed to be appropriate for the theoretical analysis. The interpretation will be explained according to factor categories instead of individual items, The Eigen values and variance explained comprehensive analysis is attached in appendix B.

Each individual item represents an instrument statement outlined in the questionnaire included in appendix A.

Factor items constructs

- Factor 1 – Employee development
- Factor 2 – Employee engagement
- Factor 3 – Communication
- Factor 4 – MDW tool
- Factor 5 – Involvement and alignment
- Factor 6 – Value Add
- Factor 7 – Employee wellness
- Factor 8 – Strategy

Table 12: Factor correlation matrix & Cronbach's Alpha

Factor	1	2	3	4	5	6	7	8
1	1.000							
2	.184	1.000						
3	.613	.210	1.000					
4	-.361	-.112	-.267	1.000				
5	-.430	-.156	-.394	.151	1.000			
6	-.323	-.154	-.283	.099	.130	1.000		
7	-.250	-.545	-.189	.051	.227	.112	1.000	
8	-.560	-.156	-.424	.180	.333	.283	.200	1.000
Cronbach's Alpha	0.976	0.936	0.959	0.731	0.923	-	0.808	0.928

The inter-factor correlation matrix followed the Oblimin with the Kaiser normalization method. These factors in table 12 above cannot be assumed to be independent, and therefore the results were shown to be meaningful for the study of dependency (Field 2009).

- **Communalities**

Communalities are the proportion of variance accounted for by the common factors of a variable. Communalities range from 0 to 1. Zero (0) means that the common factors do not explain any variance, and One (1) means common factors explain all the variance.

According to Field (2009), the average communalities of 0.60 are accurate if the sample size exceeds 250, and 0.7 for less than 30 variables.

The average initial communalities is equal to .831 with the average extracted communalities of .687, therefore we can report that 68.7% of the variance associated with all factors are common or shared variance, and indicate an accurate measure of factor analysis. This confirms the cumulative variance explanation of 72.853% reported for eigenvalue analysis.

- **Reliability Analysis**

A Cronbach's Alpha coefficient for reliability is required to be above 0.7 to indicate better internal consistency of the instrument, the higher the Cronbach's Alpha coefficient the more reliable the instrument (Breakwell *et al.* 2006).

The Cronbach's Alpha coefficient has been generally accepted by researchers to range as follows (Maree 2010):

- 0.70 – Low reliability
- 0.80 – Moderate reliability
- 0.90 – High reliability

According to Maree (2010), if the reliability coefficients of the factors are not at an acceptable level, it may require the researcher to re-look at the wording and meaning of those items before continuing with further analysis.

Looking at the Cronbach's Alpha of the reported factor matrix in table 11 above, they are all within the acceptable limits of reliability above 0.70.

The lowest Cronbach's Alpha achieved during the factoring was 0.731, and 0.808 for the MDW tool, and Employee wellness respectively, which falls above the low to moderate limits of 0.70.

Each item (statement) indicated a Cronbach's Alpha above 0.7 after the factor analysis was done, which suggests that the data sets comply with the international standard and will deliver accurate results..

3.3.2.2. UWES Utrecht's Scale Consistency Analysis

Another reliability test for the UWES Utrecht's-17 scale was conducted in assessing independently the reliability of the three work engagement factors (Vigor, Dedication, and Absorption)

These factors were analysed inclusively with all other factors in the matrix as indicated in table 11 above and also separately as indicated in table 13 below.

Table 13: UWES – 17-item Scale Items Reliability Analysis

- UWES - Vigor items and Reliability Analysis

Vigor	Mean	Std. Deviation	Cronbach's Alpha
QD1	3.08	1.795	0.857
QD4	3.82	1.776	
QD8	3.51	1.820	
QD12	3.82	1.867	
QD15	3.71	1.562	
QD17	4.08	1.762	

- UWES - Absorption items and Reliability Analysis

Absorption	Mean	Std. Deviation	Cronbach's Alpha
QD3	4.49	1.719	0.828
QD6	3.25	1.921	
QD9	3.84	1.622	
QD11	3.82	1.644	
QD14	3.27	1.763	
QD16	3.08	1.827	

- UWES - Dedication items and Reliability Analysis

Dedication	Mean	Std. Deviation	Cronbach's Alpha
QD2	4.16	1.697	0.906
QD5	4.25	1.639	
QD7	3.92	1.802	
QD10	4.50	1.727	
QD13	3.69	1.964	

From the analysis of the UWES items it shows a mean greater than 3.0 on all items, with the standard deviation < 2.0, which indicates that most respondents are sometimes and/or often engaged in their work.

The Cronbach's Alpha of the UWES 17-item Scale range from 0.828 to 0.906 shows a moderate to high internal consistency with the responses of the participants.

It should be noted that each Chronbach's Alpha reported is specifically related to the factors or items as indicated in either table 10 or table 12 above during analysis (Field 2009).

3.3.3. Correlation Analysis

3.3.3.1. Pearson's Correlation

The Pearson's correlation coefficient is used to indicate relationships between the different measurements that can be made in the sample as a measure of the strength of the linear relationship (Maree 2010).

Inter-factor correlation was also conducted on the factor matrix to determine the level of correlation between each factor. The summary table 14 below shows the Pearson's correlation between hypothesized factors.

The Pearson's correlation coefficient is a measure of linear dependence between two variables, where "r" takes on the values in the range -1 to +1.

Higher values close to one (1) denote a strong linear relationship while values close to zero (0) denote a weak relationship (Maree 2010).

The correlation of the factor items in table 14 below marked with two asterisk (**) indicates the correlation to be significant on a 2-tailed analysis at $P < 0.01$.

Overall, most items show significant correlations between each other, as indicated and summarised in table 14 below.

Table 14: Pearson’s correlation factor matrix

		Correlations							
		Employee Development	Employment Engagement	Communication	MDW Tool	Involvement & Alignment	Value Adding	Employee Wellness	Strategy
Employee Development	Pearson Correlation	1							
	Sig. (2-tailed)								
	N	146							
Employment Engagement	Pearson Correlation	.409**	1						
	Sig. (2-tailed)	.000							
	N	146	146						
Communication	Pearson Correlation	.861**	.408**	1					
	Sig. (2-tailed)	.000	.000						
	N	146	146	146					
MDW Tool	Pearson Correlation	-.317**	-.125	-.290**	1				
	Sig. (2-tailed)	.000	.133	.000					
	N	146	146	146	146				
Involvement Alignment	Pearson Correlation	.858**	.385**	.850**	-.283**	1			
	Sig. (2-tailed)	.000	.000	.000	.001				
	N	146	146	146	146	146			
Value Adding	Pearson Correlation	.385**	.320**	.460**	.001	.395**	1		
	Sig. (2-tailed)	.000	.000	.000	.994	.000			
	N	146	146	146	146	146	146		
Employee Wellness	Pearson Correlation	.328**	.694**	.311**	.018	.336**	.233**	1	
	Sig. (2-tailed)	.000	.000	.000	.829	.000	.005		
	N	146	146	146	146	146	146	146	
Strategy	Pearson Correlation	.891**	.421**	.860**	-.259**	.828**	.415**	.364**	1
	Sig. (2-tailed)	.000	.000	.000	.002	.000	.000	.000	
	N	146	146	146	146	146	146	146	146

** . Correlation is significant at the 0.01 level (2-tailed).

The results show a medium to strong linear relationship between most factors correlated. However, the results show a weak or a no-relationship between the MDW tool, value adding and employee wellness $r = .001$ and $r = .018$ with 2-tailed sig values greater than .01 respectively.

The effect size analysis, which explains the practical significance was also carried out as a measure for differences between groups. The measure of association between factors is described in the section below.

3.3.3.2. Effect Size Association

As with the statistical significance, whereby a null hypothesis is rejected, or fails to reject the null hypothesis, the question that arises is when is a difference or relationship

large enough to be considered important. Hence, the effect size indices are used for practical significance where statistical significance may be lower.

Effect sizes are simply an objective and standardize measure of the magnitude of observed effect (Field 2009). The effect size measures are useful because they provide an objective measure of an effect.

One of the factors statistical significance has is the limitation of being able to take the sample size into account, and thus it does not indicate whether the finding is of practical significance. The sample size has an effect on the statistical significance. To overcome the sample size impact on the statistical significance, the effect size calculation minimizes this shortcoming (Maree 2010).

Effect size is calculated for two cases (i) difference between two means, (ii) for relationship between variables (Maree 2010).

The following guidelines are given for the mean difference, in interpreting the magnitude of the effect size (d)

0.2 – Small effect, 0.5 – Medium effect, and 0.8 – Larger effect

Equation 1: Cohen's d effective size indices

$$d \equiv \delta = \frac{\mu_1 - \mu_2}{\sigma}$$

(d) – denotes Cohen's d effect size indices. It should be noted that the standard deviation used is the maximum of the two variables in comparison.

The effect size is equal to the difference between the treatment group mean and the control groups mean, divided by the standard deviation (equation 1).

The evaluation of practical significance is a qualitative decision because it relies on the researcher's knowledge of the research area without reflecting any of the researcher's personal or social values (ANON 2012).

Therefore the advantage of using the measure of effect size over inferential statistics is that, the measure is not affected by the sample size, and each effect size indices treat a sample as a population.

For the study, the effect size indices are calculated using the Cohen’s d formula and included in the summary statistics of one-way ANOVA analysis in tables 15 to 22 here-under.

Tables 15, 16, 17, 18, 19, 20, 21 and 22 here-under report the effect size used to analyse the practical significance of the MDW Tool, and or value adding against the demographic category to impact employee engagement. Appendix C shows the complete one-way ANOVA summary statistics with effect size calculations for all factor items against each demographic category.

Table 15: One way ANOVA summary statistics and effect size per sub-section

Sub Section		N	Mean	Std. Deviation	p values	Effect Size	
						PMR with	SML with
Value Adding	PMR	71	2.8028	.83870	0.01	0.01	0.67
	SML	53	2.8113	.80995			
	BMR	22	2.2273	.86914			
	Total	146	2.7192	.85293			

Table 16: Summary statistics and effect size per gender group

Gender		N	Mean	Std. Deviation	p value	Effect Size
MDW Tool	Male	129	2.33	.949	.184	.281
	Female	17	2.06	.726		

Table 17: One way ANOVA summary statistics and effect size per age group

Age	N	Mean	Std. Deviation	p value	Effect Size		
					<= 20	21 - 30 years	31 - 40 years
MDW_Tool <= 20	4	2.13	0.854	0.15	0.19	0.21	0.45
21 - 30 years	45	2.29	0.822				
31 - 40 years	58	2.49	0.971				
41 - 59 years	37	2.05	0.956				
60 +	2	1.50	0.707				
Total	146	2.29	0.928				

The highlighted red effect size signifies the practical significance difference between age group of the MDW tool.

Table 18: One way ANOVA summary statistics and effect size per ethnic group

Ethnic Groups	N	Mean	Std. Deviation	p value	Effect Size		
					Black with	White with	Coloured with
MDW_Tool Black	108	2.30	.932	0.67	0.05	0.70	1.09
White	32	2.34	.963				
Coloured	3	1.67	.764				
Other	2	2.50	.707				
Total	145	2.30	.931				

Table 19: One way ANOVA summary statistics and effect size per job levels

Job Levels	N	Mean	Std. Deviation	p value	Effect Size			
					Operator with	Supervisor with	Foreman with	Engineer with
MDW_Tool Operator	73	2.21	.845	0.24	0.35	0.53	0.27	0.14
Supervisor	39	2.59	1.111					
Foreman	13	2.00	.677					
Engineer	17	2.26	.986					
Supt	4	2.13	.250					
Total	146	2.29	.928					

Table 20: One way ANOVA summary statistics and effect size per job experience

Job Experience	N	Mean	Std. Deviation	p value	Effect Size		
					0 - 2 with	2 - 5 with	5 - 10 with
MDW Tool 0 - 2 years	36	2.21	.921	0.74	0.14	0.09	0.20
2 - 5 years	37	2.34	.874				
5 - 10 years	33	2.42	1.009				
>10 years	40	2.23	.933				
Total	146	2.29	.928				

Table 21: One way ANOVA summary statistics and effect size per educational level

Educational Level	N	Mean	Std. Deviation	p value	Effect Size		
					Below Matric with	Matric with	Diploma/Degree with
MDW_Tool Below Matric	12	1.79	.689	0.01	0.47	0.26	0.98
Matric	78	2.25	.983				
Diploma/Degree	53	2.51	.858				
post Graduate	3	1.67	.289				
Total	146	2.29	.928				

Table 22: One way ANOVA summary statistics and effect size per job category

Job Category	N	Mean	Std. Deviation	p value	Effect Size				
					Production with	Mechanical with	Electrical with	Instrument with	Laboratory with
MDW_Tool Production	77	2.24	.880	0.32	0.22	0.61	0.13	0.23	0.11
Mechanical	23	2.02	.983						
Electrical	22	2.64	1.014						
Instrument	11	2.50	.775						
Laboratory	7	2.29	.951						
Technical	6	2.42	1.158						
Total	146	2.29	.928						

As it can be seen in table 15, $d = 0.66$ and 0.67 PMR with BMR and SML with BMR respectively indicates a strong practical significance with the value adding measuring item supported by the p value lower than 0.05.

However the comparison between the age group and MDW tool indicate a practical significant effects between the 60+ category and other age groups, with the maximum $d = 1.02$ between age group 60+ and age group 31 to 40.

The effect size on the MDW tool and job experience category indicates a small effect with the maximum d values of 0.21 between job experience items (See table 20 above).

Table 21 and table 22 indicate a spread of practical significance ranging from a medium-practical significance to larger practical significance between the demographic category of educational level and job category.

The effect size analysis indicates the "value-adding factor" to have a medium to larger practical significance (see Appendix C).

- Between sub-divisions (Smelter with BMR) $d = 0.67$ (medium to large)
- Between gender (Male with female) maximum $d = 0.52$ (medium)
- Between age groups (≤ 20 and 41 to 59) maximum $d = 0.76$ (larger)
- Between experience category (0 to 2 with 2 to 5 years) $d = 0.46$ (medium)
- Between job categories (electrical with laboratory) $d = 0.82$ (larger)
- Between ethnic groups (Coloured with other) $d = 1.15$ larger practical significance

3.4. RESULTS AND DISCUSSION

3.4.1. Factor Analysis and Reliability Analysis

The factor analysis and the inter-factor correlation cannot be assumed to be independent and the results indicate to be meaningful for the study table 11 and 12 above.

The Cronbach's Alpha indicates the internal consistency of the research to comply with the international standard, with the minimum Cronbach's Alpha above lower reliability limits of 0.70 on all factors.

The Cronbach's Alpha of all factors ranges between the minimum of 0.731 and the maximum of 0.976 with the overall average of 0.894 indicating a moderate to high reliability.

The eight factor analysis explains 72.853% of the total variance in attribute statement in the study questionnaire.

The validity of the instrument is explained by the acceptable eigenvalue above 70%.

The UWES – 17-item Utrecht scale indicated a minimum Cronbach's Alpha of 0.828 which conforms to the UWES 17-item scale tested Cronbach's Alpha range between 0.80 – 0.90 (Bakker 2011), indicative of a high reliability when analysed separately on the participants' responses for work engagement.

3.4.2. Correlation Analysis

Pearson's correlations that indicate the statistical significance of the linear relationship between factors are evaluated and discussed, as follows.

Correlations were calculated for all eight factors interchangeably:

- Employee development and communication
- Communication and employee engagement
- Employee development and employee engagement
- Alignment–Involvement and employee development
- Alignment–Involvement and communication
- Alignment–Involvement and employee engagement
- Strategy and employee development
- Strategy and employee engagement
- Employee Wellness and employee engagement
- MDW tool and employee development

- MDW tool and employee engagement

Correlation is a technique through which we can quantify the strength of a linear association between two or more variables.

Correlation is a standardized measure of an observed effect and thus can be used as a measure of effect size indicating positively strong or negatively strong correlation between two factors, and any coefficient close to zero indicating a weak correlation.

The hypothesis test as outlined in figure 8 indicates a test for correlation between the factors and is defined as follows:

The hypothesis under review is correlation or relationship tested with the null hypothesis indicating no correlation or relationship, alternative hypothesis indicating there is a relationship or correlation, summarized as follows:

- Ho: No correlation
- Ha: There is a correlation
- $p < 0.05$ rejects the Ho – indicating there is an association (correlation)

A correlation coefficient of 0.3 indicates a small effect. A correlation coefficient of 0.5 indicates a medium effect. A correlation coefficient of 0.8 indicated a large effect.

The results from the Pearson's correlation coefficient outlined in table 12 above indicated the following:

- **Employee development and Communication $r = 0.861$**

The correlation coefficient of 0.861 indicates a strong positive relationship between a high level of communication through the use of the MDW with a high level of employee development with $p < 0.05$; rejects Ho, there is a relationship.

- **Communication and employee engagement $r = 0.408$**

The coefficient of 0.408 indicates a weak to moderate positive relationship between effective communication through the use of the MDW with employee engagement with the $p < 0.05$, rejects Ho, therefore there is correlation.

- **Employee Development and employee engagement $r = 0.409$**

The coefficient of 0.409 indicates a moderate effect positive relation between employee development and employee engagement which agrees with the relationship seen between communication and employee engagement. The p-value is < 0.05 , rejecting H_0 , therefore there is correlation.

- **Alignment – Involvement and employee development $r = 0.858$**

The correlation coefficient of 0.858 indicates a strong positive relationship between alignment–involvement advocated by the MDW tool concept and employee development with $p < 0.05$, rejecting the H_0 , therefore there is a correlation.

- **Alignment–Involvement and Communication $r = 0.850$**

The strong positive relationship between alignment-involvement and communication as the key concept for the MDW is explained by the high correlation coefficient $r = 0.850$, which agrees with the strong positive relationship between employee development and communication $p < 0.05$ rejecting H_0 .

- **Alignment-Involvement and employee engagement $r = 0.385$**

The correlation coefficient of 0.385 indicates a small to medium effect positive relationship between alignment-involvement advocated by the MDW concept and employee engagement that agrees with the correlation of communication and employee development with employee engagement and $p < 0.05$, rejecting H_0 .

- **Strategy and Employee Development $r = 0.891$**

The correlation coefficient of 0.891 indicates a strong positive relationship between strategy and employee development as per the MDW purpose concept with $p < 0.05$, rejecting H_0

- **Strategy and employee engagement $r = 0.421$**

The coefficient of 0.421 indicates a weak to moderate positive relationship between strategy and employee engagement, which is reliable with the relationship explained by the correlation of employee development and communication with employee engagement, with $p < 0.05$ rejecting H_0 .

- **Employee Wellness and Employee engagement $r = 0.694$**

The coefficient of 0.694 indicates a moderate positive to strong relationship between employee wellness and employee engagement which explains the UWES scale inter-item correlations indicated in table 13 above with $p < 0.05$, rejecting H_0 .

- **MDW tool and Employee development $r = - 0.317$**

The correlation coefficient of -0.317 indicates a negative weak to moderate relationship between the MDW tool and employee development, with $p < 0.05$, rejecting H_0 .

- **MDW tool and Employee engagement $r = - 0.125$**

The coefficient of -0.125 indicates a negative weak relationship between the MDW tool and employee engagement, which agrees with the negative relationship explained by the coefficient between the MDW tool and employee development.

The correlation coefficient of the UWES -17-item scale was also conducted and is summarised in the table 23 here-under, which indicated the responses on work and wellbeing correlation between the three UWES Scale elements (Vigor, Dedication and Absorption).

Table 23: UWES - 17 scale Pearson factor correlation coefficient

		Correlations		
		Vigor	Absorption	Dedication
Vigor	Pearson Correlation	1	.843**	.808**
	Sig. (2-tailed)		.000	.000
	N	146	146	146
Absorption	Pearson Correlation	.843**	1	.821**
	Sig. (2-tailed)	.000		.000
	N	146	146	146
Dedication	Pearson Correlation	.808**	.821**	1
	Sig. (2-tailed)	.000	.000	
	N	146	146	146

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficients reported in table 23 above represent (Section D) UWES - 17-item Scale statements in the questionnaire instrument. The factor analysis groupings also agreed to the notion of UWES grouping, section D statements were grouped into employee engagement and employee wellness factors.

The moderate to strong positive relationship or correlation of $r = 0.694$ between employee engagement and employee wellness can be explained by the strong positive UWES -17-item Scale inter-factor correlation reported in table 23 above as compared to all other factors which indicated a weak to moderate positive relationship when compared to employee engagement. The p-value on all correlation is less than 0.05 between UWES-17-item factors, rejecting H_0 .

Revisiting the hypothesized model in figure 8 and updating the summarised correlation coefficients, the relationship between individual factors and employee engagement indicates a positive moderate relationship, while the same individual factors indicates a weaker negative relationship with the MDW tool.

However, the relationship between the individual factors indicates a medium to strong relation as shown in figure 10 below explained by the hypothesis model.

The correlation between employee engagement, value adding factors and the MDW tool indicates a weak correlation $r = 0.001$ and 0.018 with $p > 0.05$, failing to reject H_0 , therefore shows no relationship between these two factors and the MDW tool.

Hence, the use of effect size indices calculation is used to determine if the impact of sample size has any effect on the correlation coefficient.

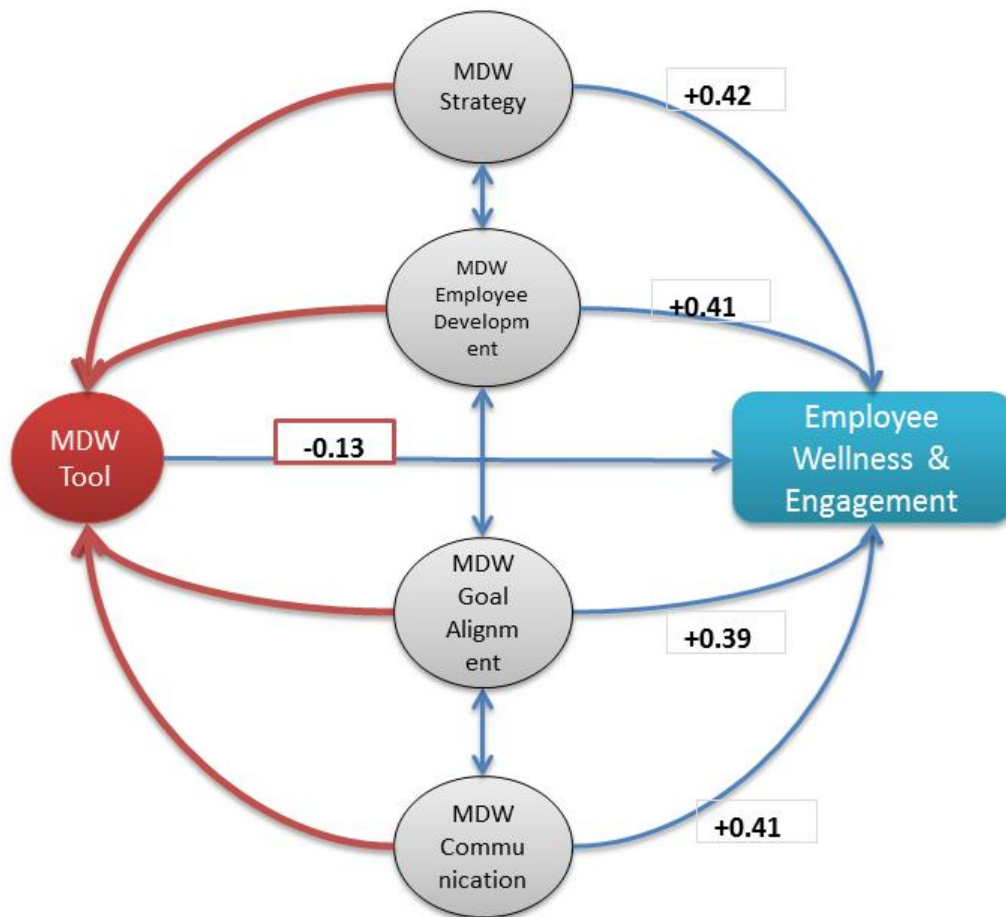


Figure 10: Relationship model on MDW process and employee engagement

The effect size correlation for practical significance was also conducted on the different categories to assess the effect of sample size on a statistical significance, on Pearson's correlation coefficient and P-value of the MDW tool and all other factors (Maree 2010).

The p-values per sub-section less than 0.05 indicate that the three sub-divisions did not answer questions in section C in the same manner for the value of the MDW process (see table 15). Only on the educational level it indicates the statistical difference in the responses between the sub-divisions and the value adding factors (See appendix C).

The MDW tool factor analysis indicates that all three sub-divisions answered the questions in section C in a similar manner, the p-value is above 0.05.

The effect size is a measure indicated by Cohen's d-value. A d-value of 0.2 indicates a small – non-practically significant difference. A d-value of 0.5 indicates a medium –

practically visible difference. A d-value of 0.8 indicates a large – practically important difference (Maree 2010).

- **Effect size practical significance Analysis**

In the review of the effect size in for the sub-division areas, it is evident that the effect size for PMR with Smelter $d = 0.09$, which indicates a small-non-practical significance. This implies the two sub-divisions have responded in a similar manner about the value of the MDW tool (See Appendix C).

Reviewing the effect size for value adding factors on the sub-division areas indicates the maximum $d = 0.67$, which indicates a medium visible practical significance, implying that all sub-divisions responded in a different manner relating to the value added by the MDW process.

Value adding factors showed no correlation with the MDW tool and employee wellness on the Pearson’s correlation coefficient analysis, with $r = 0.001$, and 0.018 respectively and $p > 0.05$ failing to reject H_0 .

The effect size analysis on value adding factor and educational level as indicated in table 24 below indicates the effect size indices of 0.75, 0.80 and 0.63 between below Matric with post graduate, Matric with post graduate, and diploma / degree with post graduate with $p > 0.05$ as compared to the MDW tool effect size report in table 21 above with $p < 0.05$. The results indicate a medium to large-practical significance on demographic factors which can be concluded to have practical significance to the study.

Table 24: One way ANOVA summary statistics and effect size per educational level

Educational Level		N	Mean	Std. Deviation	p value	Effect Size		
						Below Matric with	Matric with	Diploma/Degree with
Value Adding	Below Matric	12	2.6667	.88763	0.55	0.00	0.12	0.12
	Matric	78	2.6667	.83225				
	Diploma/Degree	53	2.7736	.89101				
	post Graduate	3	3.3333	.57735				
Total		146	2.7192	.85293				
						0.75	0.80	0.63

Appendix C shows the effect size analysis of all the factor matrixes on demographic categories, Value adding factor effect size analysis indicates a practical significance as compared to the Pearson’s correlation coefficient of relationship on value adding matrix with post graduate see table 24 with $d = 0.80$

3.4.3.Descriptive Statistics

After the Cronbach’s coefficient alpha was calculated for reliability and factor analysis for validity was conducted to obtain reliable subscales, the descriptive statistics for each section were statistically calculated as indicated in table 25 below.

Table 25: Mean descriptive summary of factor matrix

Factor Matrix	Participants	Response Scale	Mean	Std Deviation
Employee Development	146	1 – 5	3.26	1.212
Employee Engagement	146	0 – 6	3.59	1.767
Communication	146	1 – 5	3.50	1.143
MDW Tool	146	1 – 4	2.29	1.045
Value Adding	146	1 – 4	2.72	0.853
Alignment-involvement	146	1 – 5	3.09	1.124
Employee Wellness	146	0 – 6	3.08	1.795
Strategy	146	1 – 5	3.50	1.144

From the descriptive statistics review, given the scale ranges for employee development, communication, alignment-involvement, and strategy ranging from 1 to 5 (where 1= strongly disagree, 2= disagree, 3 =neutral, 4= agree and 5= strongly agree) a mean of 3.29 and 3.09 for employee development and alignment-involvement respectively on a scale of 1 to 5 indicates the notion of neutral to agree responses by participants in this category. A mean of 3.50 for both the communication and strategy respectively on a scale of 1 to 5 indicates a notion of agreement by participants to the statements of the questionnaires.

The scale for the MDW tool factor ranges from 1 to 4 (where 1= Not at all, 2= Smaller extent, 3= Larger extent, and 4 = Definite extent). A mean of 2.29 indicates a notion of the tool value impact to be of smaller extent. This has been further explained by the effect size analysis of mixed practical significance.

The scale for employee engagement and employee wellness adopted from UWES – 17-item Scale ranges from 0 to 6 (where 0 =Never, 1 =Almost never, 2 =Not often, 3 =Sometimes, 4 =Often, 5 =Very often, and 6 =Always.) The mean of 3.59 for employee engagement indicates the participants' responses to be often positive about how they feel at work in response to the statements in the work and wellness survey.

The mean of 3.08 for employee wellness on the scale of 0 to 6 indicated participants having somewhat mixed feelings about how they feel about their wellness at work.

The summary descriptive statistics in section 3.3.1 table 9 above presents the descriptive statistics summary of individual attributes of statements and categories.

The majority of the participants in the study were 88% male with 11% women. On the employment level, the majority of the participants, 50% were on the operator level.

Of the participants, 39.7% range between the 31-40 age group, which made up the majority of the respondents, 27.4% of which form the majority of the participants who are on an employment duration >10 years, and come from production.

CHAPTER 4

Chapter Summary

This chapter discusses the conclusions that can be drawn from the literature review in relation to the empirical study conducted in assessing the impact of mission-directed work teams on employee engagement within the platinum industry and makes recommendations based on the findings to the management of the Lonmin Plc.

CONCLUSION AND RECOMMENDATIONS

4.1. FINDINGS FROM LITERATURE REVIEW

The Chapter 2 review indicates the MDWTs programme's intent to transform the front line of an organization into a productive, participative environment, thereby providing a sense of purpose for people in their place of work

Several identified objectives of the mission-directed work teams programme are:

- To establish business focus, goal alignment and full employee engagement throughout the organization.
- Create a work climate characterised by teamwork, participation and continuous learning
- Result in fully engaged teams focused on business objectives, aligned throughout the organization.
- Consider communication between team members to be vital for its long-term success. This entails team-on-team, team-on-one and one-on-one reviews and problem solving

Part of the literature study was to understand the concepts of employee engagement in order to be able to design an instrument relevant to analyse the MDWTs programme's objective against the concept of engagement.

From the literature study employee engagement is defined as a worker's willingness and ability to contribute to a company's success; the extent to which employees put in discretionary effort into their work (Kennedy and Daim 2010), (Hundley *et al.*, 2005)

Engagement is further defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption (Baker 2010:229). Mark Attridge (2009:1) describes work engagement as the extent to which workers are involved with, committed to, and passionate about their work.

Job resource and personal resource are the two key drivers that are reported to have a direct influence to both work engagement and performance (Bakker 2011:266)

Job resources refer to those physical, social, or organizational aspects of the job that may: (a) reduce job demands and the associated physiological and psychological costs; (b) be functional in achieving work goals; or (c) stimulate personal growth, learning, and development.

Personal resources are positive self-evaluations that are linked to resiliency and refer to an individual's sense of their ability to successfully control and have an impact on their environment.

The bigger question to be asked would be how companies can design workplaces that are great to work in and that stimulate employee engagement?

It was from this premise that the empirical study analysis was developed, in evaluating the MDWTs programme, to discover if it does stimulate employee engagement.

4.2. FINDINGS FROM EMPIRICAL STUDY ANALYSIS

From the theoretical review the purpose and intent of the MDWTs programmes is reported as the process of transforming the front line staff of the organization into a participative environment by driving effective goal alignment, employee development and communication to impact employee engagement using the MDW tool.

The empirical study showed a positive relationship between the factors advocated by the MDWTs programme, which Baker (2010:232) explains as either job factors or personal factors that influence work engagement.

4.2.1. PARTICIPANTS

Eighty-eight percent of the participants were male and 11% were female which explains the mining sector phenomenon in connection with gender demographics to be highly male dominated. About 39.7% of the majority of the participants were in the mid-thirties (31–40) age group, and 27.4% of the majority had more than ten years of service, which explains the commitment and retention of employees within this sector.

Part of the alignment of the study to the purpose of the MDWTs programme was to target the shop floor participants to evaluate the impact of the programmes on shop floor job engagement factors. Fifty percent of the participants were on operator level, while the other 50% were distributed between supervisors and technical staff. Hence, the study results represent more shop floor respondents

4.2.2. STATISTICAL & PRACTICAL SIGNIFICANCE

Although the study indicated a statistically weak negative relationship between the MDWT process/tool and job factors, statements like “If you had a choice would you consider a different program instead of using MDW?”, and “Would you prefer MDW to be done differently than the current way?” were added to assess the maturity of the tool and participants’ acceptance of the tool itself.

The result showed a medium to large-practical significance between demographic categories of the participants as compared to the Pearson’s correlation coefficient of relationship with factors; this indicates that the tool may need to be reviewed for improvement or growth.

The statistically weak negative correlation results are the perception of participants, which indicates that the tool may no longer have significant impact on the job factors, and that the sustainability of these factors may depend on other measures.

The overall study showed high positive statistical significance of more than 85% between job factors, and an overall effect size ($d > 0.4$) indicating a medium visible practical significance of the MDWTs programme between all different demographic categories, as indicated in appendix C.

4.3. CONCLUSION

From these findings, a conclusion can be derived on the premise of this study, that the perceived employee engagement in the smelting and refinery sub-divisions can be explained by the impact of the mission-directed work teams programme.

This relationship can be explained both statistically and on a practical visible significance supported by the tested reliability of the instrument used with a Cronbach's alpha coefficient of 0.80 to above 0.90.

Further conclusions that can be drawn based on the theoretical and empirical studies are:

- The theoretical review of job factors that explains employee engagement is both statistically and of practical significance and showed a visible relationship
- The mission-directed work team programme requires continuous review and evaluation for growth
- The moderate statistical relationship between job factors and employee engagement, or employee wellness can be explained by the respondents' perception of the labour unrest that took place during the period the study was conducted, which may have affected the UWES study of how the respondents feel at work.

Overall, the empirical study outlined both factors to have impacted on the perception of participants, given the conditions that transpired during the study.

This concludes that there is a positive strong relationship or practical evidence of the impact of mission-directed work teams on employee engagement in the mining industry summarised in figure 10 above and explained by effect size analysis.

4.4. RECOMMENDATIONS

Measuring employee engagement has become a common element of the annual staff survey, the theory being that engagement “drives organizational performance” (Thornham & Chamorro-Premuzic 2006).

The engagement assessment process, when repeated each year can serve as a baseline that can be used to gauge the effectiveness and the contribution of management practices and interventions designed to encourage engagement (Mark Attridge 2009:6).

Vazirani (2007:10) has outlined four critical steps to be followed when measuring employee engagement, namely:

- Step 1 Listening (this is a continuous process)
- Step 2 Measure the current level of engagement (this should be done at regular intervals to track the contribution of engagement to the success of the business)
- Step 3 Identify the problem areas (to ensure that the disengaged employees are identified and proper systems are put in place to address the problem)
- Step 4 Take action against those problem areas identified in step 3

The researcher recommends to the organization to adopt the four critical steps cycle as outlined by Varizani (2007:10) in further measuring the impact of mission-directed work teams practices on employee engagement and to include the participants' comments in the instrument used for measuring.

The results of this study may be limited by the conditions (labour unrest) that surfaced during the period of survey, which ended up in the Marikana massacre that may have had an impact on participants' perceptions of how they feel at work.

Furthermore, the MDWT model alignment best practice as indicated in table 1 above will need to be evaluated in terms of measures to address the engagement on different levels.

4.5. FURTHER RESEARCH PROSPECTS

There have been numerous studies conducted on employee engagement, but fewer studies have been conducted to directly evaluate the strategic decisions taken by companies in implementing strategic programmes and evaluating these programmes to foster employee engagement first, and then performance.

Further research study may be to resort to the same population to include additional comments from the participants in order to foster involvement in improving the programme for sustainability should such improvement be deemed necessary.

In the mining industry, with the history of labour unrest and segregation of staff based on occupational classes, more strategic interventions are required to stimulate employee engagement that will result in both improved relationships and performance.

4.6. SUMMARY

Focusing on the question “Does the MDWT programme have a positive impact on employee engagement”, the empirical results of this study indicate that mission-directed work teams do have a positive impact on employee engagement.

The majority of the shop floor respondents in the study indicated they are satisfied with the employee development, communication, strategy, and alignment-involvement which are the job factors that explain employee engagement advocated by the programme.

Although the study indicated a moderate relationship of these job factors to the UWES scale, during the study external environmental factors had an impact on the respondents’ perception of how they feel at work.

The researcher is, therefore, of the opinion that this empirical study project is a success, and the result will benefit Lonmin by further evaluation of the MDWT initiative and the impact on employee engagement, which in turn will have a positive impact on performance (Baker 2010:229).

APPENDIX A – MODEL QUESTIONNAIRE

CONFIDENTIAL

Lonmin – Smelting & Refinery Division

South Africa

Dear Colleague

You are requested to assist in completing the enclosed Questionnaire For academic research study

As part of an MBA research study, I am exploring the impact of mission-directed work team (MDW) on employee engagement in your area of work (Smelting and Refinery division).

Completing this questionnaire should take you approximately 10 - 20 minutes.

The results of these questionnaires will be used for academic purposes only.

A concerted and conscious effort will be made at all times to keep the results **confidential** and your **anonymity** is of critical importance therefore

Please do not write your name or company number anywhere in the questionnaire.

Thank you for giving up your valuable time to assist me in this research.

Moses Twala

MBA Student – North West University

Student Number – 2258 9937

Tel – 082 551 7270 should you need any further explanation

Email – moses.twala@lonmin.com



Completion of the questionnaires is to be used in partial fulfillment of the requirements for the degree: Masters in Business Administration (MBA) at the Potchefstroom Business School of the North West University

Code Name:

SML

BMR

PMR

QUESTIONNAIRE:

GENERAL INSTRUCTIONS

1. The selected employees are requested to complete these questionnaires.
2. Please answer the questions as objectively and honestly as possible.
3. Please answer all the questions, as this will provide sufficient information to the researcher so that an accurate analysis and interpretation of data can be made.

SECTION A: DEMOGRAPHIC INFORMATION

The following information is needed to help me with the statistical analysis of the data for comparisons among different businesses. **All your responses will be treated confidentially.** I appreciate your help in providing this important information.

Mark the applicable block with a cross (X). Please Complete all the applicable information

A1	Gender	Male	Female
		1	2

A2	Age Group	≤ 20	21 - 30	31 - 40	41 - 59	≥ 60
		1	2	3	4	5

A3	Race	Black	White	Coloured	Indian	Other
		1	2	3	4	5

A4	Level of Employment	Operator	Supervisor	Foreman	Engineer	Supt
		1	2	3	4	5

A5	Duration of Employment	0 – 2 yrs.	2– 5 yrs.	5 – 10 yrs.	>10 yrs.
		1	2	3	4

A6	Qualification	Below Matric	Matric	Diploma / Degree	Postgraduate
		1	2	3	4

A7	Department /		Engineering
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Section	Production	Mechanical	Electrical	Instrument	Laboratory	Technical
	1	2	3	4	5	6



Section B: GOAL ALIGNMENT PROCESS (MISSION-DIRECTED WORK TEAMS – MDW)

The following statements are **about your experience regarding (MDW)** mission-directed work teams

All the questions should be answered by making a cross in the relevant block. Use the following guiding key:

1 = Strongly Disagree; **2** = Disagree; **3**= Neutral / Undecided; **4** = Agree, **5** = Strongly Agree.

Please select the number which best describes how you feel about the item.

Indicate to what extents do you agree or disagree with the statements below. Mark the applicable block with a cross (X).

		Strongly Disagree	Disagree	Neutral / Undecided	Agree	Strongly Agree
LEADERSHIP& STRATEGY						
B1	MDW sessions helps me to know how the business performs	1	2	3	4	5
B2	Management’s support of MDW helps me to understand the business direction	1	2	3	4	5
B3	MDW closed the gap between management and staff	1	2	3	4	5
B4	MDW clarified what is important for our business	1	2	3	4	5
B5	MDW helps our divisions to align to the company’s common goal	1	2	3	4	5
B6	MDW has improved the whole business’s communication process	1	2	3	4	5
B7	I believe every employee knows more about the company now, thanks to the use of MDW	1	2	3	4	5
B8	MDW coaching reviews promotes team goal alignment	1	2	3	4	5
B9	MDW coaching reviews promotes individual goal alignment					

		Strongly Disagree	Disagree	Neutral / Undecided	Agree	Strongly Agree
SUPPLIER - CUSTOMER FOCUS						
B10	MDW helped me to know who my customers and suppliers are	1	2	3	4	5
B11	Customer feedback is used as the basis for measuring quality	1	2	3	4	5
B11	Our customers use our MDW session for comments / feedback	1	2	3	4	5
B13	Customer requirements are discussed at MDW sessions	1	2	3	4	5
B14	MDW encourages Long term relationship with our suppliers	1	2	3	4	5
EMPLOYEE EMPOWERMENT & PROFESSIONAL EFFICACY						
B15	MDW helps me to develop my capabilities	1	2	3	4	5
B16	MDW helps me to develop myself professionally	1	2	3	4	5
B17	MDW helps me to learn new things at work	1	2	3	4	5
B18	MDW helps me to decide on how I do my work	1	2	3	4	5
B19	MDW helps me to solve work related problems	1	2	3	4	5
B20	MDW increases my work confidence towards my tasks	1	2	3	4	5
B21	MDW has improved my communication with my teammates	1	2	3	4	5
B22	MDW helps me to put my ideas and suggestions forward	1	2	3	4	5
B23	MDW has made a positive change in my working life	1	2	3	4	5
B24	MDW has increased trust between me and my supervisor	1	2	3	4	5

		Strongly disagree	Disagree	Neutral / Undecided	agree	Strongly Agree
TEAMWORK						
B25	There is emphasis on a team based problem solving approach rather than an individual based approach	1	2	3	4	5
B26	People in the team share responsibilities for work failures	1	2	3	4	5

		Strongly disagree	Disagree	Neutral / Undecided	agree	Strongly Agree
B27	Since MDW was implemented our relationship has improved	1	2	3	4	5
B27	Other teams uses MDW to communicate problems/solutions	1	2	3	4	5
B29	My Supervisor uses MDW to build team work	1	2	3	4	5
PROCESS IMPROVEMENT						
B30	We use MDW to identify process deviations	1	2	3	4	5
B31	We use MDW to track progress and completion of our projects	1	2	3	4	5
B32	Since we started using MDW our KPA's (Pillars) has improved significantly	1	2	3	4	5
COMMUNICATION						
B33	MDW helps me to know how my division performs	1	2	3	4	5
B34	Company's communications are explained in our MDW sessions	1	2	3	4	5
B35	MDW has made me understand our mission, vision and values	1	2	3	4	5
B36	Our tasks are discussed through MDW	1	2	3	4	5
B37	I use MDW platform to report safety non-compliances	1	2	3	4	5
B38	MDW has encouraged management to visit us frequently	1	2	3	4	5
B39	Through MDW we can know how other teams have performed	1	2	3	4	5
B40	MDW allows every employee to voice any concerns without fear	1	2	3	4	5
B41	I know more now about the company than I did before using MDW	1	2	3	4	5
B42	Team and business unit performances are communicated through MDW	1	2	3	4	5
B43	I use MDW platform to report any suggestions	1	2	3	4	5

Section C: VALUE OF MDW PROCESS

For the following 5 statements - use the following guiding key:

1 = Not at all; **2** = Smaller Extend; **3**= Larger Extend; **4** = Definite Extend.

		Not at All	Smaller Extend	Larger Extend	Definite Extend
C1	To what degree do you feel what you do, contribute to company’s overall performance	1	2	3	4
C2	If you had a choice would you consider a different program instead of using MDW	1	2	3	4
C3	Would you prefer MDW to be done differently than the currently way	1	2	3	4
C4	To what extend would you suggest the use of MDW to your friends/families working for other companies	1	2	3	4
C5	To what degree have you received training in MDW process	1	2	3	4

Section D: WORK AND 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 felt like that by crossing the number (from 1 to 6) that best describes how frequently you feel that way.

		Never	Almost Never	Not Often	Sometimes	Often	Very Often	Always
D1	At my work, I feel bursting with energy.	0	1	2	3	4	5	6
D2	I find the work that I do full of meaning and purpose.	0	1	2	3	4	5	6
D3	Time flies when I am working.	0	1	2	3	4	5	6
D4	At my job, I feel strong and vigorous.	0	1	2	3	4	5	6
D5	I am enthusiastic about my job.	0	1	2	3	4	5	6

D6	When I am working, I forget everything else around me.	0	1	2	3	4	5	6
D7	My job inspires me.	0	1	2	3	4	5	6
D8	When I get up in the morning, I feel like going to work.	0	1	2	3	4	5	6
D9	I feel happy when I am working intensely.	0	1	2	3	4	5	6
D10	I am proud of the work that I do.	0	1	2	3	4	5	6
D11	I am immersed in my work.	0	1	2	3	4	5	6
D12	I can continue working for very long periods at a time.	0	1	2	3	4	5	6
D13	To me, my job is challenging.	0	1	2	3	4	5	6
D14	I get carried away when I am working.	0	1	2	3	4	5	6
D15	At my job, I am very resilient, mentally.	0	1	2	3	4	5	6
D16	It is difficult for me to detach myself from my job.	0	1	2	3	4	5	6
D17	At my work, I always persevere, even when things do not go well.	0	1	2	3	4	5	6

Thank you!

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All information will be treated with **STRICTLY CONFIDENTIALITY** and will only be used for **ACADEMIC PURPOSES**.

APPENDIX B – TOTAL VARIANCE EXPLAINED (EIGENVALUE) SUMMARY TABLE

Total Variance Explained							
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	%	Total	Variance	%	Total
1	30.883	47.512	47.512	30.602	47.079	47.079	24.177
2	7.191	11.062	58.575	6.862	10.557	57.636	10.528
3	2.038	3.135	61.710	1.751	2.694	60.331	19.942
4	1.858	2.858	64.568	1.451	2.232	62.562	5.929
5	1.669	2.568	67.135	1.301	2.002	64.564	11.307
6	1.300	2.000	69.135	.971	1.493	66.057	6.532
7	1.236	1.902	71.037	.886	1.363	67.421	8.688
8	1.180	1.815	72.853	.801	1.233	68.653	15.518
9	1.069	1.644	74.497				
10	.924	1.421	75.918				
11	.884	1.360	77.278				
12	.821	1.263	78.541				
13	.761	1.171	79.711				
14	.725	1.116	80.827				
15	.696	1.070	81.897				
16	.670	1.031	82.928				
17	.642	.987	83.916				
18	.615	.946	84.861				
19	.590	.908	85.769				
20	.549	.845	86.614				
21	.504	.775	87.389				
22	.467	.719	88.108				
23	.441	.679	88.786				
24	.404	.621	89.408				
25	.393	.605	90.013				
26	.388	.597	90.610				
27	.373	.573	91.183				
28	.345	.531	91.714				
29	.329	.507	92.221				

APPENDIX C – ONE WAY ANOVA EFFECT SIZE SUMMARY TABLES

Effect size ANOVA Analysis – per Division

		N	Mean	Std. Deviation	p values	Effect Size	
						PMR with	SML with
Employee Development	PMR	71	3.1922	1.06710	0.00	0.20	0.85
	SML	53	3.4095	.91515			
	BMR	22	2.5642	.99375			
	Total	146	3.1765	1.03438			
Employment Engagement	PMR	71	3.8332	1.43061	0.11	0.18	0.56
	SML	53	4.0929	1.26724			
	BMR	22	3.3706	1.29408			
	Total	146	3.8577	1.36492			
Communication	PMR	71	3.5190	.93325	0.00	0.23	0.89
	SML	53	3.7344	.81037			
	BMR	22	2.8531	.98935			
	Total	146	3.4968	.93886			
MDW Tool	PMR	71	2.2676	.92517	0.87	0.09	0.09
	SML	53	2.3491	.89111			
	BMR	22	2.2500	1.05503			
	Total	146	2.2945	.92787			
Involvement Alignment	PMR	71	3.0493	.91258	0.01	0.12	0.77
	SML	53	3.1580	.85350			
	BMR	22	2.4943	.86386			
	Total	146	3.0051	.90579			
Value Adding	PMR	71	2.8028	.83870	0.01	0.01	0.67
	SML	53	2.8113	.80995			
	BMR	22	2.2273	.86914			
	Total	146	2.7192	.85293			
Employee Wellness	PMR	71	3.4331	1.46382	0.09	0.27	0.55
	SML	53	3.8349	1.29806			
	BMR	22	3.1250	1.17704			
	Total	146	3.5325	1.37943			
Strategy	PMR	71	3.3501	.99350	0.01	0.18	0.70
	SML	53	3.5283	.89679			
	BMR	22	2.8052	1.02689			
	Total	146	3.3327	.98691			

Effect size ANOVA Analysis per Age group

Age	N	Mean	Std. Deviation	p value	Effect Size			
					<= 20	21 - 30 years	31 - 40 years	
Employee Development	<= 20	4	3.3382	1.13086	0.36	0.08	0.24	0.35
	21 - 30 years	45	3.4340	.91510				
	31 - 40 years	58	3.0710	1.03785				
	41 - 59 years	37	3.0223	1.14989				
	60 +	2	2.9706	.87348				
	Total	146	3.1765	1.03438				0.04
Employment Engagement	<= 20	4	3.5192	1.24570	0.40	0.06	0.46	0.37
	21 - 30 years	45	3.6068	1.38842				
	31 - 40 years	58	4.1207	1.30790				
	41 - 59 years	37	3.7796	1.44345				
	60 +	2	4.0000	.76150				
	Total	146	3.8577	1.36492				0.24
Communication	<= 20	4	3.5385	1.03775	0.92	0.06	0.06	0.12
	21 - 30 years	45	3.6000	.76072				
	31 - 40 years	58	3.4721	1.02309				
	41 - 59 years	37	3.4033	1.03496				
	60 +	2	3.5385	.21757				
	Total	146	3.4968	.93886				0.07
MDW Tool	<= 20	4	2.1250	.85391	0.15	0.19	0.38	0.21
	21 - 30 years	45	2.2889	.82220				
	31 - 40 years	58	2.4914	.97103				
	41 - 59 years	37	2.0541	.95586				
	60 +	2	1.5000	.70711				
	Total	146	2.2945	.92787				0.45
Involvement Alignment	<= 20	4	3.0938	1.10102	0.67	0.07	0.11	0.19
	21 - 30 years	45	3.1667	.68827				
	31 - 40 years	58	2.9698	1.03510				
	41 - 59 years	37	2.8615	.91609				
	60 +	2	2.8750	1.06066				
	Total	146	3.0051	.90579				0.10
Value Adding	<= 20	4	3.0000	.81650	0.02	0.11	0.22	0.12
	21 - 30 years	45	2.9111	.76343				
	31 - 40 years	58	2.8103	.84722				
	41 - 59 years	37	2.3514	.85687				
	60 +	2	2.0000	1.41421				
	Total	146	2.7192	.85293				0.54
Employee Wellness	<= 20	4	3.1250	1.16369	0.75	0.16	0.42	0.24
	21 - 30 years	45	3.3556	1.42571				
	31 - 40 years	58	3.6983	1.37710				
	41 - 59 years	37	3.5405	1.40004				
	60 +	2	3.3750	.17678				
	Total	146	3.5325	1.37943				0.11
Strategy	<= 20	4	3.1071	.87579	0.61	0.48	0.15	0.27
	21 - 30 years	45	3.5302	.88306				
	31 - 40 years	58	3.2562	1.01466				
	41 - 59 years	37	3.2355	1.09328				
	60 +	2	3.3571	.50508				
	Total	146	3.3327	.98691				0.10

Effect size ANOVA Analysis per ethnic group

Ethnic Groups	N	Mean	Std. Deviation	p value	Effect Size			
					Black with	White with	Coloured with	
Employee Development	Black	108	3.3529	.94076	0.00	0.57	0.29	1.72
	White	32	2.6893	1.15862				
	Coloured	3	3.0196	.88104				
	Other	2	1.5000	.70711				
	Total	145	3.1740	1.03755				
Employment Engagement	Black	108	3.8903	1.35172	0.43	0.06	0.56	1.89
	White	32	3.8005	1.44794				
	Coloured	3	4.6154	1.07692				
	Other	2	2.5769	.38075				
	Total	145	3.8674	1.36466				
Communication	Black	108	3.6503	.89530	0.00	0.66	0.78	8.88
	White	32	3.0337	.93946				
	Coloured	3	3.7692	.20352				
	Other	2	1.9615	.05439				
	Total	145	3.4934	.94118				
MDW Tool	Black	108	2.2963	.93238	0.67	0.05	0.70	1.09
	White	32	2.3438	.96250				
	Coloured	3	1.6667	.76376				
	Other	2	2.5000	.70711				
	Total	145	2.2966	.93076				
Involvement Alignment	Black	108	3.1157	.88052	0.03	0.40	0.05	1.43
	White	32	2.7461	.93190				
	Coloured	3	2.7917	.81330				
	Other	2	1.6250	.53033				
	Total	145	3.0069	.90867				
Value Adding	Black	108	2.7222	.87364	0.69	0.03	0.10	1.15
	White	32	2.7500	.84242				
	Coloured	3	2.6667	.57735				
	Other	2	2.0000	0.00000				
	Total	145	2.7172	.85557				
Employee Wellness	Black	108	3.5671	1.36401	0.14	0.17	1.29	1.86
	White	32	3.3281	1.42336				
	Coloured	3	5.1667	1.23322				
	Other	2	2.8750	.17678				
	Total	145	3.5379	1.38266				
Strategy	Black	108	3.4802	.94609	0.01	0.56	0.32	3.00
	White	32	2.9107	1.02551				
	Coloured	3	3.2381	.43644				
	Other	2	1.9286	.10102				
	Total	145	3.3281	.98876				

Effect size ANOVA Analysis per job level

Job Levels		N	Mean	Std. Deviation	p value	effect Size				
						Operator with	Supervisor with	Foreman with	Engineer with	
Employee Development	Operator	73	3.2836	1.00122	0.58	0.29	0.04	0.32	0.24	0.15
	Supervisor	39	2.9623	1.12240						
	Foreman	13	3.3258	1.00822						
	Engineer	17	3.0796	1.02814						
	Supt	4	3.2353	.98196						
	Total	146	3.1765	1.03438						
Employment Engagement	Operator	73	3.6280	1.47464	0.10	0.27	0.41	0.15	0.13	0.95
	Supervisor	39	4.0335	1.29498						
	Foreman	13	4.2308	.97352						
	Engineer	17	4.3665	1.04362						
	Supt	4	2.9615	1.47898						
	Total	146	3.8577	1.36492						
Communication	Operator	73	3.5427	.94315	0.40	0.27	0.32	0.58	0.32	0.02
	Supervisor	39	3.2801	.98121						
	Foreman	13	3.8462	.53571						
	Engineer	17	3.5294	.98242						
	Supt	4	3.5000	1.25222						
	Total	146	3.4968	.93886						
MDW Tool	Operator	73	2.2055	.84507	0.24	0.35	0.24	0.53	0.27	0.14
	Supervisor	39	2.5897	1.11138						
	Foreman	13	2.0000	.67700						
	Engineer	17	2.2647	.98612						
	Supt	4	2.1250	.25000						
	Total	146	2.2945	.92787						
Involvement Alignment	Operator	73	3.0479	.86317	0.58	0.17	0.30	0.44	0.46	0.26
	Supervisor	39	2.8782	.98362						
	Foreman	13	3.3077	.75797						
	Engineer	17	2.8529	.99828						
	Supt	4	3.1250	1.05079						
	Total	146	3.0051	.90579						
Value Adding	Operator	73	2.7671	.84196	0.89	0.14	0.09	0.06	0.05	0.35
	Supervisor	39	2.6410	.87320						
	Foreman	13	2.6923	.75107						
	Engineer	17	2.6471	.99632						
	Supt	4	3.0000	.81650						
	Total	146	2.7192	.85293						
Employee Wellness	Operator	73	3.4041	1.40165	0.64	0.20	0.17	0.02	0.09	0.59
	Supervisor	39	3.6795	1.32778						
	Foreman	13	3.6538	1.50533						
	Engineer	17	3.7941	1.45300						
	Supt	4	2.9375	.74652						
	Total	146	3.5325	1.37943						
Strategy	Operator	73	3.4227	.96287	0.73	0.20	0.02	0.21	0.31	0.14
	Supervisor	39	3.2234	1.01429						
	Foreman	13	3.4396	.90625						
	Engineer	17	3.1176	1.04398						
	Supt	4	3.3214	1.42559						
	Total	146	3.3327	.98691						

Effect size ANOVA Analysis per job experience

Job Experience	N	Mean	Std. Deviation	p value	Effect Size		
					0 - 2 with	2 - 5 with	5 - 10 with
Employee Development	36	3.6275	.80741	0.01	0.66	0.15	0.14
2 - 5 years	37	2.8601	1.16764				
5 - 10 years	33	3.0321	1.11038				
>10 years	40	3.1824	.90688				
Total	146	3.1765	1.03438				
Employment Engagement	36	3.9808	1.16578	0.08	0.41	0.42	0.06
2 - 5 years	37	3.3597	1.51532				
5 - 10 years	33	4.0000	1.46419				
>10 years	40	4.0904	1.22730				
Total	146	3.8577	1.36492				
Communication	36	3.7607	.72061	0.12	0.48	0.25	0.02
2 - 5 years	37	3.2328	1.09110				
5 - 10 years	33	3.5152	1.14782				
>10 years	40	3.4885	.70749				
Total	146	3.4968	.93886				
MDW Tool	36	2.2083	.92099	0.74	0.14	0.09	0.20
2 - 5 years	37	2.3378	.87444				
5 - 10 years	33	2.4242	1.00872				
>10 years	40	2.2250	.93336				
Total	146	2.2945	.92787				
Involvement Alignment	36	3.2500	.70584	0.15	0.45	0.08	0.11
2 - 5 years	37	2.8209	.96174				
5 - 10 years	33	2.9091	1.10983				
>10 years	40	3.0344	.80163				
Total	146	3.0051	.90579				
Value Adding	36	2.9444	.67377	0.15	0.46	0.20	0.03
2 - 5 years	37	2.5135	.93159				
5 - 10 years	33	2.6970	.91804				
>10 years	40	2.7250	.84694				
Total	146	2.7192	.85293				
Employee Wellness	36	3.5764	1.24042	0.36	0.27	0.14	0.19
2 - 5 years	37	3.2432	1.19531				
5 - 10 years	33	3.4848	1.69551				
>10 years	40	3.8000	1.36368				
Total	146	3.5325	1.37943				
Strategy	36	3.5873	.71206	0.15	0.43	0.16	0.11
2 - 5 years	37	3.0772	1.18360				
5 - 10 years	33	3.2684	1.18114				
>10 years	40	3.3929	.77423				
Total	146	3.3327	.98691				

Effect size ANOVA Analysis per educational level

Educational Level	N	Mean	Std. Deviation	p value	Effect Size			
					Below Matric with	Matric with	Diploma/Degree with	
Employee Development	Below Matric	12	3.4412	1.03524	0.24	0.39	0.23	0.62
	Matric	78	3.0377	1.03117				
	Diploma/Degree	53	3.2786	1.04262				
	post Graduate	3	3.9216	.44150				
	Total	146	3.1765	1.03438				
Employment Engagement	Below Matric	12	4.2372	1.33656	0.23	0.40	0.19	0.73
	Matric	78	3.6913	1.36350				
	Diploma/Degree	53	3.9550	1.36328				
	post Graduate	3	4.9487	1.16744				
	Total	146	3.8577	1.36492				
Communication	Below Matric	12	3.5641	1.00688	0.32	0.16	0.16	0.74
	Matric	78	3.4034	.86694				
	Diploma/Degree	53	3.5718	1.02966				
	post Graduate	3	4.3333	.51218				
	Total	146	3.4968	.93886				
MDW Tool	Below Matric	12	1.7917	.68948	0.01	0.47	0.26	0.98
	Matric	78	2.2500	.98281				
	Diploma/Degree	53	2.5094	.85760				
	post Graduate	3	1.6667	.28868				
	Total	146	2.2945	.92787				
Involvement Alignment	Below Matric	12	3.2396	.84520	0.04	0.45	0.34	0.97
	Matric	78	2.8349	.90464				
	Diploma/Degree	53	3.1462	.88413				
	post Graduate	3	4.0000	.50000				
	Total	146	3.0051	.90579				
Value Adding	Below Matric	12	2.6667	.88763	0.55	0.00	0.12	0.63
	Matric	78	2.6667	.83225				
	Diploma/Degree	53	2.7736	.89101				
	post Graduate	3	3.3333	.57735				
	Total	146	2.7192	.85293				
Employee Wellness	Below Matric	12	4.1042	1.38768	0.17	0.51	0.24	0.78
	Matric	78	3.3590	1.46196				
	Diploma/Degree	53	3.7028	1.22382				
	post Graduate	3	2.7500	1.14564				
	Total	146	3.5325	1.37943				
Strategy	Below Matric	12	3.6429	.93876	0.15	0.46	0.16	0.83
	Matric	78	3.2143	.91596				
	Diploma/Degree	53	3.3827	1.08355				
	post Graduate	3	4.2857	.62270				
	Total	146	3.3327	.98691				

Effect size ANOVA Analysis per job category

Job Category	N	Mean	Std. Deviation	p value	Effect Size					
					Production with	Mechanical with	Electrical with	Instrument with	Laboratory with	
Professional Efficacy	Production	77	3.4118	.99932						
	Mechanical	23	2.7903	1.11113		0.56				
	Electrical	22	2.5294	.99164		0.88	0.23			
	Instrument	11	2.9679	.86587	0.00	0.44	0.16	0.44		
	Laboratory	7	3.6303	.43188		0.22	0.76	1.11	0.76	
	Technical	6	3.8627	.48317		0.45	0.97	1.34	1.03	0.48
Total	146	3.1765	1.03438							
Employment Engagement	Production	77	3.9101	1.44236						
	Mechanical	23	3.6823	1.37708		0.16				
	Electrical	22	3.5769	1.35078		0.23	0.08			
	Instrument	11	4.1748	1.26214	0.29	0.18	0.36	0.44		
	Laboratory	7	3.3736	.54831		0.37	0.22	0.15	0.63	
	Technical	6	4.8718	.73245		0.67	0.86	0.96	0.55	2.05
Total	146	3.8577	1.36492							
Communication	Production	77	3.7223	.88827						
	Mechanical	23	3.1973	1.17528		0.45				
	Electrical	22	2.9545	.84354		0.86	0.21			
	Instrument	11	3.2308	.73942	0.00	0.55	0.03	0.33		
	Laboratory	7	3.6264	.35370		0.11	0.37	0.80	0.54	
	Technical	6	4.0769	.43241		0.40	0.75	1.33	1.14	1.04
Total	146	3.4968	.93886							
MDW Tool	Production	77	2.2403	.87963						
	Mechanical	23	2.0217	.98256		0.22				
	Electrical	22	2.6364	1.01397		0.39	0.61			
	Instrument	11	2.5000	.77460	0.32	0.30	0.49	0.13		
	Laboratory	7	2.2857	.95119		0.05	0.27	0.35	0.23	
	Technical	6	2.4167	1.15830		0.15	0.34	0.19	0.07	0.11
Total	146	2.2945	.92787							
Involvement Alignment	Production	77	3.1818	.91734						
	Mechanical	23	2.7663	1.05347		0.39				
	Electrical	22	2.4830	.71578		0.76	0.27			
	Instrument	11	2.8068	.63827	0.00	0.41	0.04	0.45		
	Laboratory	7	3.3036	.34503		0.13	0.51	1.15	0.78	
	Technical	6	3.5833	.67392		0.44	0.78	1.54	1.15	0.42
Total	146	3.0051	.90579							
Value Adding	Production	77	2.8961	.83641						
	Mechanical	23	2.5217	.94722		0.40				
	Electrical	22	2.2727	.88273		0.71	0.26			
	Instrument	11	2.5455	.52223	0.03	0.42	0.03	0.31		
	Laboratory	7	3.0000	.57735		0.12	0.50	0.82	0.79	
	Technical	6	2.8333	.75277		0.08	0.33	0.64	0.38	0.22
Total	146	2.7192	.85293							
Employee Wellness	Production	77	3.6364	1.42899						
	Mechanical	23	3.2717	1.64957		0.22				
	Electrical	22	3.3182	1.17813		0.22	0.03			
	Instrument	11	3.8409	.86076	0.16	0.14	0.35	0.44		
	Laboratory	7	2.6429	.55635		0.70	0.38	0.57	1.39	
	Technical	6	4.4583	1.20848		0.58	0.72	0.94	0.51	1.50
Total	146	3.5325	1.37943							
Strategy	Production	77	3.5714	.95044						
	Mechanical	23	2.9317	1.15326		0.55				
	Electrical	22	2.8117	.92096		0.80	0.10			
	Instrument	11	3.1429	.86189	0.01	0.45	0.18	0.36		
	Laboratory	7	3.5918	.47687		0.02	0.57	0.85	0.52	
	Technical	6	3.7619	.36886		0.20	0.72	1.03	0.72	0.36
Total	146	3.3327	.98691							

Effect size ANOVA Analysis per gender

Gender		N	Mean	Std. Deviation	p value	Effect Size
Employee Development	Male	129	3.1003	1.05618	.001	.619
	Female	17	3.7543	.60891		
Employment Engagement	Male	129	3.8175	1.41605	.164	.244
	Female	17	4.1629	.85437		
Communication	Male	129	3.4371	.95042	.034	.540
	Female	17	3.9502	.71746		
MDW Tool	Male	129	2.3256	.94920	.184	.281
	Female	17	2.0588	.72634		
Involvement Alignment	Male	129	2.9457	.92291	.006	.553
	Female	17	3.4559	.61387		
Value Adding	Male	129	2.6667	.86903	.011	.519
	Female	17	3.1176	.60025		
Employee Wellness	Male	129	3.5465	1.42377	.737	.084
	Female	17	3.4265	1.00687		
Strategy	Male	129	3.2492	.99172	.001	.723
	Female	17	3.9664	.68981		

APPENDIX D – MINI DISSERTATION LANGUAGE EDITING CERTIFICATE

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