

# Measuring the job satisfaction of young engineers at Eskom power stations

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## **Abstract**

At the time of writing, South African electricity parastatal Eskom was losing critical skills at an alarming rate at a time in which it battled to supply the country's energy demand (Grindrod, 2008). With electricity demand forecasted to double in the next two decades, the power giant could ill afford loss of experienced engineers (DOE, 2013).

With this in mind, the author informally noticed a general lack of job satisfaction amongst Eskom's young engineers, specifically those working at power stations. Since employees' intention to leave an organisation is directly related to their job satisfaction (Pretorius, 2012), a measure of the job satisfaction levels of these young engineers was necessitated.

This study thus set out on determining the level of job satisfaction of young engineers working on Eskom's power stations, with the aim of providing management with the knowledge to bring along changes that will increase the job satisfaction of their employees and prevent further loss of critical skills.

A total of 48 engineers within the target population successfully participated in the research. The Minnesota satisfaction questionnaire short form was used to determine the levels of intrinsic, extrinsic and general job satisfaction of the sample, while the Job Descriptive Index was administered to identify specific job facets that played a role in the satisfaction levels. The multitrait-multi-matrix method (Gillet & Schwab, 1975) was utilised to successfully prove convergent and discriminant validity of the research instruments.

The results showed a significant lack of job satisfaction for Eskom's young engineers working at power stations. They did not experience intrinsic job satisfaction which led to a lack of general satisfaction. A lack of creativity, routine work, limited opportunities for promotion and internal company politics gave effect. They did however experience moderate extrinsic job satisfaction, especially with regards to remuneration.

## Disclaimer

I, Carel de Jager (I.D. 8902165066084) hereby declare that this dissertation is my own original work and has not been submitted before to any institution for assessment purposes. Further, I have acknowledged all sources used and have cited these in the reference section.



.....  
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.....2015/11/01.....

Date

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Die liefde is die volle uitvoering van die wet; dit oorskadu alles (Mark 12:28-31; Rom. 13:8-10). Die liefde is geduldig, die liefde is vriendelik, dit is nie afgunstig nie, is nie grootpraterig nie, is nie verwaand nie. Dit bedek alles, glo alles, hoop alles, verdra alles (1Kor. 13:4-7).

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# Chapter 1. Introduction

## 1.1 Background

This study deals with the intrinsic, extrinsic and overall job satisfaction levels of young engineers working at Eskom power stations.

### Development of the Eskom crisis

In 1999, the South African government was warned that “Eskom’s present generation capacity surplus will be fully utilised by about 2007” in a renowned document entitled *White Paper on the Energy Policy of the Republic of South Africa*. The authors explained that although 2007 was still a long way off, expansion plans should be realised soon in order to meet the electricity demand that a growing, developing economy required. (Vermeulen, 2014)

As forecasted, the electricity demand exceeded supply for the first time in 2007 and Eskom was forced to implement “load shedding” – a term which gained increasing popularity in the following 8 years. (Eskom, 2014)

The South African government eventually gave the belated instruction for Eskom to increase their generation capacity in 2004 by constructing amongst others, two coal-fired power stations, named Medupi and Kusile. After lengthy delays, the first unit of Medupi was finally synchronised to the national grid in 2015. Kusile is set for its first synchronisation in 2017. (Vermeulen, 2014)

The new-build programme, and also unprecedented increases in primary energy costs, contributed to fast deterioration of Eskom’s finances. This in turn led to several downgrades of the organisation’s credit rating. With a \$3.75 billion loan from the World Bank, increasing interest payments were passed to the consumer. (DOE, 2010; DPE, 2010)

Eskom’s total workforce halved in the years from 1992 to 2007, and another 346 engineers left the organisation in 2008. Six years later, the skills situation has deteriorated even further. In an effort to cut costs, recruitment was partially frozen and voluntary separation packages offered, although the utility admitted to facing a serious shortage in skills (Etzinger, 2014; Tshabalala, 2008; Van Rooyen *et al.* 2010). With generation capacity planned to double in

the next two decades, along with the skills demand to maintain such capacity, the situation is set to worsen (DOE, 2013).

## **Engineers at Eskom**

The typical engineer working on an Eskom power station was recruited through a bursary offered to him<sup>1</sup> during his undergraduate studies. He is then contractually obliged to work back the time that he had the bursary, which is generally between 1 and 5 years. When the graduate engineer is formally employed at an Eskom power station after his undergraduate studies, he starts with a well-defined 18-24 month training program. This is a detailed program exposing the young engineer to every aspect of the power station, including operations, maintenance, engineering, projects, human resources etc. The Engineer In Training (EIT), as he is known, undergoes various training courses to prepare him for his work as an engineer. He also chooses a mentor, which is usually a senior engineer in the organisation. The EIT and his mentor have regular scheduled meetings and it is the mentor's job to guide the young engineer in achieving his career goals. The EIT's progress during the program is tracked by three presentations that he has to prepare and present to the engineering management team.

This EIT training program provides a smooth transition from graduate to engineer and is intended to fully prepare the individual for the road ahead. Even though the remuneration package of an EIT is already market related, he receives a large promotion when finally appointed as junior engineer. He is promoted from the T11 to the P13 salary band, which includes a car allowance, cell phone allowance and standby allowance to name a few. His gross salary is very attractive compared to engineers in other industries. For the junior engineer, there are ample opportunities for career growth. Eskom provides several career acceleration programs for those individuals who show promise. They also encourage their engineers to obtain professional accreditation, write the Government Competency Certificate (GCC) or become technical specialists through various training courses and/or financial incentives.

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<sup>1</sup> Referral to the male gender is for editorial purposes only and refers equally to the female. The author acknowledges that Eskom employs many female engineers and they were included in this study.

## 1.2 Problem statement

At the time of writing it appeared to the author that Eskom provides the ideal platform for any engineer to start his career. But when the author spoke to young engineers working on power stations, it appeared that many of them were unhappy with their work and were actively searching for another job. They appeared to have low levels of job satisfaction and apparently didn't see a future for themselves in the organisation.

The author construed that if this informal observation proved to be substantiated, it could be an early indication that Eskom might experience a professional skills shortage within the foreseeable future.

A preliminary literature survey on the subject of job satisfaction indicated two dimensions, namely intrinsic and extrinsic satisfaction, where intrinsic satisfaction is derived from the work itself and extrinsic satisfaction from the employment conditions (Hirschfield, 2000; Spector, 1997; Buitendach & Rothmann, 2009).

It thus appeared to the author that Eskom focused entirely on providing extrinsic job satisfaction to its employees but neglected in providing the structures necessary for intrinsic satisfaction.

This study thus set out to scientifically determine whether this supposed lack of intrinsic job satisfaction for young engineers at Eskom power stations and the abundance of extrinsic job satisfaction actually existed, and what influence it had on their overall job satisfaction levels.

This led to the formulation of the following research questions:

- i) Do young engineers at Eskom power stations experience intrinsic job satisfaction?
- ii) Do young engineers at Eskom power stations experience extrinsic job satisfaction?
- iii) Do young engineers at Eskom power stations experience overall job satisfaction, and which job factors contribute to this?

## **1.3 Research Aim and Objectives**

The aim of this research was firstly to report on the overall job satisfaction that young engineers at Eskom power stations experience, and secondly to identify which facets of their work contributes to the job satisfaction/lack thereof.

In order to achieve this, the following objectives needed to be achieved:

- Present a comprehensive literature study on the construct of job satisfaction.
- Determine the level of extrinsic job satisfaction of young engineers at Eskom power stations.
- Determine the level of intrinsic job satisfaction of young engineers at Eskom power stations.
- Determine the overall job satisfaction levels of young engineers at Eskom power stations.
- Statistically evaluate the research instrument for construct validity.
- Define the relationship between intrinsic, extrinsic and overall job satisfaction for young engineers at Eskom power stations.
- Use the results to make conclusions and recommendations towards the influences of job satisfaction of Eskom's young engineers working at power stations.

The purpose of this study was to ultimately contribute to knowledge which might lead to minimising further loss of critical skills within Eskom, specifically those of young engineers working at power stations. This was done by making recommendations to Eskom's engineering managers with regards to specific factors in relation to the job design and working conditions to which their young engineers are exposed.

## **1.4 Chapter Division**

The contents of the dissertation document are as follows:

Abstract

Preface

1. Introduction
2. Literature Review
3. Research Methodology

4. Results and Discussion
5. Conclusion and Recommendations

References

Appendices

Chapter one contains an introduction providing a brief background on the crisis Eskom faces in terms of critical skills and its financial situation. It also describes information on the typical young engineer working on an Eskom power station. Proceeding the background section is the problem statement, objectives of this study and the dissertation outline.

Chapter two comprises of a literature study which outlines the basic theories that define intrinsic and extrinsic job satisfaction from the realm of positive psychology. It also contains information about the research instruments administered during this study [the Minnesota Satisfaction Questionnaire (MSQ) and Job Descriptive Index (JDI)], as well as historical research on the topic. The chapter ends with critique on the theories and models that were discussed.

Chapter three describes the research methodology that was used and how it applied in reaching the objectives of this study. It includes further details on the MSQ and JDI, the sample group, statistical methods used to interpret the data and verification and validation techniques employed to authenticate the results. It ends with a critical analysis by the author himself concerning the investigative procedure.

Chapter four contains results of the research done on Eskom's young engineers. The data was analysed and the results discussed. Several statistical coefficients describing the data were discussed and comments were made towards the accuracy and relevancy of the results. This chapter also includes results from the verification and validation attempts, attempted factor analysis of the MSQ, and a critical analysis of the results.

Chapter five concludes by addressing the research question and objectives of this study. It contains critique and shortcomings of the research, as well as recommendations for future research on this topic.

# Chapter 2. Literature Review

## 2.1 Introduction

This literature review provides the reader with a background to the theoretical origin and development of job satisfaction of employees in the workplace. It focusses specifically on historical perspectives of job satisfaction, as well as the causes of job satisfaction in an organisation. Several theories defining the concept of job satisfaction are discussed. The literature is portrayed from a theoretical basis and also contains critique, both from recognised publications and the author's personal views. The chapter ends with an explanation of how the literature will guide the reader to the proceeding chapters and to what extent it supports the research work that follows.

Balzer *et al.* (2000) stated that the concept of job satisfaction was first discovered in the 1920's and has since been one of the most frequently studied topics in industrial psychology. A decade later, Mayo (1931) discovered that the work habits of employees were influenced by the treatment they received from their supervisors, which sparked a series of extensive research on the topic (Pugh, 1990). Later, Smith *et al.* (1969) found strong correlations between job satisfaction and productivity, but Barbish (1979) raised some doubt about the significance of this rapport and recommended that further research is done to quantify such a relationship. Spector (1985) redefined job satisfaction by concluding that although the correlations to productivity might be modest, it is indirectly affected by burnout, absenteeism, apathy and turnover. Buce and Blackburn (1992:6) supported this finding from Spector, stating "Satisfied employees are more likely to experience high internal work motivation, to give high quality work performance, and to have low absenteeism and turnover" (as cited in Waskiewicz, 1999).

Gruneberg (1979) found that job satisfaction also extends beyond the workplace. He established that an employee's overall well-being is influenced by his/her feelings about security, pay and other benefits and rewards received from having job satisfaction. Spector (1969) also stated that management should be concerned about their workers' job satisfaction as it contains humanitarian value.

Considering the historic research conclusions towards the topic of job satisfaction, as described above, it was found to be important to also study the job satisfaction of young engineers at Eskom power stations, whether this information will lead to an improvement from a productivity viewpoint or from a purely humanitarian viewpoint.

## 2.2 Definitions and theories of job satisfaction

The most common cited definition for job satisfaction is that of Locke (1976:1300), who defines it as “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences”. Schneider and Snyder (1975) defined the term as a personal evaluation of conditions present in the job or outcomes that arise as a result of having a job. Other definitions relate the term to how much people enjoy being at their work, doing their work, and being rewarded for it (Hirschfield, 2000). Taking this into account, job satisfaction involves an individual’s perception and evaluation of his job and this perception is influenced by unique circumstances such as needs, values and expectations (Buitendach & De Witte, 2005). Giannikis and Mihail (2011) identified positive experiences such as friendly colleagues, good remuneration, compassionate supervisors and attractive jobs as factors that create high levels of job satisfaction. In other words, the more someone’s needs, values and personal characteristics are fulfilled by his work environment, the greater satisfaction he will experience in his job (Yeung & Cheng, 2010). Satisfied employees are often more committed to their work and are less likely to leave an organisation (Agarwal & Ferrat, 2001). It is therefore vitally important for employers to provide an environment enhancing the levels of job satisfaction of their employees as this has a positive effect on the success of the organisation (Price, 2001).

Balzer *et al.* (2000:10) defines job satisfaction as “the feelings a worker has about his or her job or job experiences in relation to previous experiences, current expectations, or available alternatives”. Earlier theories of job satisfaction suggested that workers only experience an overall or global feeling towards their job, but recent findings prove that employees feel different about different aspects with regards to their work. Balzer *et al.* (2000) summarised these factors into the following facets: the work itself, pay, co-workers, opportunities for promotion and supervision.

The literature relating to this study falls within the paradigm of positive psychology, which is defined as “the study of the conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions” (Gable & Haidt, 2005:104). A recent development of positive psychology, which is specifically applicable in the workplace, emerged in 2003 and named Positive Organisational Scholarship (POS) (Caza & Cameron, 2008). The term POS refers to an umbrella concept which includes generative dynamics in organisations that lead to the development of human strength, foster resiliency in employees, enable healing and restoration, and cultivate extraordinary individual and

organisational performance. Cameron & Spreitzer (2011) stated that POS does not ignore dysfunctional or typical patterns of behaviour, but it focuses on the motivations and effects linked to positive phenomena, and how they are facilitated, why they work, how they can be recognised, and how organisations can use them. The four key components of POS are self-efficacy, hope, optimism and resiliency. Youseff and Luthans (2007) showed that these four components are also associated with elevated levels of job satisfaction.

The theories constructing the concept of job satisfaction began with Maslow's (1943) hierarchy of needs, which forms the basis of human developmental psychology. From this basis, Herzberg (1959) went further by altering the theory to be applicable to job satisfaction alone. McClelland (1961) also refined Maslow's theory by identifying three intrinsic factors that motivate employees in his model, named the Acquired needs theory. Similarly, Alderfer (1977) used Maslow's hierarchy to develop the Existence, Relatedness and Growth (ERG) theory. (Tietjen & Meyers, 1998)

From the basis of needs theories, Locke (1976) developed arguably the most popular model for job satisfaction, named the Affect theory. Later, Locke was a co-author in another famous model for job satisfaction, viz. the Core Self-evaluations Model. Hackman and Oldham (1976) modelled the concept into a framework which identifies specific characteristics of an individual's work, known as the Job Characteristics Model.

It must be noted that the development of the job satisfaction concept is not limited to the theories and models named above, but their understanding is necessary to form a theoretical background for this study, thereby justifying the discussions that follow in the succeeding sub-chapters.

### **2.2.1 Job satisfaction and motivation**

The theories pertaining to job satisfaction have a strong overlap with the theories relating to human motivation, as both these notions involve the movement of workers to act in a desired manner (Tietjen & Meyers, 1998). Although the concepts are closely related, Wolfe (2014) explained that job satisfaction refers to the pleasure or reassurance that a job provides a person, whereas motivation refers only to the reasons a person performs the job regardless of the satisfaction relating to it. Griffeth *et al.* (2000) differentiate the two terms by defining job satisfaction as a person's emotional response to his job condition, whereas motivation is the driving force to pursue and satisfy needs. However, job satisfaction and motivation are related in that their presence both increase job performance. In an extensive literature review of the relationship between job satisfaction and motivation, Kumari (2013:8) found

that “satisfaction on a job might be motivated by the nature of the job, its pervasive social climate and extent to which a worker’s peculiar needs are met”. Further, Lambrou *et al.* (2010) found a significant relationship between job satisfaction and motivational factors.

It has thus been well documented that the variables influencing motivation and job satisfaction are strongly dependant on each other (Deci *et al.*, 2011; Tella *et al.*, 2007; Singh & Tiwari, 2011). Since most theories relating explicitly to job satisfaction were simply improvements of basic motivational theories, the author deemed it necessary to start the discussion on job satisfaction literature with summaries of the most renowned human motivational theories.

Historical viewpoints of motivational factors have not always been accurate, but it is important to note them because of the insight they provide on the development of the motivational theories that proceeded.

Taylor (1911, in Riley, 2015) was one of the first people to study work motivation. He concluded that employees are only motivated by remuneration and nothing else. He stated that a person would rather do a job that he hates for a larger salary than doing something he loves. He made several incorrect assumptions during his study, including that work is inherently unpleasant to all people.

20 years later, the human relations approach was developed. Mayo, (1931, in Riley, 2015) stated that satisfying social needs is more important in motivating employees than the money they earn. Managers were advised to make their employees feel important even if it was an illusion, like involving them in decisions although the decision was already taken.

In the 1950’s, the human relations approach was improved to the human resource approach, which assumed that employees can essentially make valuable contributions in an organisation. Similar to the human relations approach, it encourages employees to be actively involved in strategic organisational decisions, but without the illusions of Mayo’s (1931) tactic. (Riley, 2015)

In more recent times, studies on the topic of employee motivation revolved around need-based perspectives. It is now known that humans are motivated primarily through deficiencies in one or more needs or need categories. The best known need theories are the hierarchy of needs developed by Maslow in 1943, the Existence, Relatedness and Growth

(ERG) -theory by Alderfer in 1969, and the Dual Structure theory by Herzberg in 1963. (Tietjen & Meyers, 1998)

### **Extrinsic and intrinsic motivation**

Employee motivational factors can be subdivided into two broad categories, viz. extrinsic and intrinsic factors.

Extrinsic motivation usually originates from a source external to the task and is applied by other people. This includes a regular salary, fringe benefits and cash rewards. On the other hand, intrinsic motivation stems from within the employee himself and is a result from the direct relationship between the worker and the task, for example interest in the task, recognition and the feeling of competency. (Baylor, 2010)

Intrinsic motivation is related to factors that derive from inside a person and is based on individual needs. It is evident in a self-motivated person who enjoys performing a certain task, and therefore exceeds expectation. Or it may be that the task is challenging to him and completing it satisfies his ego through serving a purpose higher than the task itself. By motivating someone intrinsically, one would thus lead the individual to a goal through satisfying his needs and values instead of managing the project by offering transient rewards. (Gupta, 2011)

According to Galia (2007), managers need to be aware that the diversity of their workforce causes different employees to be motivated by different factors. Most employees are best motivated through a variety of both extrinsic and intrinsic factors.

Much research have been done on the topic of extrinsic motivation and job satisfaction (Lam, 1995; Li-Ping Tang & Talpade, 1999; Oshagbemi, 2000), but most of these focused on the private sector alone. Other authors singled out countries (Bernard & Driscoll, 2011), cross-cultural contexts (Loscocco & Bose, 1998; Wang & Lee, 2009) and different levels of jobs in different industry sectors (Lentz & Allen, 2009; Ting, 1997). The abundance of research done on this topic testifies of the importance of employee behaviour studies in organisational performance (Mafini & Dlodlo, 2014).

The author is of opinion that many known motivational factors can be categorised as either extrinsic or intrinsic factors, but there are some that overlap. If, for example, an employee is

motivated through receiving a compliment or a promotion from his superior, it will be regarded as extrinsic motivation. But if this action prompts a positive feeling of competence or recognition of the employee's achievement, it can also be considered as intrinsic motivation.

### 2.2.2 Maslow's hierarchy of needs

Abraham Maslow developed a well-known need theory in 1943, arguing that human beings have several needs which can be categorised in a hierarchy based on importance. The most basic needs, forming the foundation of the hierarchy, are physiological needs (Figure 2.1). This include food, sex and air. In an organisational context this would be the employee's basic salary. The second building block of the hierarchy are security needs, including shelter, clothing and freedom from worry and anxiety. In a workplace an example of security needs would be a pension plan. Next in the hierarchy is belongingness needs which are primarily social, for example love, affection and acceptance by peers and fellow employees. Esteem needs are the fourth level and it includes a positive self-image and also respect from others, for example the job title that an employee holds. The fifth and top level is Self-Actualisation Needs, involving a person realising his full potential and achieving challenging goals. They can only be achieved in the workplace if an employee has a stimulating job. (Maslow, 1943, in Griffin, 2009).

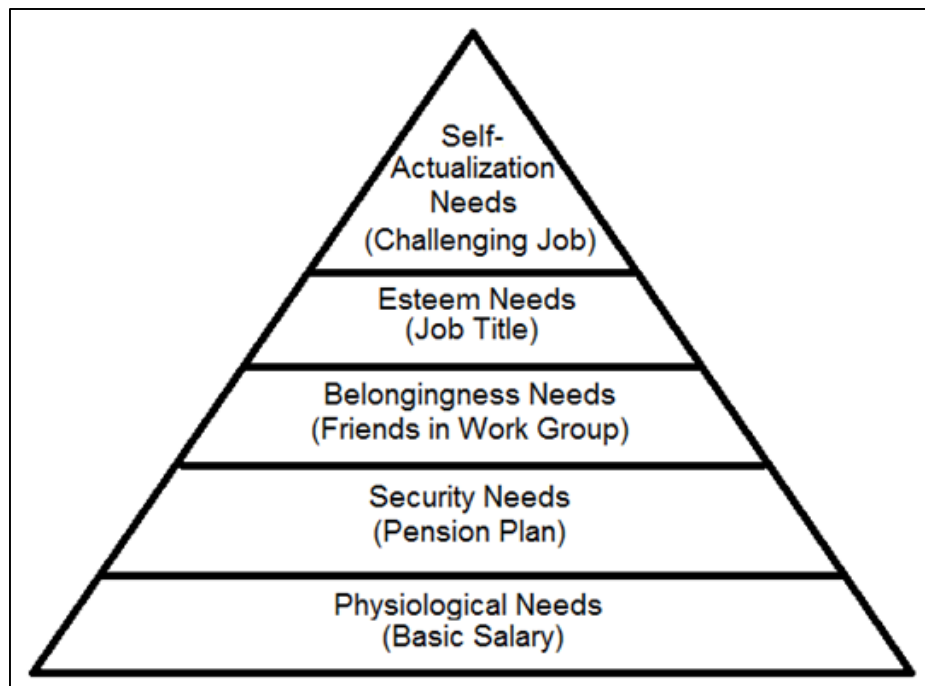


Figure 2.1 Maslow's hierarchy of needs, containing organisational examples in brackets. Adapted from Griffin (2009).

Maslow supposed that each level of needs must be satisfied before the next level can become important to the individual. If, for example a person receives an adequate salary to maintain his living standard and does not desire to improve it, he might be motivated by a higher level in the hierarchy like satisfying his self-esteem. But if he should suddenly lose his job and struggles to find a new one, his expectations would lower and he might focus primarily on finding any job regardless of the title. (Griffin, 2009)

### **2.2.3 Herzberg's Dual Structure Theory**

The dual structure theory, first developed by Frederick Herzberg in 1959, is accepted by only a few researchers, but nevertheless well-known by many practicing managers. The theory originated from Herzberg interviewing 200 accountants and engineers in Pittsburgh, asking them about times when they felt particularly motivated by their jobs, and other times when they felt especially dissatisfied and unmotivated. After analysing the results of this experiment, Herzberg found that job satisfaction and dissatisfaction are not two different ends of the same yardstick, but are in fact associated by two different kinds of feelings about work (Herzberg *et al.*, 1965, cited in Stello, 2011). For example, someone who identified his low salary as a source of dissatisfaction at work, might not feel that a higher salary will provide satisfaction or motivation. Instead, people might associate entirely different sources with being satisfied or motivated, like recognition or achievement. This means that one set of factors does not influence movement back and forth along a single continuum measuring job satisfaction, but rather different factors measured with two different dimensions (see Figure 2.2). Herzberg thus saw motivation as a dual-structured phenomenon. (Stello, 2011)

As another example, an employee might feel that he is working in an unpleasant environment when the office air-conditioning system does not work. He might be cold in the winter and hot in the summer, which leaves him miserable and dissatisfied. However, in solving this problem, he would not necessarily experience job satisfaction. He would most likely take the air conditioning system for granted and simply not be dissatisfied with his work, as opposed to being satisfied. (Gaspar *et al.*, 2006)

Herzberg's dual structured theory thus proposed that employees might be either satisfied or not satisfied and at the same time, dissatisfied and not dissatisfied. (Stello, 2011)

Herzberg's theory divides motivation and job satisfaction into two groups, namely motivation factors and hygiene factors. Hygiene factors form part of the work environment and is typically associated with negative feelings, whereas motivation factors involve characteristics

of the work environment which promote employee growth and development. (Gaspar *et al.*, 2006)

Herzberg found that the motivation factors such as achievement and recognition are primary causes of satisfaction and motivation. It appears as if these factors could cause satisfaction and motivation when present in a job situation, but if absent, they resulted in feelings of no satisfaction rather than dissatisfaction. These factors are intrinsic to the work itself and include recognition and achievement. Other factors, named Hygiene factors, were identified as causing dissatisfaction and a lack of motivation. These are extrinsic to the work itself and include remuneration, job security, working conditions and supervisors. If these factors were above standard however, employees would simply not be dissatisfied. (House & Wigdor, 1967)

In order to utilise the dual-structure theory in the workplace, Herzberg recommended that a manager should first attempt to eliminate situations that cause dissatisfaction by addressing hygiene factors. This could be done by giving employees a raise and improving job security. When a state of no dissatisfaction is reached, the manager should aim at improving motivation and satisfaction through recognition, increased responsibility, advancement and growth. (Baylor, 2010)

Herzberg went further with his research and wrote a manual for managers implementing his theory. He developed a technique called “job enrichment” which is a structure for developing employee tasks through the use of motivational factors. (Baylor, 2010)

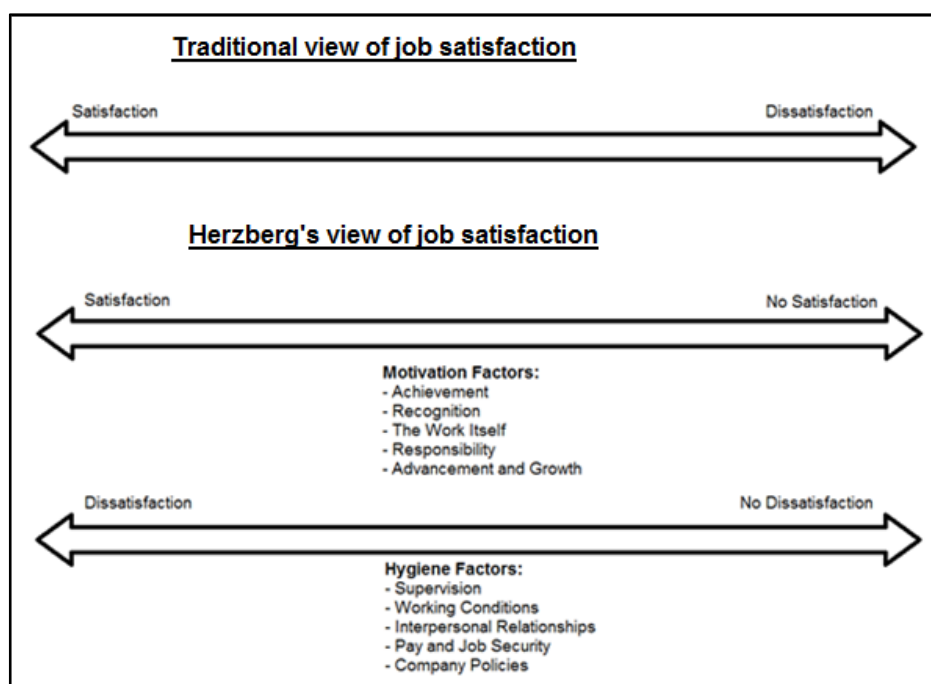


Figure 2.2 A visual representation of Herzberg's dual structure theory on motivation. (Adapted from Griffin, 2009)

As part of his job enrichment model, Herzberg (1986) described seven principles for creating a motivating workplace for employees. He called it vertical enrichment, which included limiting controls, whole work projects, job empowerment, increased responsibility, direct communications, increasingly challenging work, and special tasks to establish expertise. He distinguished it from the ill-advised horizontal job loading techniques such as job rotation, ever increasing production expectations and adding pointless tasks. This indicated that the responsibilities of managers extend beyond the establishment of wages, hours, and other terms and conditions of employment (Baylor, 2010).

## **2.2.4 Acquired Needs Theory**

The acquired needs theory is popular amongst many researchers on the topic of employee motivation (Solomon, 1980; Ankli & Palliam, 2012). This theory was developed by McClelland (1961) and states that individuals acquire three types of needs, based on their life experiences. These are the need for achievement, the need for affiliation and the need for power. All individuals possess a combination of these three needs (Carpenter *et al.*, 2010).

### *The need for Achievement*

The need for achievement relates to an individual's desire to accomplish a goal or task more effectively than he did in the past. Employees with an increased need for achievement tend to set themselves difficult goals and often make risky decisions in the attempt of reaching their objectives. (Chapman, 2009)

Another characteristic of employees with a strong need for achievement, is that they demand immediate, specific feedback on their performance. They often end up in a sales position and are scarce in the research and development sectors. They become extremely involved in their work, struggling to take their mind elsewhere and they would also not easily trust someone else to help them. (Hartzell, 2015)

Although high-need achievers are usually successful in their jobs, they often do not end up in management positions. This might be that the traits of the need for achievement often conflict the requirements for high-level management positions.(Griffin, 2011)

### *The need for Affiliation*

People having a high need for affiliation are very concerned about others' feelings. They long for human companionship and are likely to act and feel as others want them to. They often end up in positions where they engage with lots of people, such as sales or teaching. (Bordens & Horowitz, 2013)

Gallup (2004) found that people who have at least one good companion at work are more likely to be positively engaged with their work and thus show higher levels of job satisfaction.

### *The need for Power*

The desire to control one's environment is known as the need for power. In the workplace, this includes having control over financials, material, information and human resources. The need for power varies greatly among different individuals, with some employees avoiding power as much as they possibly can, while others will do anything to fulfil this desire. (Griffin, 2009)

According to Griffin (2009), there are three conditions to be met for people with a high need for power to be successful managers. First, they must seek power in order to improve their organisation, rather than for their own benefit. Second, they must have a low need for affiliation because fulfilling their need for power may separate them from their friends in the workplace. Lastly, they need to be able to control themselves effectively when their power threatens to interfere with effective organisational and interpersonal relationships. (Pinder, 1998)

## **2.2.5 ERG Theory**

In 1972, Clayton Alderfer developed the well-known ERG theory for needs-based motivation. The E, R and G refer to three basic need categories, namely Existence needs, Relatedness needs and Growth needs. Similar to the basis of Maslow's hierarchy, existence needs are those critical to survival. Relatedness needs, like Maslow's belongingness and esteem, refer to relationships with others and growth needs are parallel to Maslow's needs for self-esteem and self-actualisation. (Griffin, 2009)

The ERG theory differs from Maslow's hierarchy in that it suggests that a person can be motivated by more than one need simultaneously, for example through relatedness and growth needs at the same time. Another difference between the two theories is that the ERG

theory includes a satisfaction-regression as well as a frustration-regression -component. The satisfaction-regression component means that a person progresses to the next level of needs after satisfying the preceding level, which is similar to what Maslow suggested (French *et al.*, 2011). The frustration-regression component assumes that once a person is frustrated in attempting to satisfy a need, he will eventually move on to satisfy the next level of needs, which is in conflict to Maslow's assumptions. (Griffin, 2009)

As a practical example of the ERG theory, suppose an employee has fulfilled his basic needs of relatedness at work, meaning once he has made enough friends, he would proceed to the next level of needs which is growth. He might try and train himself to be acquainted in new skills and advance in his career. But should there be organisational constraints limiting his career growth, the ERG theory suggests that he will eventually get frustrated at failing to satisfy that need, and his growth needs will once again become dominant. As a result, he will put renewed interest into making friends and developing social relationships. (Griffin, 2009)

## **2.2.6 Affect Theory**

In ground-breaking research on the topic of job satisfaction, Locke (1969) questioned the existing theories at the time by forming a contrasting theory which was based on the relationships between satisfaction, dissatisfaction, value, emotion and appraisal. Locke strongly criticised the research available at that time (1969), stating that the lack of progress in the field of job satisfaction is due to "the implicit conception of causality accepted by most psychologists". He called this a "policy of correlation without explanation". Locke proceeded in studying the concept of job satisfaction from the basis of Rand's (1943) theory of emotions.

He proved that the level of satisfaction is dependent on the difference between what an employee has in his job and what he wants in a job. Different to earlier theories who viewed a job as a single notion, Locke went further to study the satisfaction and dissatisfaction of employees with regards to different facets of their jobs. He found that some workers value certain facets of their jobs more than other, which leads to increased satisfaction levels when expectations towards the job facet are met and greater dissatisfaction when their expectations are not met. (Locke, 1976)

Locke thus succeeded in placing different job factors influencing satisfaction into context, stating that individuals weigh facets differently when assessing job satisfaction. This means

that the presence of pay, for instance, might lead to high satisfaction of an employee who regard it as important and high dissatisfaction if it were absent, but might have a minimal impact on satisfaction levels of someone who does not regard it as essential. (Locke, 1976)

### 2.2.7 The Core Self-evaluations Model

In 1997, Locke again played a role in formulating a significant model which added to the construct of job satisfaction. Locke was a co-author in a study by Judge *et al.* (1997), titled “The dispositional causes of job satisfaction: A core evaluations approach”. This model proposed that an individual’s job satisfaction inclination forms part of his/her personality, as each person possesses a certain degree of *core self-evaluations*. These core self-evaluations affect how a person views his/her own abilities and control, and consists of four personality dimensions, namely locus of control, neuroticism, generalised self-efficacy and self-esteem. Each of the four dimensions are briefly discussed below.

- **Locus of control.** An individual’s locus of control refers to his idea as to what the causes are of the events that shape his life. It relates to whether he believes his life experiences are under his control or if it is subjective to events outside of his control. An individual’s locus of control can either be classified as internal or external. People with an internal locus of control believe they have control over their life events, and typically experience higher levels of job satisfaction, while those with an external locus of control are prone to reduced life satisfaction, job satisfaction and job performance.
- **Neuroticism.** People with a high degree of neuroticism tend to experience an enhanced degree of negative emotions, such as depression, anger and anxiety. Apart from experiencing these emotions, they also usually react negatively towards it. The terms neuroticism and emotional stability are often regarded as the same. Several authors showed that employees with low levels of neuroticism experience higher levels of job satisfaction (Rothman & Coetzer, 2002; Hlatywayo *et al.*, 2013; Sterns *et al.*, 2011)
- **Generalised self-efficacy.** This refers to someone’s ability to handle a variety of situations in general. Bandura (1994:71) defines self-efficacy as “the people’s belief about their abilities to generate the required levels of performance that exercise an impact over the events that affect their lives”. If a person faces a particular challenging obstacle in his life, his level of self-efficacy will determine his behaviours in overcoming the obstacle. People with elevated levels of self-efficacy tend to be more motivated, behave more positively and think more creatively (Oyewumi *et al.*,

2012). Self-efficacy consists of three dimensions, namely magnitude, strength and generality (Bandura, 1977). It has been shown that self-efficacy is strongly related to employee job satisfaction (Judge & Bono, 2001; Oyewumi *et al.*, 2012)

- **Self-esteem.** Wells and Marwell (1976) views self-esteem as a self-evaluation that individuals make and maintain with regards to themselves. It reflects an attitude of approval or disapproval that a person has with himself. Pierce *et al.* (1989) stated that high self-esteem of employees is directly related to positive work attitudes, which includes jobs satisfaction.

## 2.2.8 The Job characteristics model

Hackman and Oldham introduced the Job characteristics model in 1974. This model supposes that a job consists of several characteristics which influence job outcomes such as satisfaction. It identifies five job characteristics, viz. skill variety, task identity, task significance, autonomy and feedback. These five characteristics have been found to impact three critical psychological states, namely knowledge of actual results, experienced meaningfulness and experienced responsibility for outcomes, which in their turn influence performance, job satisfaction, absenteeism and work motivation.

The five job characteristics can be described as follows:

- **Skills variety.** Skills variety has been defined as the “degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the employee”. It refers to designing a job that minimises boredom, which in turn increases job satisfaction. (Hackman & Oldham, 1976:161, as cited in Biggs, 2003)
- **Task identity.** According to Coelho and Augusto (2010), task identity encourages a feeling to employees that their work is meaningful and worthwhile, which in turn acts as a motivator.
- **Task significance.** Hackman and Oldham (1976) defined task significance as the degree to which a job has a substantial impact on the lives or work of other people. This is not limited to co-workers as such, but includes people in the employee’s external environment.
- **Autonomy.** This refers to the extent to which a job provides freedom, independence and discretion to an employee in terms of scheduling of the work and the choice of determining in which way to handle work-related tasks.

- **Feedback.** Hackman and Oldham (1976) described feedback as the information an employee receives with regards to his performance. Coelho and Augusto (2010) amplified the importance of feedback from management to their employees, stating that it leads to a better understanding of their work nature.

## 2.2.9 Critical evaluation of theories and models

### **Maslow's hierarchy of needs**

Maslow's methodology has been described as the most limiting factor of his needs theory, since his concept of self-actualisation was formulated from biographical analysis. He studied the biographies and writings of 18 different highly influential people (such as Abraham Lincoln, Albert Einstein and Eleanor Roosevelt) from which he formed the concept, instead of considering humanity in general (McLeod, 2014). The method of biographical analysis is also suspect with regards to validity, as it is almost entirely based on opinion.

The assumption from Maslow that lower needs are to be satisfied before one can satisfy higher needs have been proved to be inaccurate by amongst others Alderfer (1972) through his well-known ERG-theory.

From the author's personal views, Maslow provided the building blocks for motivation as we understand the concept today. As described in Chapter 2.2.1, motivation and job satisfaction are closely related, but several authors question the validity of Maslow's theory on job satisfaction (Worlu & Chidozie, 2012). On the other hand, Herzberg's improvement of Maslow's theory have been validated.

### **Herzberg's dual structure theory**

Herzberg's dual structure theory has been tested by various authors since its inception in 1960. In general, authors using the same technique in their study that Herzberg used, namely content analysis of recalled incidents, tend to yield supporting results. However, the results from studies that used different methods of measuring satisfaction and dissatisfaction often produced contrasting outcomes. The theory therefore seems to be dependent on the method used, questioning its validity. (Pinder, 1998; Dunette *et al.*, 1967; Adler, 1986)

Further critique of the theory entails that the sample Herzberg used was not representative of the general working population; that the theory does not account for individual differences; that it does not define the relationship between motivation and satisfaction; and that it does not acknowledge cultural differences (Malik & Naeem, 2013; House & Wigdor, 1967).

Hackman and Oldham (1980) agreed with the critics, suggesting that Herzberg's original formulation of the theory may have been a methodological artefact, from which the assumption can be made that all employees will act identically to changes in hygiene/motivating factors and thus not accounting for individual differences.

### **Core-self evaluations model**

The theory of Core-self evaluations adds a significant contribution to personality and industrial/organisational psychology (Bono & Judge, 2002). Although the theory is highly acclaimed, there are published concerns about the development and measurement of the traits. Some of the most significant concerns are summarised below:

- It has been found that the locus of control trait lacks reliability when compared to the other three dimensions (Judge *et al.*, 1998).
- The accuracy of core self-evaluation measurement is questionable due to the influence of socially desirable responding (Bono & Judge, 2002)
- The relationships between core self-evaluations, job satisfaction and job performance may be culturally dependant, as studies from different countries revealed contrasting results (Judge *et al.*, 1998; Kwan *et al.*, 1997).
- Bono and Judge (2002) strongly believe that the four dimensions of core self-evaluations are interrelated and cannot be treated as separate measurements.

### **ERG theory**

Although the ERG theory can be regarded as an attempt to improve on Maslow's hierarchy of needs, questions were raised with regards to its validity. Rauschenberger and Schmitt (1990) indicated that it is nearly an impossible task to measure the factors which motivate a person to act in a certain way. This means that it is very difficult to prove the theory of Alderfer in the workplace. Moreover, the freedom for employees to move amongst the needs can lead to frustration-regression where needs are not being properly met, often resulting in a negative move to a lower need with less productivity. (Redmond, 2010)

### **Acquired needs theory**

Criticism of the acquired needs theory include that it serves little purpose in the public sector. Jurkiewics *et al.* (1998) stated that public sector employees are more motivated by job security and stability, teamwork and worthwhile service to society, and less so by monetary rewards, prestige and the desire for challenge and independence. It is thus clear that employees working for the government are only high in affiliation and low in achievement and power. Since the present study involves engineers working for a parastatal, this criticism should be noted.

## The Job characteristics model

The evidence relating to weaknesses in the Job characteristics model seem to be circumstantial rather than conclusive. In his assessment of the model, Tahun (1997) found that the relationship between job characteristics and outcomes is valid for psychological outcomes, but not for objective outcomes such as absenteeism and productivity. He also concluded that the scoring system associated with the model (the Motivating Potential Score) is questionable.

## 2.3 Intrinsic and extrinsic job satisfaction influences

Job satisfaction is generally recognised as a multifaceted construct that includes employee feelings about a variety of both intrinsic and extrinsic job elements (Howard & Frink, 1996). This study recognises that job satisfaction is indeed influenced by a range of different factors, and since the measurement of these factors forms part of the objectives of the present study, the author deemed it necessary to include a discussion detailing the most prominent job facets. Herzberg *et al.* (1959) identified supervision, working conditions, co-workers, pay, policies and procedures, status, personal life and job security as being *extrinsic* factors influencing job satisfaction. He claimed that although these factors did not serve as satisfiers, it would lead to dissatisfaction should they be absent, which inclines a neutral state. On the other side of the model are the intrinsic factors such as achievement, recognition, the work itself, responsibility, advancement, and growth. By contrast, their absence was not necessarily dissatisfying. However, when present, they could be a motivational force. (Ramlall, 2004). Herzberg's job satisfaction factors are shown in Table 2.1. (Herzberg, 1976 as cited in Aziri, 2011)

Table 2.1 Hygiene factors and motivators by Herzberg (1976)

Hygiene factors	Motivators
Company Policies	Achievement
Supervision	Recognition
Interpersonal Relations	Work Itself
Work Conditions	Responsibility
Salary	Advancement
Status	Growth
Job Security	

The sections that follow discuss these factors by Herzberg, and also includes other factors applicable to the present study.

## 2.3.1 Extrinsic factors

### Remuneration

An employee's satisfaction with his pay refers to his attitude towards the perceived difference between his actual pay and his expected pay. Expected pay implies both the value of his perceived inputs and outputs of the job, as well as the salary of other employees in similar positions with similar qualifications. Satisfaction towards remuneration is also dependant on the personal financial situation of an employee, the economy and the amount of pay he has received previously. (Balzer *et al.*, 2000)

Ting (1997) stated that remuneration has a significant impact on the job satisfaction that civil servants experience. Equitable rewards such as compensation systems which are seen as fair and in line with employee expectations, also have a major effect on job satisfaction (Robbins, 2003). Low benefits and salaries were identified by Kebriael and Motoghedhi (2009) as factors which contributed to public services employees being dissatisfied with their jobs. The results of a study in the Maldives proved that a significant positive correlation exists between job satisfaction and remuneration for civil servants (Naeemllham *et al.*, 2011). This proves that since income fulfils an individual's universal needs, it acts as a positive stimulus for job satisfaction. It is an antecedent to job satisfaction and subjective well-being at lower levels (Mafini & Dlodlo, 2014).

Contrastingly, Furnham (2006) showed that compensation does not increase productivity or have any long term motivational effects. From the author's personal view, this is evident in cases where employees get satisfaction from regular pay incentives, but then become hugely upset when these incentives are suddenly withdrawn.

### Promotion (Advancement)

Satisfaction with promotions implies a worker's satisfaction with a company's promotion policy and the administration of such a policy. It also includes the frequency, desirability and importance of promotions. (Balzer *et al.*, 2000)

Ellickson and Logsdon (2002) found that satisfaction with promotion is significantly related to the job satisfaction of municipal workers. This observation is supported by Ting (1997) who states that the motive to realise one's full potential (self-actualisation) in the workplace can only be achieved through the creation of promotional opportunities for workers. Employees

are more motivated to work harder in achieving organisational goals when they are under the impression that they have a high chance for promotion to elevated job designations or higher ranks, while those who are dissatisfied with the promotion opportunities in their organisation display higher intentions to leave (Dessler, 2008; Shields & Ward, 2001). A number of other authors confirm this, suggesting that there is a definite positive relationship between job satisfaction and promotional opportunities for employees. (McCausland *et al.*, 2000; Saari & Judge, 2004). Kosteas (2010) also showed that employees who believe they have an opportunity for possible promotion in the next two years, experience higher levels of job satisfaction. Many other authors found similar results (Malik *et al.*, 2012 Muhammad & Akhter, 2010, Stein & Craft, 2007).

Promotions contain elements of many other job satisfaction factors, including increased power, increased responsibilities, and achievement. Herzberg (1959) narrowed the concept of promotion to “an employee’s attitude following a change in position or status”. So from his viewpoint, it encompasses the emotion *after* an employee has received the promotion. Hemmasi (2006) found that promotion in such a context leads to improved job satisfaction levels and a lower degree of intent to quit, whereas Kosteas (2010:1) stated that “past promotions have a lingering, but fading impact on job satisfaction”.

If the difference between promotion and growth are not carefully considered, it may appear as if historic studies on the relationship between promotion and job satisfaction delivered contrasting results. The concept of advancement is related to the act of being promoted, while “growth” refers to the possibility of promotion in the future. (Herzberg, 1959)

### **Company policies**

In his research, Herzberg (1959) identified employee perceptions about administrative practices, benefits and communication as elements of company policies. These are regarded as hygiene factors, meaning that they do not lead to satisfaction per se, but their absence lead to dissatisfaction. Anuna (1997) showed that organisational commitment is encouraged by policies, procedures and practices that focuses on employee well-being. On the other hand, it was proven that job satisfaction and commitment decline when leadership is inconsistent with regards to company policy (Blevins, 2005; Witt & Kacmar, 2000).

### **Supervisors’ roles**

The job facet of supervision refers to an employee’s direct supervisor or manager. It has been found that the more considerate and employee-centred supervisors are towards their

employees, the greater the levels of worker satisfaction. This includes taking personal interest in employees, praising good performance, providing feedback and listening to workers' opinions. It has also been shown that the greater a supervisor's perceived competence on the job, the greater the levels of satisfaction with supervision. (Balzer *et al.*, 2000)

A supervisor's ability to provide technical guidance and emotional support on work-related tasks is a vital part of the job satisfaction that employees experience (Robbins, 2003). Supervisors thus have a direct influence on the moral of their employees (Ramsey, 1997). Ladebo (2008) proved that one can predict the job satisfaction of employees by studying the supervision that they receive, with supervision directly influencing job performance and organisational citizenship behaviours. Mafini and Dlodlo (2014) confirmed this by suggesting a positive relationship between supervision and job satisfaction at a South African government entity. Ellickson and Logsdon (2002) also studied employees working in the public sector, and confirmed the strong relationship between supervision and job satisfaction.

Herzberg (1966) associated supervision with an employee's general attitude about his/her relationship with an immediate supervisor. He stated that "A positive supervisor-employee relationship influences the quality of two-way communication, trust, and performance while increasing job satisfaction, organisational commitment, and lower intentions to quit".

In terms of the sample group associated with this study, the term "supervisor" was assumed to be used interchangeably with the term "manager".

### **Job security**

Job security is closely related to opportunities for advancement and level of responsibility (Ito & Brotheridge, 2007). Herzberg (1959) classified job security as a hygiene factor. It is thus not essential for employee motivation, but will lead to dissatisfaction if absent.. Blanchflower and Oswald (2000) proved that job satisfaction is related to job security in several countries, including the UK and the USA. Cooper (2006) stated that job security also influences organisational commitment.

### **Quality of work Life**

Kroonmee *et al.* (2010) described the quality of work life as one of the largest influences of the total work environment, which comprises of features such as the management style that is employed, the acceptability and quality of amenities within the organisation, administrative features such as policies and procedures and the general contextual factors within the organisation. The perception that employees have about quality of work life plays a major role in their decisions to enter, stay with or leave an organisation (Bagtasos, 2011). In 2004, Behar *et al.* came to a conclusion that a definite relationship exists between the quality of work life and job satisfaction factors such as physical working environment, psychological support at work and time available for sport and personal lifestyle activities. Lee *et al.* (2007) confirmed this when they proved that quality of work life has a positive impact on comradeship, organisational commitment and overall job satisfaction. From a South African perspective, Mafini and Dlodlo (2014) proved that public servants value quality of work life as an important variable in overall job satisfaction.

### **Co-workers**

Balzer *et al.*, (2000) stated that an employee's degree of satisfaction with co-workers is determined by their work-related interaction and mutual liking or admiration of fellow employees.

Harris *et al.*, (2007) amplified the quality of interpersonal relationships between co-workers at low and higher levels of an organisation, as it is associated with job satisfaction and influences good feelings and positive support. The relationship is influenced by coaching, helping with assignments and giving instruction. Shirey (2004) showed that good interrelationships between co-workers reduces employees' intentions to quit, which is one of the indirect outcomes that this study aims to provide for Eskom. Bateman (2009) also found strong correlations between support from co-workers and job satisfaction.

The relationships between co-workers also encompasses teamwork. Various authors have found positive correlations between teamwork and job satisfaction levels (Viswesvaran *et al.*, 1998; Mafini & Dlodlo, 2014). Buitendach and De Witte (2005) studied the job satisfaction levels of South African maintenance workers in the public sector and found that social synergy is a vital factor in the job satisfaction that they have. As such, an increase in departmental members' unity and interaction yielded enhanced job satisfaction amongst public service employees. Acuna *et al.* (2009) found similar results, concluding that teamwork is positively associated with job enlargement elements, allowing the possibility of learning new skills. This in turn, is related to increased job satisfaction levels.

## 2.3.2 Intrinsic factors

### Achievement

The intrinsic job satisfaction factor of achievement refers to an employee's feelings of accomplishment. This feeling is typically induced when a worker successfully finishes a task or solves a problem (Knight & Westbrook, 1999). Long working hours, a willingness to take on challenging tasks and a high desire to accomplish goals are characteristics of an employee who demonstrates a strong orientation for achievement (Scot *et al.*, 1997). Section 2.2.4 of this dissertation elaborates further on an employee's need for achievement from the view of McClelland (1961).

### Recognition

Recognition is defined as "the acknowledgement, appreciation, or approval of the positive accomplishments or behaviours of an individual or team" (Caligiuri *et al.*, 2010). Tessema *et al.* (2013) studied the relationship between job satisfaction and amongst others, the factor of recognition, for a range of different age groups, countries, income groups and cultures. The results show that the relationship between recognition and job satisfaction is universally significant. Nelson (2002) stated that recognition is too often underutilised by leaders, even though the concept has been well-established.

### Responsibility

Herzberg (1959) defined the intrinsic job satisfaction of responsibility as the control over one's work or that of others. The authority over a job directly influences an employee's job satisfaction and intent to quit. It is essential for managers to give employees ownership of their work and minimise control while retaining accountability (Dole & Schroeder, 2001).

### Growth

The intrinsic job satisfaction factor of growth can easily be confused with advancement. Herzberg (1959) eradicates this uncertainty by explaining that advancement pertains to actual change, while growth concerns the potential for advancement in the future. In an article titled "One more time: How do you motivate employees?", Herzberg explained that managers tend to motivate their employees by using fear of, for example, being disciplined. This approach, which exploits the human need to elude misfortune, is wrong and should be avoided. Managers should rather focus their attention on fulfilling their employees' needs for

experiencing psychological growth. The stimuli for such growth is referred to as the *job content*. On the other hand, the stimuli for inducing behaviour that attempts in avoiding misfortune, is referred to the *job environment*. (Herzberg, 2009)

### **The work itself**

Literature identified several attributes of the work itself to be influential to job satisfaction. This includes allowing an employee to increase his knowledge, creating opportunities for creativity and task variety, and changes in responsibility, autonomy, job enrichment, amount of work and job complexity. By taking this into account, satisfaction with the work itself involves work that can be accomplished and is intrinsically challenging. (Balzer *et al.*, 2000)

The work itself was defined by Herzberg (1959) as containing personal employee attitudes about the job requirements and tasks assigned to them, including complexity and scope of work. Smerek and Peterson (2007) reviewed Herzberg's theory (Section 2.2.3) and found that the work itself-factor showed the strongest relationship to job satisfaction than any of the other hygiene or motivator factors.

This translates to the way a job is designed, which is an important consideration for managers (Baylor, 2010).

### **Job design**

The intrinsic factor of job design indirectly includes the factors of recognition, advancement, ability utilisation, activity, independence, variety and social service. It can, however, also be defined as a concept in itself, consisting of a number of dimensions that organises these factors. (Balzer *et al.*, 2000)

Kreitner *et al.* (1999) defined two approaches to designing a job for increased satisfaction, viz. job rotation and job enrichment. Job rotation involves moving employees from one specialised job to another. The benefits of this approach have however not been thoroughly researched. Job enrichment involves stimulating work, recognition of achievement by employers, increased responsibility and advancement into a job. It is based on Herzberg's Motivation-Hygiene model (1968).

Kumar (2012) showed that the promotion of job enlargement eliminates routine work and increases job satisfaction.

## 2.4 Previous research on job satisfaction in a South African context

A systematic and comprehensive search was made in prominent industrial organisational psychology journals for studies on the topic of job satisfaction within the South African context. The results delivered from this search were analysed and those articles most relevant to this study are summarised below.

Mafini (2014) identified working conditions, ability utilisation, teamwork, creativity and autonomy as factors which influence the job satisfaction levels of South African public sector employees. He found that teamwork emerged as the highest contributor to his sample's job satisfaction and stated that managers in public organisations should pay particular interest to each of the five identified factors. He emphasised that improving on these factors could lead to improved performance of employees. The results from Mafini (2014) was specifically taken note of since Eskom also forms part of South Africa's public sector.

In another article by Mafini in the public sector, this time as co-author of Mafini and Dlodlo (2014), they found strong positive relationships between job satisfaction and remuneration, quality of work life, supervision and teamwork. A weak positive association was also identified between promotion and job satisfaction. As part of their data collection procedure, they administered the JDI, which was also administered during the current study. They concluded that overall job satisfaction of South African public sectors employees are related to but not limited to extrinsic factors.

In terms of the research instruments used during the current study, Buitendach and Rothmann (2009) validated the Minnesota Satisfaction Questionnaire (MSQ) in South Africa. As part of the validation experiment, they proved significant differences between the job satisfaction levels of different age and race groups of South Africans. Bowen *et al.* (2009) found contrasting results in their study among South African quantity surveyors, concluding that age did not play a significant role in job satisfaction levels.

Mayer *et al.* (2015) studied the job satisfaction of managers in the South African public sectors and found that it is positively related to organisational commitment. Since poor organisational commitment might be related to the loss of critical skills in Eskom (as per definition), the results of the study are applicable. It was also shown that dissatisfaction with power, pay and promotion were positively associated with overall job dissatisfaction.

### **2.4.1 Job satisfaction in Eskom**

Heymans (2002) studied amongst other factors the job satisfaction levels of maintenance workers at Eskom power stations. He found that the workers experienced above average levels of job satisfaction, although they were unsure of their job security. These results were in contrast with literature (Ashford *et al.*, 1989).

The findings of Heymans (2002) that Eskom workers had high levels of job satisfaction might be contributed to the time in which the study was done. In 2002, Eskom was still flourishing as one of the top five global power producers in terms of performance, and regarded as one of the best companies in South Africa to work for (Brevis, 2005). As portrayed in Chapter 1 of this dissertation, Eskom's problems only started in 2008.

Khoza and Kanjere (2014) studied employees within the group customer services division at Eskom. They found that the importance of benefits and job design are important contributors to job satisfaction. Lack of recognition, imbalance of workload and remuneration added to elements of dissatisfaction. Another factor, namely the chance to be of good help to others, were identified as an element of job satisfaction. This is a unique factor which was not yet explicitly identified in literature as influential to job satisfaction, although there might be some correlation to the commonly cited factor of co-workers.

#### **Engineers at Eskom**

When EIT's start working for Eskom, they are employed in the T10 salary band. After about 6 months, they do their first "star grading", which is the presentation that they deliver to the Engineering Managers to measure their progress. Once they pass their 6 month star grading, they are promoted to the T11 band, which is a 5% increase in basic salary. They receive another 5% increase after their 12 month star grading, staying in the T11 band. When passing their 18 month star grading, they are no longer an EIT. Should there be a position available, they are then employed as junior engineers in the P13 salary band. They usually stay in the P13 band for a number of years, until promoted to line manager or senior engineer, should they acquire the necessary qualifications or register professionally. Typical engineers on P13 level are between the ages of 25 and 35.

Junior engineers at Eskom can earn up to 25% more than their counterparts in the private sector. The cost-to-company package of P13 engineers include a generous housing allowance, subsidised medical aid, subsidised lunches, a significant car allowance, cellphone allowance, standby allowance, subsidised pension and life insurance packages and above average leave days. They also have access to long and short term loans at low

interest rates through Eskom Finance Company. An Eskom employee will also never be forced to work overtime without being compensated, which is rarely the case in the private sector.

On the other hand, junior engineers do not always have a choice of employment location. Many engineers end up at power stations far away from their home town and loved ones. Others are forced to stay and work in Johannesburg even though they despise the city. Some engineers, especially females, are not comfortable with working on power stations, since the plant is generally a dirty and sometimes harsh environment. It is well-known amongst employees that these factors contribute to job dissatisfaction of some engineers.

From the author's personal viewpoint, job satisfaction at Eskom is entirely defined by extrinsic factors. No reliable literature could be found on the intrinsic factors of job satisfaction at Eskom, and the present study aims to partly fill this gap.

## **2.5 Chapter Two: Conclusion and Critique**

The literature review was designed in order to give the reader an in-depth understanding of the variables that comprise this study. It was aimed at defining job satisfaction from a theoretical basis by reviewing the fundamental theories that construct the concept. It did so by providing a comprehensive summary of the development of job satisfaction, from the fundamentals laid by Maslow (1943), to the more recent discoveries by Herzberg (1959), McClelland (1961), Locke (1969), Hackman and Oldham (1976) and Judge *et al.* (1997).

From the author's personal viewpoint, inconsistencies exist in the theory involving the relationship between job satisfaction and performance, as was briefly discussed in Section 2.1. Although this relationship does not form part of the objectives of the present study, it does indirectly relate to the problems Eskom management face with their young engineers.

Section 2.2, containing the theories as stated above, is important in the context of addressing one of the objectives of this study, namely presenting "a comprehensive literature study on the construct of job satisfaction". The academic reader will find this section captivating, whereas a manager might need the knowledge to understand the origin of job satisfaction. The reader should particularly take note of Section 2.2.9, where the theories were critically evaluated both from a theoretical point of view, as well as from the author's personal view. Their applicability to the present study is also discussed.

Section 2.3 contains a discussion on the application of Herzberg's theory in the work place. The hygiene and motivator factors as discussed in his research (1959) are summarised, as well as other job factors applicable to this study, for instance those measured by the Job Descriptive Index (JDI). This section also elaborates further on the relationship between job satisfaction and motivation, distinguishing between extrinsic and intrinsic factors. These factors should be carefully noted by the reader as they were measured during the investigation.

Section 2.4 contains previous research conclusions on the study of job satisfaction, specifically in similar contexts as the present study. It includes detail about former studies on the present target group, namely young engineers at Eskom power stations. It summarises earlier research of job satisfaction on the group and also contains elements of extrinsic job satisfaction factors as observed by the author himself. It is vital for the reader to take note of this section as it is an elaboration of the research problem, and thus compliments the conclusions made in Chapter 5.

## **Chapter 3. Empirical Investigation**

This chapter elaborates on the methodology that was used to measure variables identified in Chapter 2 in order to reach the objectives of this study. It starts by defining the target population, namely “young engineers at Eskom power stations”, after which it is explained how the author went about in collecting the data. A description of the research instruments follows, elaborating on the development and reasons as to why the MSQ and JDI were administered to identify intrinsic, extrinsic and overall job satisfaction. Sections 3.3 and 3.4 describe the validation attempts and statistical data interpretation, respectively, while 3.5 elaborates on the qualitative methods used to analyse an open ended question. The chapter ends with a critical analysis of the investigation method, both from the author’s personal viewpoint and from published literature.

### **3.1 Target Population**

The aim of this research was to provide knowledge of lacking intrinsic and extrinsic factors leading to Eskom’s young engineers experiencing little or no satisfaction in doing their jobs. It was decided to restrict the sample group to young engineers working for Eskom, as the author is also part of this group and the observations that led to the problem statement were primarily applicable to them.

By taking this into account, the sample group was limited through implementation of the following control categories:

- Graduated engineers. The sample group was limited to those individuals holding at least a B.Eng. degree, as this was regarded to be a critical skill to Eskom.
- Permanently employed by Eskom. This study was only applicable to engineers working for Eskom on a full-time basis, and not any other company, whether affiliated with Eskom or not. Engineers working as temporary employees were also discarded from the results as they were not included in the author’s observations that lead to the problem statement.
- Employed on the P-13 salary band. Graduated engineers completing their training programme in Eskom are usually offered a position within the organisation on the P-13 salary band. They are then given the responsibilities of a junior engineer.
- Under the age of 35. In many cases, graduated P-13 engineers get promoted or explore new career opportunities within 10 years of being appointed. But there are

also some exceptions where the engineer will spend most of his career in the same position. These experienced engineers appeared to be in a different mind-set than the younger generation, and they were therefore excluded from the sample group.

The categories as described above were controlled through a demographics section of the questionnaire and treated as a gatekeeper. If an individual did not meet these minimum criteria, his response was rejected entirely when analysing the results.

## **3.2 Research Design**

The empirical investigation was designed in order to meet the objectives of this study. In essence, this includes measuring the intrinsic, extrinsic and general job satisfaction of the sample as well as identifying which job facets play a role in their satisfaction levels. As discussed in Section 2.3, literature has identified many factors that play a role in job satisfaction. But practicality of the investigative procedure restricted the scope of the present study to the investigation of only a limited number of factors influencing job satisfaction.

A quantitative research approach was utilised for this study through the distribution of a questionnaire to young engineers working at Eskom power stations. The questionnaire is provided as Appendix A.

The survey was administered online and made available as an open website where only a web link was needed for access. The link was sent by email to approximately 170 young engineers working on different power stations who then shared it with their colleagues. It is impossible to calculate a response rate as it is not known how many people had shared the link with their colleagues. The control categories, as listed in Section 3.1, were communicated in the email to prevent people who do not qualify to complete the survey and waste their time. In order to ensure that employees outside the specified sample group do not contaminate the results, section 1 of the survey captured their employment information and demographics. This was later used to filter out those who do not qualify. Another characteristic of the survey was that it captured each computer's IP address and prevented the survey from being completed twice from the same computer. It was assumed that this feature would not have prevented any person from the specified sample group to complete the survey, as all engineers working for Eskom have their own personal computer.

The survey consisted of four parts. Part one of the survey captured the demographics of the respondent. Part two consisted of the Minnesota Satisfaction Questionnaire (MSQ) short form, while part three contained the Job Descriptive Index (JDI). Part four comprised of an open-ended question which asked the respondent to elaborate on his job satisfaction. The research instruments are further elaborated upon in Section 3.3.

In order to prevent social desirability being a threat to validity, the questionnaire was answered anonymously. This aimed to prevent the respondents from answering the questions in a manner that they think is expected from them (Creswell *et al.*, 2007).

### 3.3 Research Instruments

From the information portrayed in Section 2.2, it is clear that the concept of job satisfaction has been well defined from the basis of numerous theories by several authors. A wide variety of measurement instruments have been published through the development of the job satisfaction concept (Cook *et al.*, 1981; Day & Bedeian 1991; Ross & Reskin 1992; Scarpello & Vandenberg 1992; Spector & Wimalasiri 1986). Two questionnaires extinguished themselves from the others in terms of popularity. The Job Descriptive Index by Smith *et al.* (1969) and the Minnesota Satisfaction Questionnaire by Weiss *et al.* (1967) have been used and validated more than any other job satisfaction measurements available (Viviers, 2004).

Balzer *et al.* (2000) stated that it is important for the choice of research instrument to reflect the theoretical and practical goals of the investigator. The researcher thus found it useful to discuss certain job satisfaction measurement techniques and provide reasoning behind the chosen instruments. In their research towards the development of the JDI, Balzer *et al.* (2000) stated why there was a need for the JDI in its current format:

- **Interviews.** Although interviews can provide valuable information if the questions are standardised and structured correctly, the procedure is very costly in terms of salaries for both the interviewer and interviewee. In addition, interviewers tend to interpret the interview answers differently, which leads to unreliable results. (Balzer *et al.*, 2000)
- **Records.** The examination of company records of absence, complaints, accidents, lateness, transfers and production evaluations can provide valuable insights into the job satisfaction levels of its employees. Such an exercise is however very time consuming and inferences have to be corrected through employee reports.

Moreover, many companies do not keep accurate records of these variables and/or have a poorly organised system. (Balzer et al., 2000)

- **Specially constructed questionnaires.** Each organisation is different and it might seem as if a specially constructed questionnaire would be able to measure aspects relevant to only specifically identified problems. But, as Balzer *et al.* (2000) states, developing good questionnaires is a very difficult task. Validating these questionnaires is a time consuming process which requires considerable expense and expertise. In addition to this, specially constructed questionnaires would not have been used in other organisations, meaning that there would not be a basis for comparing the results.

By taking the above into account, it was decided to utilise standardised questionnaires which have been validated over a wide range of different industries.

The MSQ short form and the JDI were used as research instruments. Both these instruments are internationally accepted and highly popular in job satisfaction research (Watson *et al.*, 1985; Viviers, 2004; Buitendach & Rothmann, 2009). Hancer and George (2004) and Buitendach and Rothmann (2009) confirmed the three factor structure of the MSQ short form in South Africa, measuring extrinsic, intrinsic and general job satisfaction. The JDI is designed to measure specific aspects of an employee's job, such as co-workers, work nature, remuneration, promotion opportunities, supervision as well as the job in general. It was decided to use both these instruments in order to validate the general job satisfaction subscale of the MSQ against the overall job satisfaction score of the JDI. Balzer *et al.* (2000) stated that the JDI can be administered with other instruments as long as the time it takes to complete the entire survey is less than one hour in order to maintain high levels of participation. The total time for completion of the MSQ short form together with the JDI was less than ten minutes.

An open ended question was included in the survey which asked the respondent to elaborate on his job satisfaction responses and suggest actions from his employer to improve on it. Apart from making recommendations towards Eskom based on the answers from this question, it was also used as verification of the respondent's job satisfaction levels by comparing it to the results from the JDI and MSQ. The question was worded as follows:

“Think about your job at general. Do you experience job satisfaction? What do you think contributes to this satisfaction / lack thereof? What, in your opinion, can be done by your managers to improve this?”

The complete questionnaires and the informed consent form can be viewed at <https://www.surveymonkey.com/s/eskom1>, as well as Appendix A.

The two sections that follow provide deeper insight into the research instruments administered during this study, discussing the development, description and normative data of the MSQ short form and the JDI.

### **3.3.1 Minnesota Satisfaction Questionnaire (MSQ)**

#### **MSQ development and nature**

The MSQ long form was originally developed together with the Work Adjustment Project, which formed part of a range of studies that aimed at developing diagnostic tools for assessing the work adjustment of applicants for vocational rehabilitation. Since satisfaction is a measurable indicator of work adjustment, the MSQ was developed and used extensively. In the years that followed, it became a widely used measure of job satisfaction. (Weiss *et al.*, 1967)

The MSQ long form consists of 100 questions, measuring 20 sub scales of job satisfaction. The MSQ short form is a condensed version of the long form, containing only 20 questions or one question for each of the subscales. The short form was developed after Weiss *et al.* (1969) identified a need for employers to assess the job satisfaction levels of their employees, but not have adequate time to administer the long form. The long form of the MSQ consists of five items per facet, while the short form contains only one. Factor analysis by various authors of the MSQ long and short forms proved that the subscales can be divided into three categories, which measure intrinsic job satisfaction, extrinsic job satisfaction and general job satisfaction, respectively (Buitendach & Rothmann, 2009). The questionnaire items from the MSQ short form are summarised in Table 3.1. The respondents are asked to think about each statement and rate the job satisfaction they receive with regards to the statement according to a five point Likert scale, ranging from a score of “1” which indicates “very dissatisfied” to “5” which indicates “very satisfied”. (Weiss *et al.*, 1967)

Buitendach and Rothman (2009) administered the MSQ short form to several selected industries in South Africa, measuring the relationship between extrinsic and intrinsic motivational factors to varying age groups, gender and race. The study found that job satisfaction levels are dependant on age and race, but not gender. This was consistent with results from Higgs *et al.* (2004). The study also showed construct equivalence and reliability

of the MSQ to both black and white employees in South Africa. Reasonable reliability coefficients have been reported, with an average test-retest value of  $r=0.83$  (Dawis *et al.*, 1974; Dunham *et al.*, 1977).

**Table 3.1 Items from the MSQ short form**

MSQ Questionnaire Item	MSQ Factor Description	Scale
1. Being able to keep busy all the time.	1. Activity	Intrinsic
2. The chance to work alone on the job.	2. Independence	Intrinsic
3. The chance to do different things from time to time.	3. Variety	Intrinsic
4. The chance to be "somebody" in the community.	4. Social Status	Intrinsic
5. The way my boss handles his/her workers.	5. Supervision--HumanRelations	Extrinsic
6. The competence of my supervisor in making decisions.	6. Supervision--Technical	Extrinsic
7. Being able to do things that don't go against my conscience.	7. Moral Values	Intrinsic
8. The way my job provides for steady employment.	8. Security	Intrinsic
9. The chance to do things for other people.	9. Social Service	Intrinsic
10. The chance to tell people what to do.	10. Authority	Intrinsic
11. The chance to do something that makes use of my abilities.	11. Ability Utilization	Intrinsic
12. The way company policies are put into practice.	12. Company Policies	Extrinsic
13. My pay and the amount of work I do.	13. Compensation	Extrinsic
14. The chances for advancement on this job.	14. Advancement	Extrinsic
15. The freedom to use my own judgment.	15. Responsibility	Intrinsic
16. The chance to try my own methods of doing the job.	16. Creativity	Intrinsic
17. The working conditions.	17. Working Conditions	General
18. The way my co-workers get along with each other.	18. Co-workers	General
19. The praise I get for doing a good job.	19. Recognition	Extrinsic
20. The feeling of accomplishment I get from the job.	20. Achievement	Intrinsic

### MSQ scales description

Several authors confirmed (mostly through factor analysis) that the constructs of the MSQ consist of an intrinsic, extrinsic and general job satisfaction scale (Hancer & George, 2004; Buitendach & Rothmann, 2009; Hirschfeld, 2000, Weiss *et al.*, 1967). The questionnaire items are designed to measure specific factors which are linked with a corresponding scale, as shown in Table 3.1.

### MSQ Normative data

The developers of the MSQ short form (Weiss *et al.*, 1967) produced normative data to which the results from the questionnaire can be compared to. This is done by obtaining a percentile score from the appropriate tables of normative data for any applicable industry. In

the case of the present study, the author obtained the percentile score from the table developed for “Engineers”. The percentile score is an indication of the percentage of people in the norm group with scores equal to or lower than the individual’s raw score (i.e. what fraction of engineers will generally experience lower job satisfaction than the current sample). This is the most accurate and appropriate measurement of true satisfaction levels.

As a general rule, percentile scores of more than 75 or higher is ordinarily taken to represent a high degree of satisfaction, while percentiles of 25 or below would represent a low level of satisfaction. Scores of between 26 and 74 would indicate average satisfaction. (Weiss *et al.*, 1967)

Normative data was developed for assemblers, clerks, graduated engineers, janitors, machinists and salesmen. The sample group consisted of 4191 employees from the Minneapolis and St Paul city directories. (Weiss *et al.*, 1967)

The engineering group, which is applicable to the current study, consisted of 387 employees between the ages of 18 and 65. The sample included professional engineers, chemical engineers, electrical engineers, industrial engineers and mechanical engineers. Further, detailed demographic data of the sample group and normative data development process can be found in Weiss *et al.* (1967).

### **3.3.2 Job Descriptive Index (JDI)**

#### **JDI description and development**

Brown and Lent (2012) described the JDI as the most popular available measure of job satisfaction. Cook (1981) added to this by stating that the JDI may be the most carefully developed and validated job satisfaction scale as there were over 100 studies that used the instrument by 1981.

The JDI contains 72 items that assess satisfaction with five job facets, including work, pay, promotion, supervision and co-workers. It also includes a Job-In-General (JIG) subscale which measures overall job satisfaction. Both the JDI facets and JIG subscale contain short lists of phrases and adjectives that describe different aspects of the job or the job overall. Respondents are required to read these simple words (such as “boring”, “good”, “poor” and so forth) and evaluate whether the words describe the related job facets, by simply answering “Yes”, “No”, or “Cannot Decide”. A “Yes” response means that the adjective or phrase describes the job situation, “No” means that the adjective or phrase does *not*

describe the job situation, and “Cannot decide” means that the respondent cannot select whether the job situation is relevant to him or not. For analysis of the results, a “Yes” response would be scored as 3, a “No” response as 0 and a “Cannot decide” response as 1. Certain facets of the questionnaire require reverse scoring as the facet description in itself portrays a negative feeling (Kinicki *et al.*, 2002).

Early revisions of the JDI required respondents to indicate how they *feel* about their job, which tended to elicit defensive responses. Later, the questionnaire design improved by asking participants to *describe* their job, by simply answering “no”, “yes” or “cannot decide”. People seemed more willing to write “No” to the question “Is your present job ... satisfying” than to mark “Disagree” to the statement “I am satisfied with my work”. The focus of the JDI was therefore shifted to the characteristics of a job rather than a person’s emotions about his job (Balzer *et al.*, 2000). Although the JDI scoring system is regarded as unconventional, Hanisch (1992) showed that similar results is achieved when using a Likert scale. She concluded that the “overall scoring procedure is still justified today” (Hanisch, 1992:382)

The validity of the JDI has been well established (Brief, 1998), and Balzer *et al.* (1997) found internal consistency reliabilities of between 0.86 to 0.92. The alpha values for each facet were reported as follows: satisfaction with work: 0.90; satisfaction with supervision: 0.91; satisfaction with pay: 0.86; satisfaction with co-workers: 0.91; satisfaction with promotional opportunities: 0.87; and satisfaction with their job in general: 0.92.

Westaway *et al.* (1996) conducted a study among South African nurses to measure their job satisfaction and self-esteem. The authors concluded that the Job Descriptive Index is a usefull measure of job satisfaction in the South African context.

Balzer *et al.* (2000) states that the JDI’s acceptability of the scales is proven by the sheer popularity of the instrument. The JDI is one of the most popular standardised measures of job satisfaction and has been used by hundreds of organisations (DeMeuse, 1985; Smith *et al.*, 1987; Zedeck, 1987). It has been called “the gold standard” of measuring job satisfaction (Landy & Shankster, 1994).

Criticism of the JDI includes that of Buffum and Konick (1982) who believe that it does not apply to all employee groups, and educated people might find the instrument wording to be “oversimplified”.

## **JDI job facet descriptions**

Satisfaction or dissatisfaction with certain aspects of jobs have been identified from already the earliest studies on the topic, with researchers identifying as little as two and as many as twenty factors. Smith *et al.* (1969) hypothesised five principle areas of satisfaction with the job, namely the work itself, promotions, supervision and co-workers. Research led by the Bowling Green State University and elsewhere continued to reconfirm and validate the robust nature of these five job facets. The JDI was later developed with specific reason to measure these five areas of job satisfaction. (Balzer *et al.*, 2000)

Ironson *et al.* (1989) later developed an additional scale for the JDI which measures an employee's job satisfaction in general. The Job in General (JIG) scale, as it is known, was developed to be administered along with the JDI and is a carefully constructed measure of overall job satisfaction. In the context of the present study, the JIG scale was administered as part of the JDI. The information from the JIG scale was later used to compare the general job satisfaction scale from the MSQ short form.

## **JDI Normative data**

In order to investigate the job satisfaction levels of a certain group of employees, one cannot simply make use of descriptive statistics to draw conclusions. This is because different employee groups react differently to certain aspects of their jobs (Balzer *et al.*, 2000). Gillespie *et al.* (2009) therefore developed normative data for the JDI for a wide range of different comparison groups, stratified by age, manager status, organisation type, job tenure and job level. These norms allow the investigator to determine how his survey responses compare with other results in terms of percentile terms (i.e., specifying the percentage of individuals who scored equal to or less than the national norm group on the scales). It was therefore important to capture background information (e.g. Job level, job tenure, age etc.) of all survey respondents in order to make use of the normative data.

For the results to be compared to normative data, the scores of each facet is totalled and the mean is used in comparisons. The analysis of the JDI data was made according to the recommendations of Brodke *et al.* (2009) and Balzer *et al.* (2000). Appendix A contains the entire JDI with each item.

### 3.3 Verification and Validation of results

Creswell *et al.* (2007) defines validity as the extent of an instrument to measure what it is supposed to measure, describing four types of validity namely face validity, content validity, construct validity and criterion validity. In human sciences, validity is a complex subject since the instruments need to measure intangible human emotions like anger, motivation or satisfaction.

Both research instruments administered during this study were independently validated by reputable authors in several countries, including South Africa (Kinicke *et al.*, 2002; Martins & Proenca, 2012; Hirschfield, 2000; Abubakar & Musa, 2015; Lopes *et al.*, 2015; Buitendach & Rothmann, 2009).

Since the JDI was developed in 1969, it has been validated in several industries and different contexts around the world. It is described as the most widely used measure of job satisfaction, applicable to a broad variety of demographic groups (Yeager, 1981). Some of the authors that conducted validation experiments of the JDI include Lopes *et al.* (2015), McIntyre *et al.* (2012), Lijde (2012), Mo *et al.* (2005), Kinicki *et al.* (2002), Futrell (1979), and Johnson *et al.* (1982).

Specifically to the South African context, Edwards (1986) extensively describes validation experiments of the JDI in his book titled "Translation and Validation of the Job Descriptive Index for Use in the Republic of South Africa".

Buitendach and Rothmann (2009) validated the MSQ short form in South Africa during a study titled "The validation of the Minnesota job satisfaction questionnaire in selected organisations in South Africa". The objectives of that study were to assess the equivalence of the MSQ and to investigate the manifestation of job satisfaction at selected organisations in South Africa, through administering the MSQ short form along with biographical information. The results confirmed that job satisfaction in South Africa comprises of extrinsic and intrinsic factors. It also indicated that "the MSQ is a reliable instrument to assess the extrinsic and intrinsic job satisfaction of employees at selected organisations in South Africa". The study recommended that "the MSQ with the two subscales of extrinsic and intrinsic job satisfaction be used to assess the levels of job satisfaction of employees" (Buitendach & Rothmann, 2009:6).

Since validation is an ongoing process requiring continuous re-evaluation as evidence accumulates (Anastasi, 1986; DeVellis, 1991), this study attempted to further validate the research instruments. Validation was attempted through the assessment of the different constructs of the MSQ short form subscales through exploratory factor analysis. Additionally, construct validity of the MSQ and JDI was determined through a method developed by Gillet and Schwab (1975). Nunnally and Bernstein (1994) stated that reliability of measurement is necessary for construct validity. In order to satisfy this statement, internal reliability was determined through the assessment of the Cronbach alpha coefficients prior to the validation attempts.

Cronbach's alpha values were also used to evaluate the degree of cohesiveness amongst scale items, serving as another indicator of convergent validity (Eys *et al.*, 2007).

### **3.4 Statistical data interpretation**

Statistical analysis of the data was done by the author himself, using Microsoft Excel. Descriptive statistics including the mean, minimum, maximum and standard deviation were utilised to summarise meaningful patterns emerging from the data.

Pearson product moment correlations were calculated to determine the strength of the relationships between each factor within the two instruments. A coefficient of 0.30 or above was used as a benchmark to represent practically significant correlations (Hair *et al.*, 2010).

Cronbach's alpha coefficients were then calculated for each factor in the JDI and MSQ in order to determine internal consistency between each item and assess the reliability of each instrument.

The underlying factor structure of the MSQ short form was evaluated using confirmatory factor analysis. Although authors have confirmed the factor structures for both the MSQ (Hancer & George, 2004) and the JDI (Viviers, 2004) in the past, this study partly aimed at confirming that the factor structure of the MSQ was also valid for the present sample group. Factor analysis of the JDI was not attempted as it falls outside the scope of this study.

Factor analysis is a statistical technique to reduce large sets of data into smaller, more meaningful variables. This can be done to create indexes with variables that measure similar things. Exploratory factor analysis is done when one does not have a pre-defined idea of the structure or how many existing dimensions are in a set of variables (Friel, 2007). For the MSQ, this was not the case, since it has been extensively reported that it consists of three factors. On the other hand, confirmatory factor analysis is used to verify a specific hypothesis about the structure or number of underlying dimensions of a set of variables. Confirmatory factor analysis was done on the data from the MSQ in order to verify that the questionnaire indeed measured intrinsic, extrinsic and general job satisfaction. Although this was done several times in the past and comprehensively reported in literature (Weiss *et al.*, 1967), Schriesheim *et al.* (1993) challenged the conventional three factor breakdown, causing reason for further consideration (Hancer & George, 2004).

The factor analysis was conducted using Microsoft Excel as well as a software application developed by the Rovira University in Spain (Seva & Ferrando, 2015), by the name of *Factor*. The data was first organised in such a manner for the application to read it before the factor analysis methods were configured. The application then calculated all the specified variables before generating a file which was opened and further analysed in Microsoft Excel. It was specified that the MSQ consisted of 20 variables and three factors. A Pearson correlation matrix was developed from which Parallel Analysis with the Unweighted least squares–method was used to verify the number of factors.

### **3.5 Qualitative data analysis**

The following open-ended question was added to the survey:

*Think about your job at general. Do you experience job satisfaction? What do you think contributes to this satisfaction / lack thereof? What, in your opinion, can be done by your managers to improve this?*

This question was included in the survey for the following two reasons:

- To be used as a tool to verify the results from the quantitative survey
- To identify specific aspects of the sample's jobs which negatively influence their job satisfaction.

The results from this question were used to provide recommendations for practice which may be utilised by management to reinstate job satisfaction at Eskom power stations. It was analysed according to the qualitative analysis technique as described by Braun & Clarke

(2006). It involves the practice of identifying, analysing and reporting thematic patterns within the data according to the following six steps:

1. Become familiarised with the data. This is done in order to gain a good overview and better understanding of the data as a whole.
2. Create preliminary codes. This step involves deeply reading through the data while systematically coding the data.
3. Consider potential themes. This is done through categorising the data into specific themes and labelling them accordingly.
4. Revise the themes. The themes are revised in relation to the data and corresponding labels.
5. Name, revise and describe the themes. This step requires the researcher to elaborate and outline each theme.
6. Write-up in report-format. Each of the identified themes are described and integrated in such a manner as to answer the research question.

An inductive approach was used to link the data to the themes that were identified. As the qualitative data from the current research was only collected in support of the quantitative data, and not the other way round, the detailed results from each step was not be reported.

### **3.6 Chapter Three: Conclusions and Critique**

Chapter three contains information regarding the investigative procedure that was followed during this study, in order to deliver results that address the research objectives as stated in Chapter one. It starts by identifying the target population, before continuing to explain the reasoning behind the chosen research instruments. A lengthy discussion of the MSQ and JDI follows, describing the development, nature, history and norms of the research instruments. Their development and historic results puts the succeeding chapters into context. It is therefore important for the reader to study this section, as the information adds considerable value to the results. Section 3.3 provides information on the validity of the instruments, both in a South African and global context. It also elaborates on how the researcher planned to validate the results in the context of the present study. The statistical data interpretation techniques utilised during this study follows, describing how the researcher went about in analysing and presenting the data in a meaningful way. The chapter ends with an explanation of the qualitative data analysis technique that was used to

interpret the answers from the open-ended question, which asked the respondents to open their minds about their job satisfaction and opinions to improve on it.

The following paragraphs summarise the critique from the author's personal viewpoint on the contents of Chapter three.

The choice of target population for this study was based on an informal observation by the researcher which led to the research question. It resulted in stringent control categories being enforced on the questionnaire respondents, thus limiting the sample group to only a small fraction of Eskom employees.

The author is also of opinion that there is a major gap in theory relating to the measurement of job satisfaction. Although several instruments exist for this purpose, most of them are only validated in a limited number of different demographical, cultural and age groups. There is also very little information available of job satisfaction measures where validation attempts actually failed, which lead to several instruments generally accepted to be valid on a global scale (including the JDI and MSQ). The lack of literature pertaining to failed validation attempts puts the credibility of the instruments in jeopardy. The author was particularly concerned with validity of the JDI for the current sample group, as the wording of the questions seemed to be more applicable to unskilled workers than professionals. The instrument would, for instance, contain words such as "supervisor", where in the case of engineers, "manager" would have been more applicable.

Other prominent critique that may have had an effect on the results of this study, is summarised in Section 4.4. The reader should take note of this critique and read it with consideration of this review of Chapter three.

## **Chapter 4. Results and Discussion**

Chapter 4 of this dissertation contains the results from the investigative work, organised in three sub-sections. Section 4.1 describes the group of respondents that took part in the survey, whereas section 4.2 contains descriptive statistics and the results of various validation and verification attempts. Section 4.3 comprises of the job satisfaction results from the sample group, including comparisons of the results to other studies as well as published normative data. It also contains a discussion on the answers to the open-ended question in which participants were asked to give their thoughts towards their job satisfaction levels.

All of the statistical calculations and analysis were done by the author himself, using Microsoft Excel.

### **4.1 Participants' characteristics**

The research instruments were administered electronically by means of an online survey. A total of 81 individuals completed the survey, of which 48 responses were deemed valid in terms of the control categories and amount of questions answered. A response rate could not be calculated as the link to the open survey was shared among an unknown amount of people. On recommendation of Brodke *et al.* (2009) and Weiss & Dawis (1967), the results with more than two answers left blank on either one of the research instruments were rejected in total from the analysis. Three people answered only questions from the MSQ and left the JDI blank. Their answers were still used in the analysis of the results from the MSQ, but not for the JDI.

As indicated in Figure 4.1, the respondents were all between the ages of 21 and 35, with more than half of them being between 21 and 29 years old.

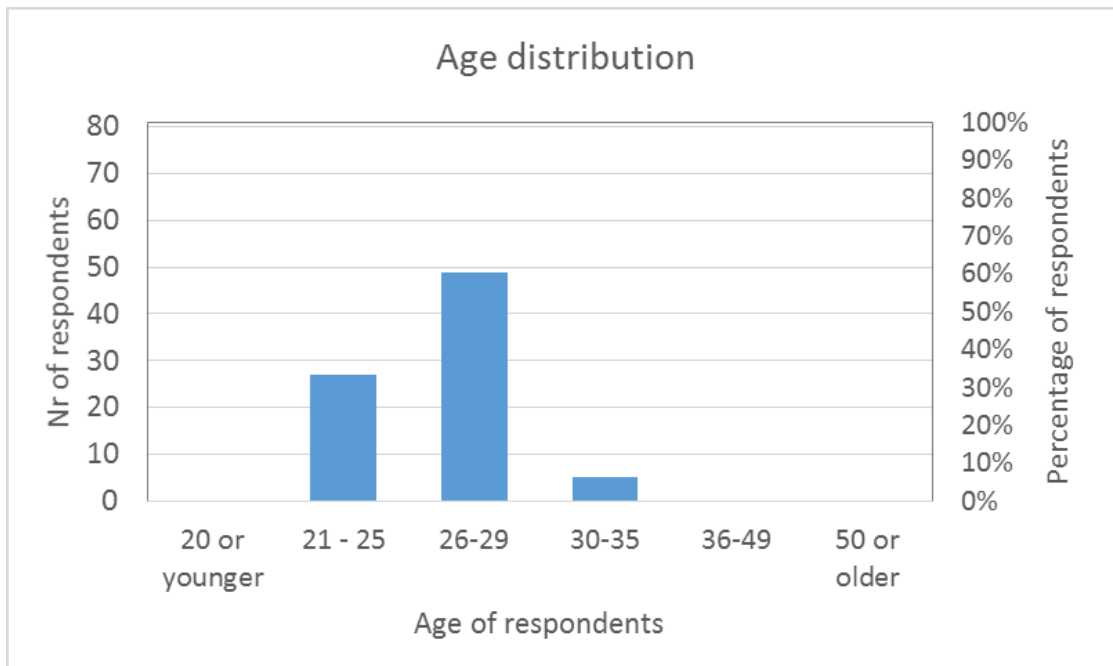


Figure 4.1 Age distribution of the participants to the online survey (n=81)

As figure 4.2 shows, the participants all worked for Eskom but within different divisions. Since working for Eskom was the only gatekeeper in this question, none of the responses were rejected based on division. The same applied to department, which was the question that followed, since all of the participants worked for Engineering and none for Operating, Maintenance or any other department. In the case of work station, however, 36% of the participants' answers were rejected from the results analysis because they did not work at a power station (Figure 4.3).

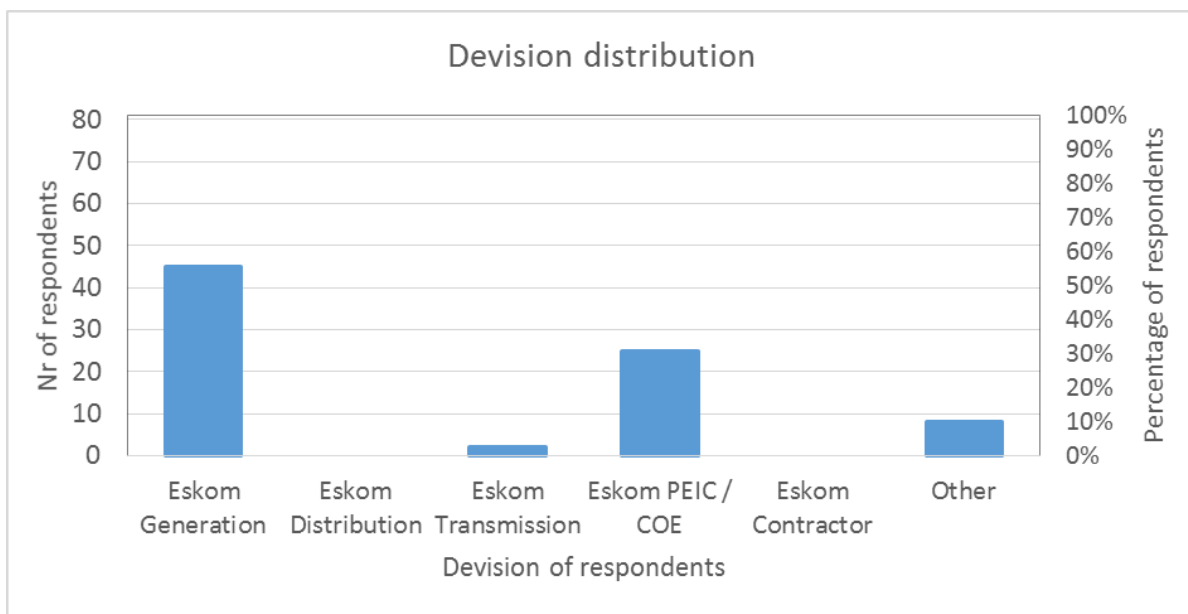


Figure 4.2 A distribution of the divisions in which the respondents are employed (n=81)

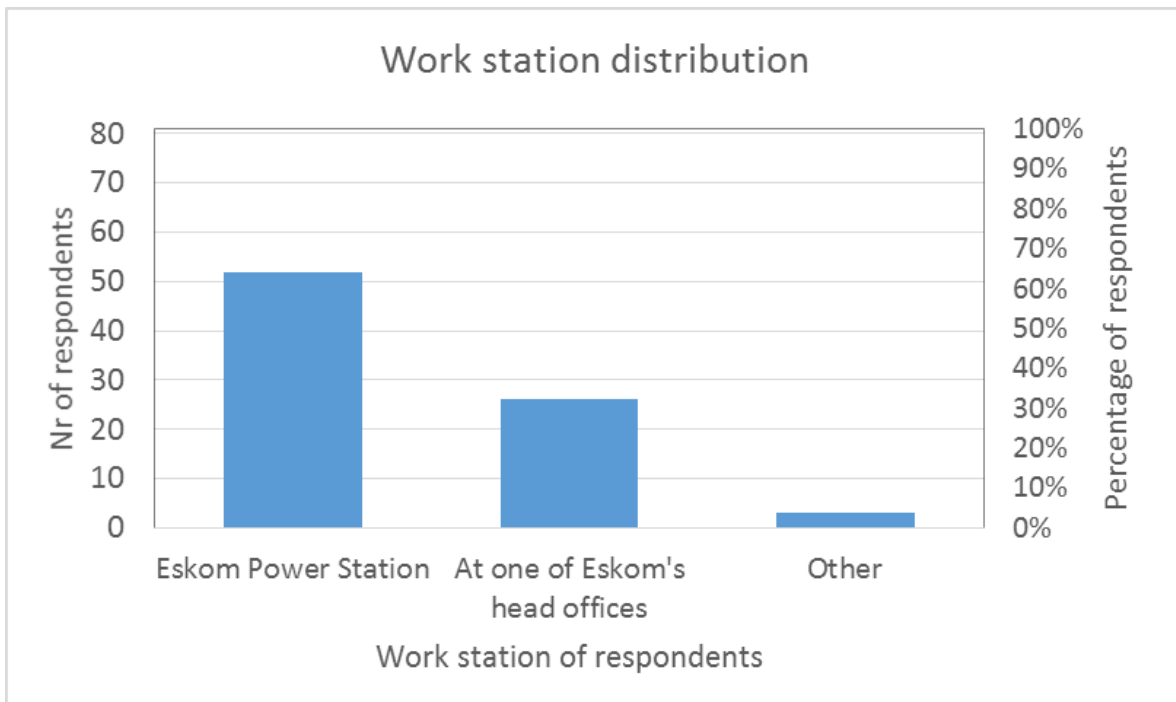


Figure 4.3 Work station distribution of the respondents (n=81)

87% of the respondents were employed on the P13 employment level. Those who were employed on different levels were excluded from the results analysis.

## 4.2 Statistical Analysis

### Descriptive Statistics

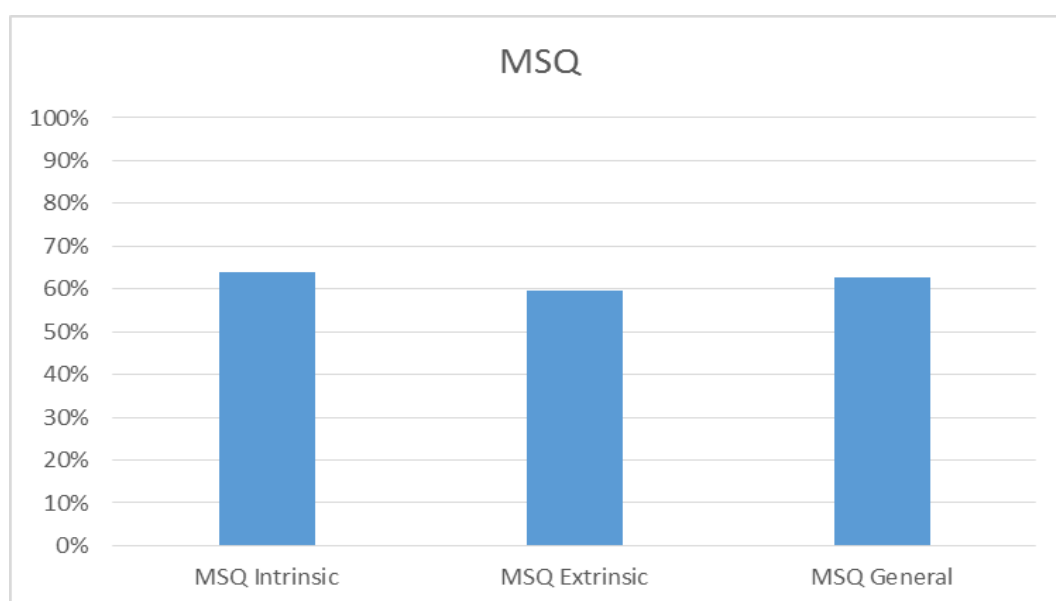
Both the JDI and the MSQ revealed relatively low levels of job satisfaction within the sample group.

The mean, standard deviation and variance were calculated for each question individually as well as for each sub scale of the MSQ and JDI. As depicted in Table 4.1, the results from the MSQ compared well to other studies in South Africa by Masvaure (2014), Strydon *et al.* (2012) and Buitendach and Rothmann (2009). The standard deviation of the present study did not differ substantially from the comparable studies, adding to reliability of the results. The lower mean scores of the current study can be interpreted as an early indication of low job satisfaction, but the fact that the median scores are higher than the mean indicates a negatively skewed data representation.

**Table 4.1 Descriptive statistics for the MSQ, including results from similar studies**

MSQ sub scales	This study					Masvaure, 2014		Strydom <i>et al</i> , 2012		Buitendach & Rothmann, 2009	
	n	Mean	Standard Deviation	Median	Variance	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
<b>Intrinsic job satisfaction</b>	48	39.2	8.1	41.0	65.1	46.5	9.8	44.1	9.6	43.4	8.8
<b>Extrinsic job satisfaction</b>	48	17.6	17.6	18.0	14.1	23.1	6.8	18.8	4.7	26.5	7.3
<b>General job satisfaction</b>	48	63.5	11.7	66.0	137.4	71.0	18.0	69.6	14.6	53.8	10.8

When calculating the mean score of each subscale of the MSQ and presenting it as a percentage of the maximum obtainable score, it results in Figure 4.4. From this figure, it would seem as if the three sub scales are relatively equivalent, with moderate satisfaction levels of 60-65%. But this score is meaningless on its own. As Weiss *et al.* (1976) proved, satisfaction scores vary substantially for different industries and it is crucial to compare the mean scores of each subscale to that of the industry group in which the sample falls (see comparison with normative data). By doing this (Section 4.3), it becomes clear that the MSQ shows a significant lack of job satisfaction among Eskom’s young engineers at power stations.



**Figure 4.4 Mean values from the MSQ sub scales (n=48)**

As opposed to the 48 respondents that successfully completed the MSQ, three respondents did not go on to complete the JDI.

The JDI breaks the data down into certain facets of the job, which gives the reader insights into specific aspects that influence the lack of job satisfaction. The mean and standard

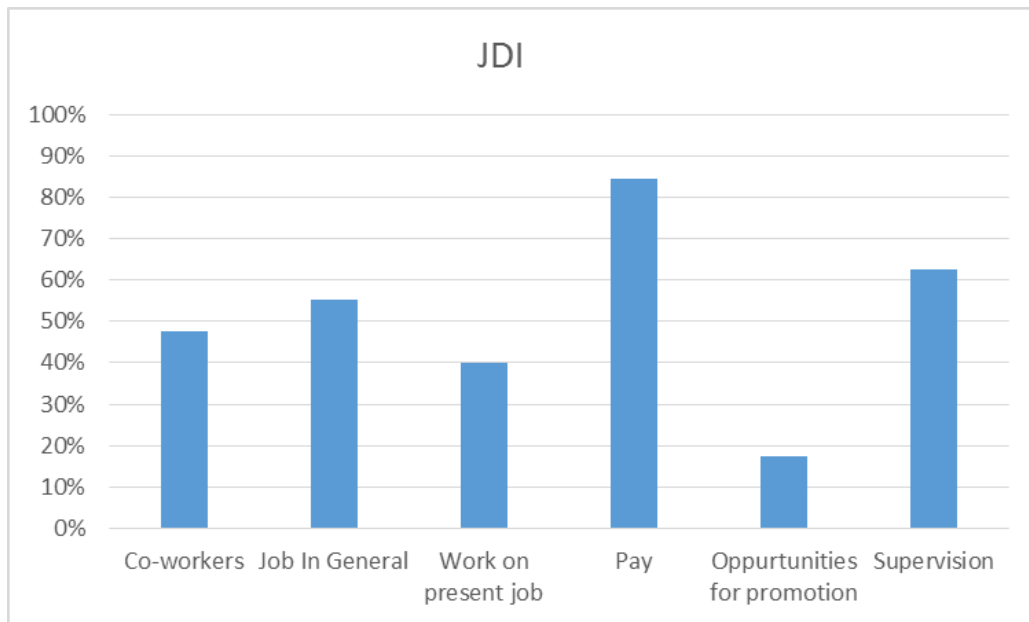
deviation of the JDI job facets compare well with values obtained from Nwosu (2006) and Louw *et al.* (2012), as shown in Table 4.2. As with the MSQ results, the differences in mean and median scores of each JDI job facet score show skewed distributions.

**Table 4.2 Descriptive statistics for the JDI, including results from similar studies**

JDI job facets	This study					Nwosu, 2006		Louw <i>et al.</i> , 2012		Cobb, 2004	
	n	Mean	Standard Deviation	Median	Variance	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
<b>People (Coworkers)</b>	45	25.8	16.9	22.0	285.1	36.6	10.3	41.8	9.4	37.9	11.8
<b>Job In General</b>	45	29.8	16.5	35.0	271.6	21.0	17.0	-	-	-	-
<b>Work</b>	45	23.1	16.8	17.0	283.0	35.3	9.4	38.9	8.0	32.7	11.0
<b>Salary (Pay)</b>	45	44.0	12.4	48.0	154.0	12.0	13.3	26.8	15.2	27.3	12.7
<b>Promotion</b>	45	6.5	7.0	6.0	48.4	12.0	13.4	19.2	15.7	-	-
<b>Supervision</b>	45	34.7	15.5	38.0	241.0	26.1	13.2	10.3	13.6	37.4	12.0

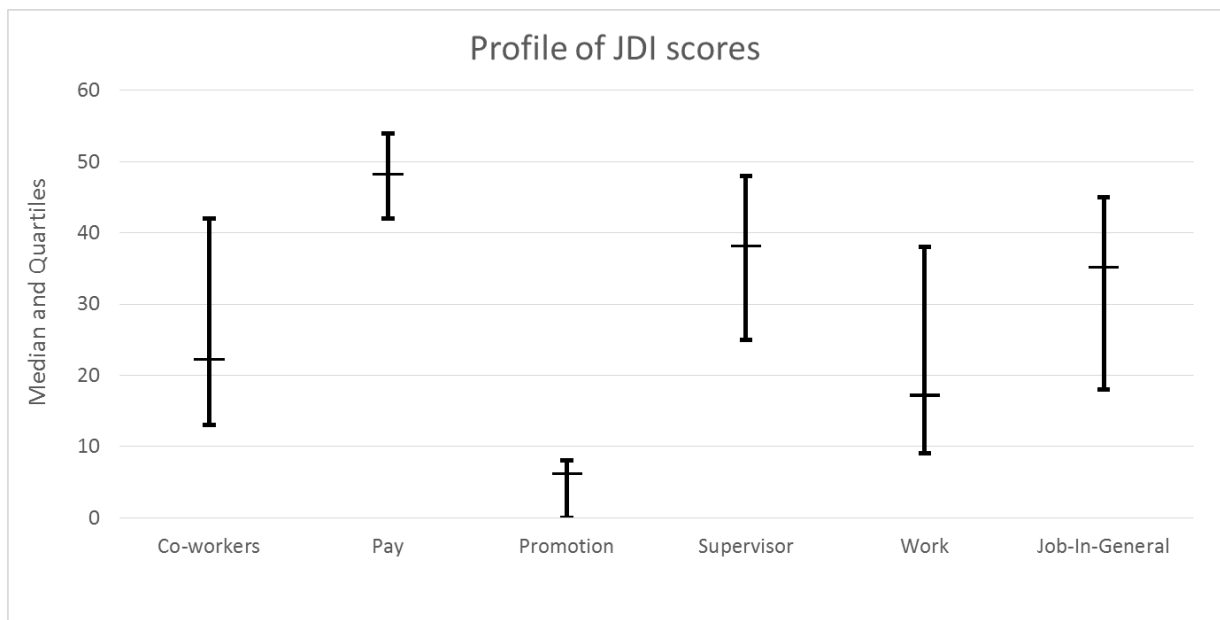
As an early indication to the level of job satisfaction of the sample group, the mean values can be compared to a rating scale developed by Pennington and Riley (1991). They stated that for the JDI job facets, mean scores of below 13.5 indicate high dissatisfaction, while scores between 13.6 and 27 designate moderate dissatisfaction. A mean value between 27 and 40.5 would show moderate satisfaction and values between 40.6 and 54 can be assessed as high satisfaction. If this is rating is used, one can conclude that the sample was highly dissatisfied with their opportunities for promotion, moderately dissatisfied with their co-workers and work on present job, moderately satisfied with their job in general and supervision and highly satisfied with their pay. These results were consistent with that of Louw *et al.* (2012) who also administered the JDI at a parastatal in South Africa. But since literature disagrees with drawing conclusions from descriptive statistics (Trochim, 2006), the author went further to analyse the results with published normative data in Section 4.3.

By comparing the mean of each job facet as a percentage of the maximum obtainable score (Figure 4.5), it becomes clear that the sample group might be satisfied with the remuneration they receive but might lack satisfaction for their opportunities for promotion. As with the MSQ, these scores have to be compared to normative data in order to get a true impression of job satisfaction levels.



**Figure 4.5 Mean values for each of the JDI sub scales**

The results were confirmed when studying the profile of the JDI. Figure 4.6 shows the median score for each job facet, as well as the 1<sup>st</sup> and 3<sup>rd</sup> quartiles (25<sup>th</sup> and 75<sup>th</sup> percentiles). It shows that there is minimal doubt about the satisfaction scores of pay and promotion, as the quartile spreads are marginal. The other job factors have larger spreads, indicating increased variances.



**Figure 4.6 Profile of each JDI job facet, showing the median score, and 25th and 75th percentiles**

The data was further analysed and presented in the succeeding sections in order to make accurate conclusions.

## Internal reliability

Internal reliability of both the MSQ and the JDI were determined through the calculation of the Cronbach alpha coefficient of each scale and sub-scale (Tavakol & Dennick, 2011). The values were then compared to other authors who conducted research in the same context.

Cronbach's alpha coefficient is a popular method of evaluating internal consistency of a questionnaire with its value ranging from 0 (no consistency) to 1 (no inconsistency). Creswell *et al.* (2007) stated that a Cronbach alpha coefficient of more than 0.9 indicates high reliability, while 0.8, 0.7 and 0.6 are generally accepted as moderate reliability, low reliability and unacceptable reliability, respectively.

The overall alpha coefficient for the MSQ was calculated to be 0.94. This compares well with Heyman (2004) who also used the questionnaire during a study at Eskom and reported a value of 0.89. Welman and Basson (1995) also reported a lower alpha coefficient of 0.92 for the MSQ short form in a South African context. The alpha coefficients for the MSQ sub scales range from 0.75 to 0.89, which supports the internal consistency of the scales (Luthans & Youssef, 2007). Nunnally and Bernstein recommended that results from the MSQ delivering a Cronbach's alpha value of less than 0.7 is unacceptable. Table 4.3 summarises the coefficient's comparison with other reported values in similar contexts as the current study.

**Table 4.3 Cronbach's alpha coefficient for the MSQ**

	<b>This study</b>	<b>Heyman, 2004</b>	<b>Buitendach &amp; Rothmann, 2009</b>	<b>Welman &amp; Basson, 1995</b>	<b>Buitendach &amp; Hlalele, 2005</b>	<b>Pretorius &amp; Roodt, 2004</b>
<b>Intrinsic job satisfaction</b>	0.88	-	0.79	-	0.88	-
<b>Extrinsic job satisfaction</b>	0.75	-	0.82	-	0.81	-
<b>General job satisfaction</b>	0.89	-	0.86	-	0.91	-
<b>Overall</b>	0.94	0.89	-	0.92	-	0.91

In terms of the JDI, the alpha coefficients were calculated for each facet of job satisfaction as well as for the Job In General sub scale. As seen in Table 4.4, the coefficients proved acceptable internal reliability when compared to reported values from Viviers (2002), Ramaya *et al.* (2001), Balzer *et al.* (2000) and Kinicki *et al.* (2002).

**Table 4.4 Cronbach's alpha coefficients for the JDI**

JDI Job Facet	This study	Viviers, 2002	Ramayah <i>et al</i> , 2001	Balzer <i>et al.</i> , 2000
People (Coworkers)	0.94	0.71	0.85	0.91
Job In General	0.94	-	-	0.92
Work	0.93	0.81	0.74	0.90
Salary (Pay)	0.99	0.55	0.81	0.86
Promotion	0.98	0.82	0.83	0.87
Supervision	0.92	0.72	0.91	0.91

### Confirmatory factor analysis

Confirmatory factor analysis was done for the MSQ in order to test the assumption of the instrument measuring three factors, namely intrinsic, extrinsic and general satisfaction. The results indicated support for the three factors, but some discrepancies were found to the items of the MSQ that measure these factors.

Theoretically, the maximum possible number of factors in a set of variables are equal to the number of items that measure the variables. Since the MSQ short form has 20 items, the aim of confirmatory factor analysis was to prove that the statistical relationships between the 20 items are of such nature that three distinct factors could be identified.

First, a correlation matrix between all items of the MSQ short form were developed. From this matrix, the Kayser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were conducted in order to confirm that the data is suitable for factor analysis. The KMO value was calculated to be 0.78, which indicates a fair appropriateness for factor analysis. The Bartlett's test of sphericity was also significant, meaning that the correlation matrix is not an identity matrix and is therefore suitable for factor analysis. (Friel, 2007)

Eigenvalues were calculated for each of the theoretical factors in the MSQ short form and those that returned values of more than one were deemed to be significant. As seen from the scree plot in Figure 4.2, it is clear that the instrument measured three distinctive factors. This is indicated by the drop in the curve between values of more than one and less than one. The three factors cumulatively accounted for 53% of the total variance, which is consistent with results from Hancer and George (2004).

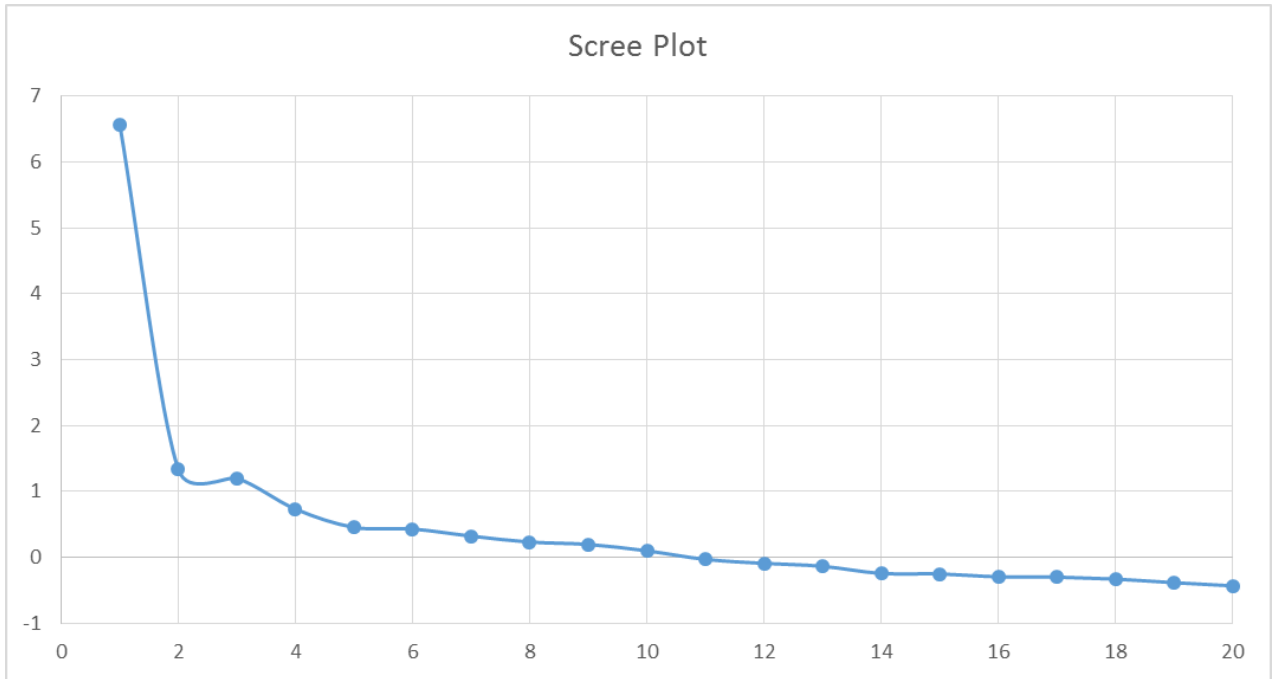


Figure 4.7 Scree plot from eigenvalues of each factor

Although the factor analysis confirmed three factors, the results from the rotated loading matrix contradict literature in that it indicates different items from the MSQ short form that measure these factors. Table 4.5 summarises the results, showing how it differs from literature (Hancer & George, 2004; Hirschfield, 2000; Weiss *et al.*, 1967).

**Table 4.5 Results from the rotated loading matrix, showing loadings to MSQ items for each factor**

		<b>Rotated Loading Matrix</b> (Loadings lower than absolute 0.003 omitted)		
<b>MSQ Scale Item</b>	<b>Original Scale</b>	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>
1. Activity	Intrinsic			0.538
2. Independence	Intrinsic			0.437
3. Variety	Intrinsic			0.664
4. Social Status	Extrinsic			0.827
5. Supervision--HumanRelations	Extrinsic	0.945		-0.354
6. Supervision--Technical	Extrinsic	0.719		
7. Moral Values	Intrinsic		0.343	0.303
8. Security	Extrinsic		0.787	
9. Social Service	Intrinsic			0.835
10. Authority	Intrinsic			0.455
11. Ability Utilization	Intrinsic			0.901
12. Company Policies	Extrinsic			0.54
13. Compensation	Extrinsic		0.739	-0.383
14. Advancement	Intrinsic			0.312
15. Responsibility	Intrinsic	0.832		
16. Creativity	Intrinsic	0.644		
17. Working Conditions	General	0.534		
18. Co-workers	General			
19. Recognition	Intrinsic	0.615		
20. Achievement	Intrinsic			0.573
Eigenvalue		6.57	1.33	1.2
% of total variance		35.45%	8.95%	8.42%
Cumulative variance		35.45%	44.40%	52.82%

From Table 4.5, it does not seem as if there is any significant relationship between the identified factors and those described in literature. Those cells in Table 4.5 that contain values indicate a representation of the factor in the column heading. Values less than absolute 0.3 have been omitted from the results as they hold no significance. This resulted in item 18 having no clear relations to any of the three factors. Cross-loadings (meaning a representation of more than one factor) appear in three of the items. Generally the highest absolute score would designate the associated factor, but cross loadings of less than 0.2 indicate double attribution (Asparouhov *et al.*, 2015). In the case of item 7 (moral values), it would mean that the item can either be a measurement of factor 2 or 3.

Since the present factor analysis might be suspect due to the small sample size (see Section 4.4), the results were rejected and the well-reported, accepted scales of intrinsic, extrinsic and general satisfaction were used in this study.

### **Validity of research instruments**

Buitendach and Rothmann (2009) confirmed the construct equivalence of the MSQ in selected organisations in a South African context, meaning that the mean scores of the sample could be compared in other analyses. In order to further assure validity of the research instruments, convergent validity of the scales of the MSQ and JDI were assessed through analysis of the Cronbach's alpha values. The high alpha values ( $\geq 0.80$ ) reflect a degree of cohesiveness amongst the scale items serving as an indicator of convergent validity (Maxwell & Moores, 2007)

Moreover, convergent and discriminant validity were assessed through the multitrait-multimethod matrix method described by Gillet and Schwab (1975). Gillet and Schwab proved that there are four scales which measure similar aspects of job satisfaction in the JDI and MSQ. These scales are:

- MSQ Pay (item 13) - JDI Pay
- MSQ Advancement (item 14) - JDI Promotion
- MSQ Boss (item 5) - JDI Supervision
- MSQ Co-workers (item 18) - JDI Co-workers

These four items can therefore be used through convergent and discriminant analysis to test the research instruments for construct validity. The method for assessing the convergent and discriminant effect was developed by Campbell and Fiske (1959). They suggested that by examining the Pearson Product Moment Correlation coefficients obtained from the results of two instruments measuring similar scales, one can make accurate conclusions with regards to convergent and discriminant validity. This is done through assessing the correlation coefficients as shown in Table 4.5 according to the following 3 criterion:

- Criterion 1. "Data in validity diagonal should be higher and significantly different from zero". This means that the correlation between similar scales from different instruments should be high. As indicated by the yellow cells in Table 4.6, this is valid for pay (0.397), promotion (0.561), supervision (0.496) and co-workers (0.31). A

value of more than 0.3 was deemed significant (Hair *et al.*, 2010), thus fulfilling the requirement for all four scales.

- Criterion 2. “The value of validity diagonal should be higher than the values in the columns and rows in the heterotrait-heteromethod triangle”. This means that, as an example, the correlation between MSQ pay and JDI pay should be higher than MSQ pay and any other variable from the other instrument (i.e. JDI promotion, JDI supervision or JDI co-workers). As indicated by comparing the yellow cells to the blue cells in Table 4.6, this requirement was again fulfilled for all four scales.
- Criterion 3. “The value of validity diagonal should be higher than the correlation values in the heterotrait-monomethod triangle”. For example, the correlation between MSQ pay and JDI pay should be higher than MSQ pay and any other variable from the same instrument (i.e. MSQ advancement, MSQ boss or MSQ co-workers). Again, this requirement was fulfilled for all four scales, as indicated by comparing the green cells in Table 4.6 to the yellow cells.

**Table 4.6 Correlation coefficients between different sub scales of the MSQ and JDI**

	MSQ Pay	MSQ Advancement	MSQ Boss	MSQ Co-workers	JDI Pay	JDI Promotion	JDI Supervision	JDI Co-workers
MSQ Pay	1	0.195	0.111	0.371	0.397	-0.005	0.002	0.096
MSQ Advancement	0.195	1	0.117	0.119	0.035	0.561	0.214	0.217
MSQ Boss	0.111	0.117	1	0.083	0.124	0.113	0.496	0.142
MSQ Co-workers	0.371	0.119	0.083	1	0.105	0.052	0.218	0.310
JDI Pay	0.397	0.035	0.124	0.105	1	-0.170	-0.005	-0.057
JDI Promotion	-0.005	0.561	0.113	0.052	-0.170	1	0.196	0.456
JDI Supervision	0.002	0.214	0.496	0.218	-0.005	0.196	1	0.431
JDI Co-workers	0.096	0.217	0.142	0.310	-0.057	0.456	0.431	1

Sulaiman *et al.* (2010) describes the criteria by Campbell and Fiske (1959) as “very stringent”. Satisfying this criterion was thus a clear indication of strong convergent and discriminant validity for both the JDI and the MSQ.

### Data verification

Data verification refers to a process which reviews a set of data for integrity, accuracy, correctness or validity (Berestizhevsky & Kolosova, 1993). It is generally done after the data has been migrated from the survey instruments to the analysing platform. In the context of the present study, the data was received on an online platform and then transferred by the researcher to a Microsoft Excel spreadsheet before processing.

As a method of verifying the data, an independent person with post-graduate experience in data analysis assessed the transfer of data from the online survey to Microsoft Excel, and confirmed that the cell references within the formulas were correct. It was acknowledged that no mistakes were made by the researcher during the transfer and analysis processes.

The results from the MSQ and JDI were also verified through the answers of the open ended question in which each respondent was asked to give his view about the level of job satisfaction that he experienced. The answers to this question were then compared against their answers in the JDI and MSQ after which the researcher applied his mind as to whether they correlate. The results from this exercise proved to be satisfactory. 95% of the answers from the open-ended question referred to the respondent experiencing little or no job satisfaction, which corresponds well to the results from the JDI and MSQ general satisfaction scales.

### **4.3 Job satisfaction results**

Several techniques were employed in order to determine the job satisfaction results from the MSQ and JDI. Firstly, the results from each research instrument were analysed descriptively by examining the mean, median, maximum, minimum and standard deviation of each subscale within the questionnaire (Section 4.2). This data was discussed and then used to further evaluate the job satisfaction of the sample group by comparing the results to that of norm groups with similar characteristics as the sample (Section 4.3). This would give the reader a true overall impression of the job satisfaction levels. In order to develop a deeper understanding of what contributed to the job satisfaction results, the researcher analysed and discussed certain individual questions from the survey.

#### **Normative data comparison**

Normative data have been developed for both the JDI and the MSQ with which the job satisfaction results can be compared to that of sample groups with similar characteristics (Weiss *et al*, 1967; Gillespie *et al.*, 2000). The mean values of the totalled scores from each sub scale in the questionnaires are used to obtain a percentile score from a norm table, which indicates the percentage of people in a similar industry who had a lower score. By doing this, one can obtain a good approximation of where the sample group as a whole falls in reference to global industry standards.

The MSQ research manual contains normative data of engineers for the extrinsic satisfaction, intrinsic satisfaction and general satisfaction subscales. Table 4.7 shows the normative data for engineers, with the highlighted cells indicating the results from this study.

**Table 4.7 Normative data for the MSQ for engineers**

MSQ Normative Data for Engineers			
Percentiles	Intrinsic	Extrinsic	General
1	16	8	29
5	36	13	59
10	40	14	64
15	42	16	68
20	44	17	70
25	45	18	72
30	46	19	73
35	47	20	75
40	48	20.5	77
45	48.5	21	78
50	49	21.5	79
55	50	22	80
60	51	22.5	81
65	51.5	23	82
70	52	23.5	83
75	53	24	85
80	54	24.5	86
85	54.5	25	88
90	55	26	90
95	58	27	93
99	60	29	98

As highlighted in Table 4.7, the results show an intrinsic satisfaction percentile of 5, an extrinsic satisfaction percentile of 20 and a general satisfaction percentile of 10. Weiss *et al.* (1967) stated that a percentile score of 75 or higher is usually taken to represent a high degree of satisfaction, while a percentile score of 25 or lower would represent a low level of satisfaction. Scores between 26 and 74 would indicate average satisfaction. If the results are to be assessed according to this criterion, it would mean that the sample group experiences low levels of intrinsic, extrinsic and general job satisfaction.

Gillespie *et al.* (2009) developed normative data for the JDI for each job facet, namely co-workers, pay, supervision, work and job-in-general. The data was structured in categories of industry type, age, education, tenure, profit or non-profit, managerial or non-managerial and government or private industry. Since the age of the sample group overlaps the different data sets of the norm tables, it was not used in the analysis. The profit or non-profit and tenure norm table were also not used as it is not relevant to the sample group of this study.

In terms of the remaining data, the results were compared to graduate schools norm tables in terms of education type, non-manager norm tables in terms of managerial type, professional and technical services in terms of industry type and government organisations in terms of organisational type. A range of percentile scores were obtained from these groups to which an average was used for further analysis. The complete set of norm tables can be found in Appendix B.

Table 4.8 and Figure 4.8 shows a summary of the results from the comparison of each of the JDI job facets to normative data as published by Gillespie *et al.* (2009). Since the results were compared to four different comparative categories, Figure 4.8 shows the minimum (bottom of the rectangle) and maximum (top of the rectangle) percent of people who scored less than that of the current sample.

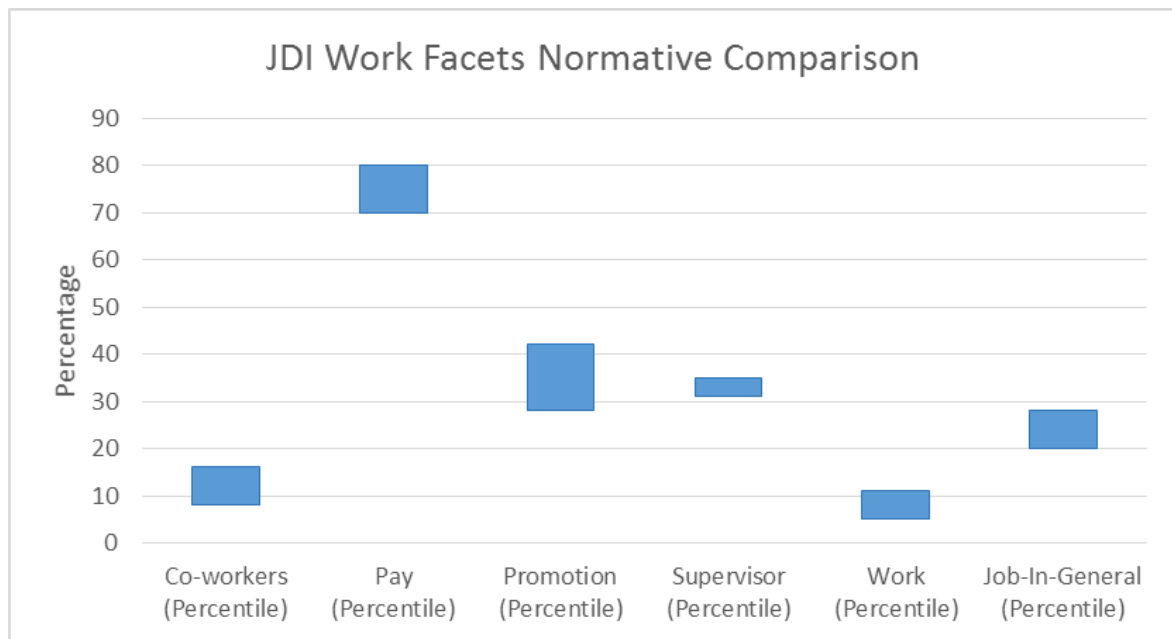
In order to portray this more clearly, consider for instance the job facet of pay. From comparison to normative data it can be concluded that between 70% and 81% of employees with similar employment characteristics as the current sample group, are less satisfied with their pay than the present sample. These figures were obtained from evaluating the median scores of the sample to that of normative data from the following groups:

- Education: 77% of **graduate schooled** employees were less satisfied with their pay
- Manager: 81% of **non-managerial** employees were less satisfied with their pay
- Industry: 70% of employees working in **professional and technical services** industries were less satisfied with their pay
- Organisational type: 80% of employees working for the **government** were less satisfied with their pay.

By taking the above into account, it proves that the young engineers at Eskom power stations are indeed satisfied with their pay.

**Table 4.8 JDI results compared to normative data**

Co-workers (Percentile)				Pay (Percentile)				Promotion (Percentile)				Supervisor (Percentile)				Work (Percentile)				Job-In-General (Percentile)			
Median = 22				Median = 48				Median = 6				Median = 38				Median = 17				Median = 35			
Educa-tion	Mana-ger	Indus-try	Organisa-tional type	Educa-tion	Mana-ger	Indus-try	Organisa-tional type	Educa-tion	Mana-ger	Indus-try	Organisa-tional type	Educa-tion	Mana-ger	Indus-try	Organisa-tional type	Educa-tion	Mana-ger	Indus-try	Organisa-tional type	Educa-tion	Mana-ger	Indus-try	Organisa-tional type
Gradu-ate School	Non-Mana-ger	Profession-al and Technical Services	Government	Gradu-ate School	Non-Mana-ger	Profession-al and Technical Services	Government	Gradu-ate School	Non-Mana-ger	Profession-al and Technical Services	Government	Gradu-ate School	Non-Mana-ger	Profession-al and Technical Services	Government	Gradu-ate School	Non-Mana-ger	Profession-al and Technical Services	Government	Gradu-ate School	Non-Mana-ger	Profession-al and Technical Services	Government
11	16	8	16	77	81	70	80	37	39	28	42	31	35	31	32	7	13	5	11	22	28	28	20



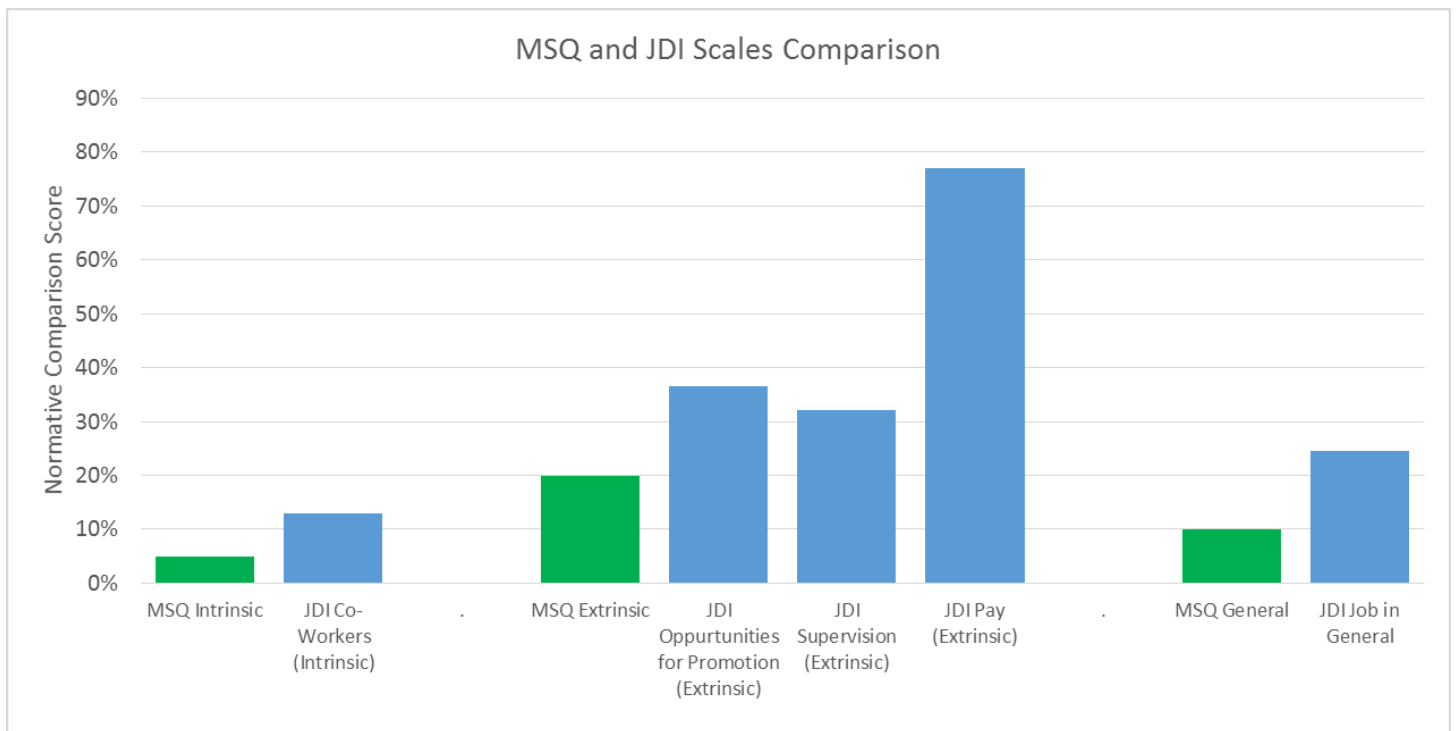
**Figure 4.8 Comparison of JDI results to normative data**

Table 4.9 summarises the results of normative data comparisons for the MSQ and the JDI. In this table, the range of scores obtained for each JDI job facet was averaged to obtain a single percentage which could be utilised for further analysis.

As shown in Figure 4.9, the JDI verifies the results from the MSQ, showing low levels of satisfaction for the co-workers facet (extrinsic), and work on present job (intrinsic). The job in general (general), opportunities for promotion (extrinsic) and supervision (extrinsic) facets show moderate satisfaction while the pay (extrinsic) facet shows a high level of satisfaction. These results are consistent with the researcher’s informal observations that young engineers are more satisfied with regards to extrinsic factors (especially remuneration and benefits) than intrinsic factors and this leads to a lack of general job satisfaction.

**Table 4.9 Normative data results comparison for the MSQ and JDI**

MSQ normative data for engineers			JDI normative data for graduate school education, non-managers, professional & technical service industries and government organizations					
Intrinsic	Extrinsic	General	Co-workers	Job In General	Work on present job	Pay	Oppurtunities for promotion	Supervision
5%	20%	10%	13%	24%	9%	77%	37%	32%



**Figure 4.9 Percentile score comparison between the MSQ and JDI in terms of intrinsic, extrinsic and general scales**

From a visual analysis of Figure 4.9, it seems as if a correlation exists between the results from the MSQ and that of the JDI. The MSQ supports the problem statement that there is a lack in intrinsic job satisfaction at Eskom, and although the extrinsic satisfaction is higher, it is still significantly lower than normative data for engineers. It is also clear that these low intrinsic and extrinsic satisfaction levels relate to the low levels of general job satisfaction.

## Individual questions analysis

By analysing each question individually, one acquires an in-depth idea of which factors contribute to the lack of job satisfaction as described in the preceding paragraphs.

Table 4.10 and Figure 4.10 show a comparison of each of the 20 items forming the MSQ short form to studies by Martins and Proenca (2012) and Khan *et al.* (2013). The comparison shows that all of the items from the MSQ except for MSQ 13 are lower than at least one of the studies. MSQ 13 refers to the remuneration of the employee and the higher satisfaction to this aspect is consistent with previous analysis. MSQ 18 and MSQ 5 are relatively consistent with the comparison studies, meaning that the sample group is comparatively satisfied with their co-workers and the way they are handled by their managers.

**Table 4.10 Individual question analysis of the MSQ**

Minnesota Satisfaction Questionnaire Items	Sub Scale	This study		Martins & Proenca, 2012		Khan <i>et al.</i> , 2013	
		Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
1. Being able to keep busy all the time.	Intrinsic	3.51	1.21	4.04	0.78	2.81	1.21
2. The chance to work alone on the job.	Intrinsic	3.30	1.09	4.18	0.84	2.32	0.96
3. The chance to do different things from time to time.	Intrinsic	3.05	1.28	3.57	0.96	2.55	0.81
4. The chance to be “somebody” in the community.	Intrinsic	2.98	1.17	4.10	0.74	2.60	0.80
7. Being able to do things that don’t go against my conscience.	Intrinsic	3.41	0.89	3.99	0.82	3.10	1.10
8. The way my job provides for steady employment.	Intrinsic	4.10	0.77	3.52	1.06	5.15	0.57
9. The chance to do things for other people.	Intrinsic	3.46	0.81	4.25	0.76	5.20	0.60
10. The chance to tell people what to do.	Intrinsic	3.46	0.78	3.59	0.80	5.05	0.67
11. The chance to do something that makes use of my abilities.	Intrinsic	2.80	1.21	4.10	0.80	5.05	0.74
15. The freedom to use my own judgment.	Intrinsic	3.02	1.08	3.62	0.90	3.35	0.28
16. The chance to try my own methods of doing the job.	Intrinsic	2.90	1.16	3.69	0.86	2.14	0.83
20. The feeling of accomplishment I get from the job.	Intrinsic	2.80	1.08	3.99	0.91	3.28	0.83
5. The way my boss handles his/her workers.	Extrinsic	3.39	1.16	3.75	1.00	3.40	0.97
6. The competence of my supervisor in making decisions.	Extrinsic	3.37	1.24	3.78	0.90	2.80	0.68
12. The way company policies are put into practice.	Extrinsic	2.20	0.95	3.07	0.90	4.69	0.74
13. My pay and the amount of work I do.	Extrinsic	3.68	0.79	2.61	1.12	2.80	0.88
14. The chances for advancement on this job.	Extrinsic	2.20	0.90	3.00	1.16	2.20	0.95
19. The praise I get for doing a good job.	Extrinsic	2.95	0.92	3.66	1.05	4.05	0.67
17. The working conditions.	General	2.95	1.05	3.75	0.95	2.50	0.93
18. The way my co-workers get along with each other.	General	3.56	1.05	3.60	0.95	3.25	0.77

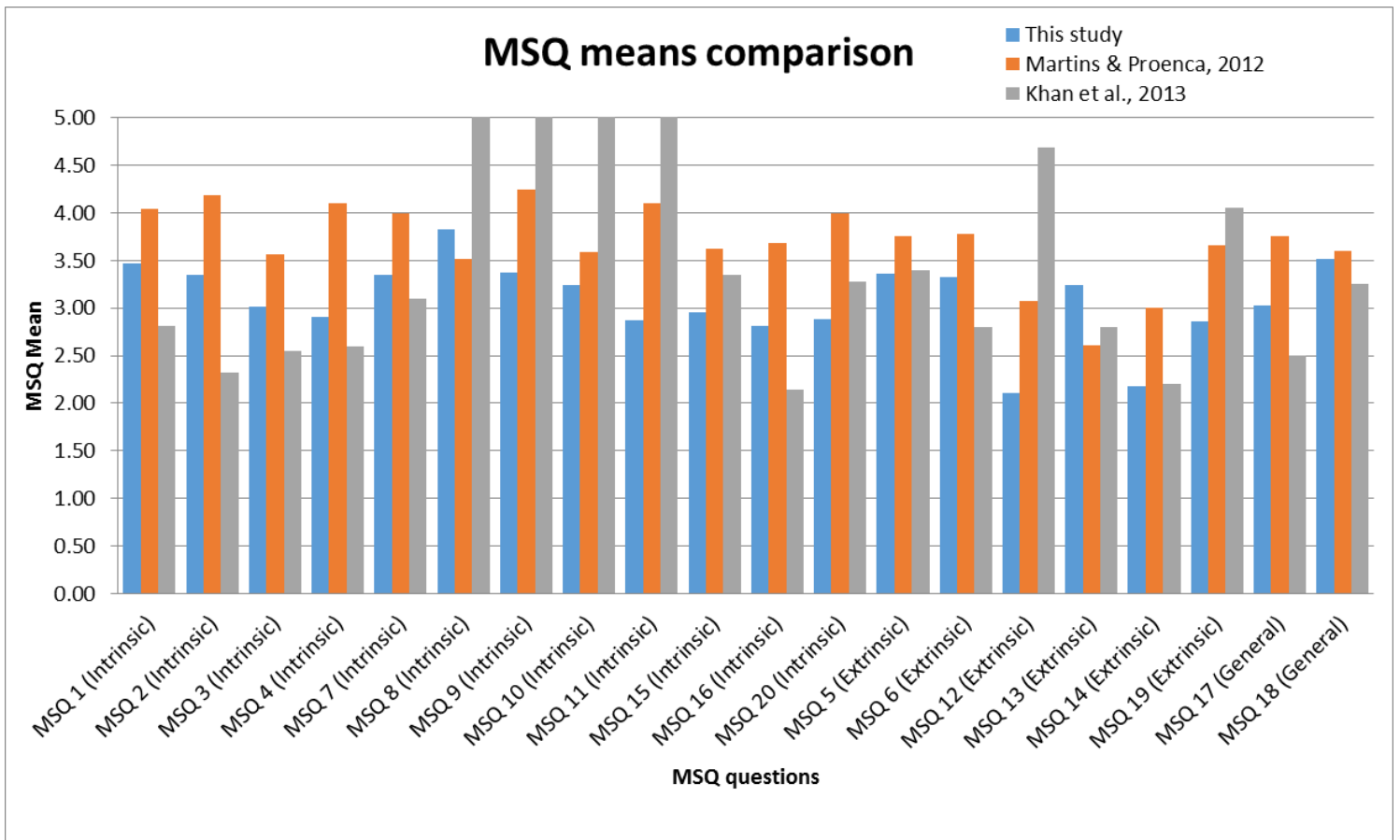


Figure 4.10 Individual question comparison for the MSQ

Although a comprehensive internet search was done to find similar data for the JDI in which results were published for each individual question, the author could not find any reputable data. The author still analysed the individual items as valuable insights could be retrieved for each job facet.

Figure 4.11 to Figure 4.16 display the mean score for each individual item of the JDI. This data was analysed by relating mean scores of less than one to dissatisfaction, and scores of more than two to satisfaction. From these data, the following results were retrieved:

- People on present job. The sample seemed to feel that their co-workers are slow, lazy, frustrating, inactive and stubborn. On the other hand, they also seemed to be likable.
- Job in general. In terms of their job in general, the results returned poor scores for the terms “excellent”, “superior” and “great”. On the positive side, they indicated that their jobs are “acceptable” and better than most.

- Work on present job. The sample indicated that their work is uncreative, unrewarding, routine and not fascinating. None of the scores in this scale was more than two, indicating that the sample was very dissatisfied with their job design.
- Pay. No mean scores of less than one were recorded for the pay scale, indicating high satisfaction. The sample specifically identified that they were not underpaid, that they earn enough to make a living, that their pay is fair, not bad, adequate for normal expenses and comfortable.
- Opportunities for promotion. The sample scored their opportunities for promotion much worse than any of the other scales. 7/8 of the items were scored below one, as indicated in Figure 4.15. This should send a clear message to Eskom management that vacancies should be filled and better communication in terms of promotional opportunities should be maintained.
- Supervision. This term, which can be used interchangeably as “manager”, did not return any scores below one. The sample indicated particular satisfaction with their manager’s kindness, support, politeness and intelligence.

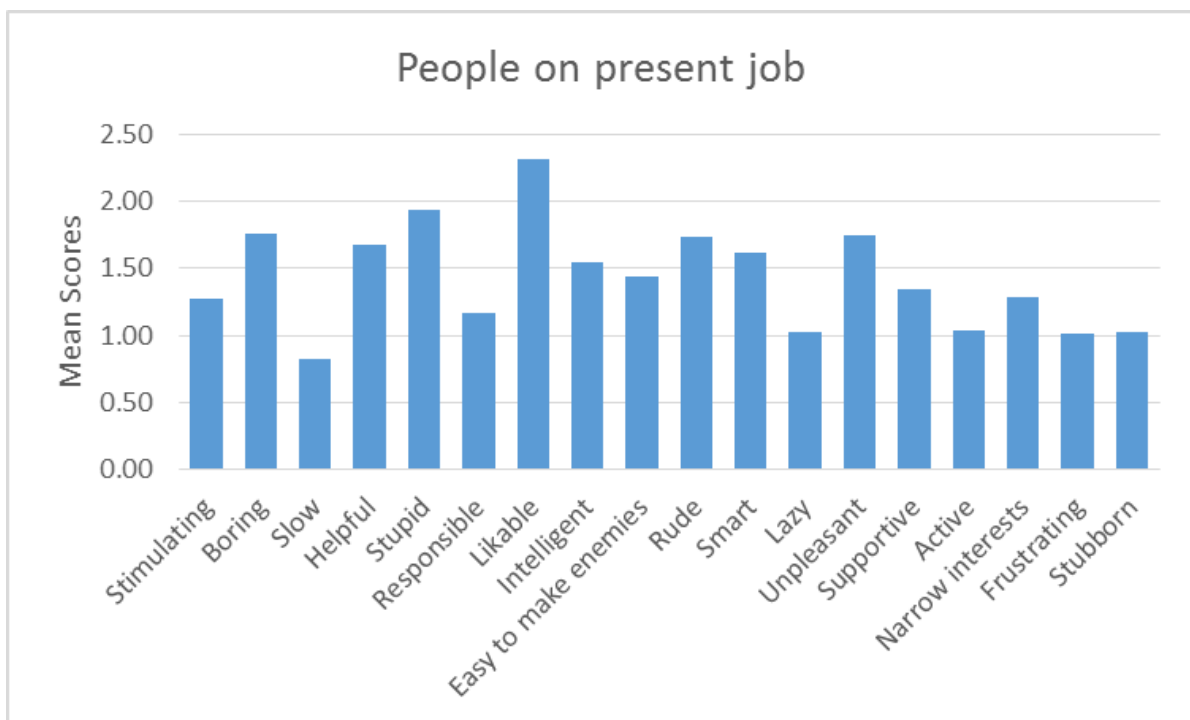


Figure 4.11 JDI Job facet (People on the present job), showing the mean scores of each item

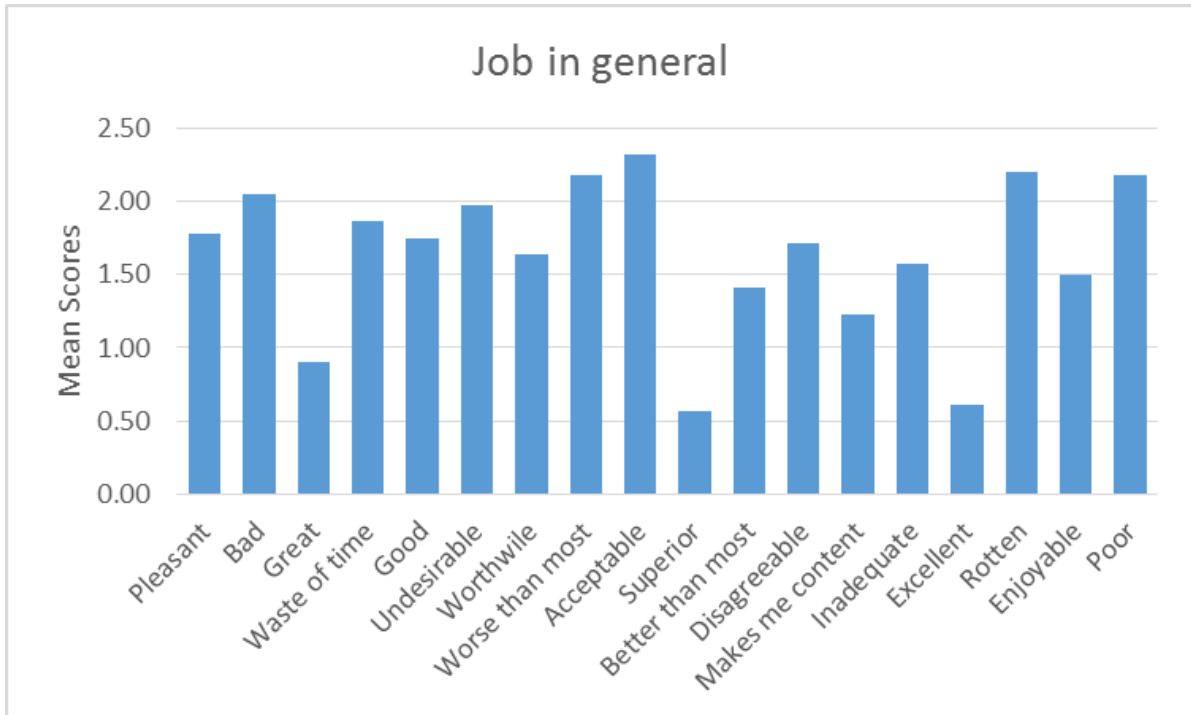


Figure 4.12 JDI Job facet (Job in general), showing the mean scores

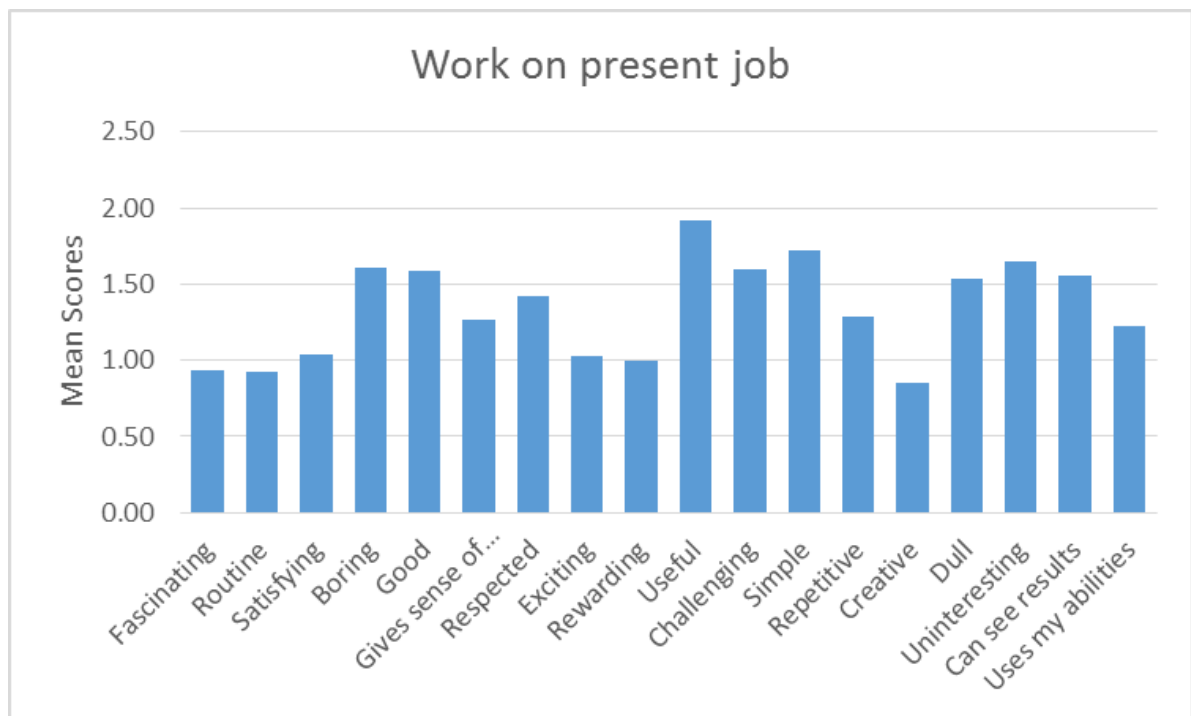


Figure 4.13 JDI Job facet (Work on present job), showing the mean scores

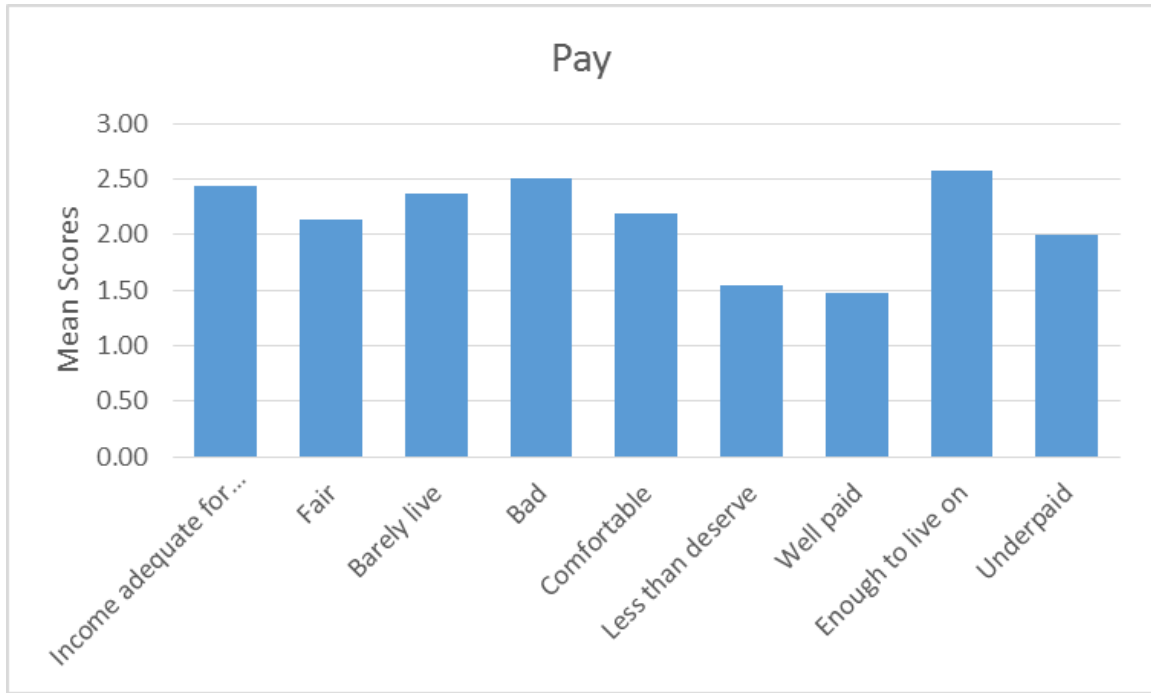


Figure 4.14 JDI Job facet (Pay), showing the mean scores

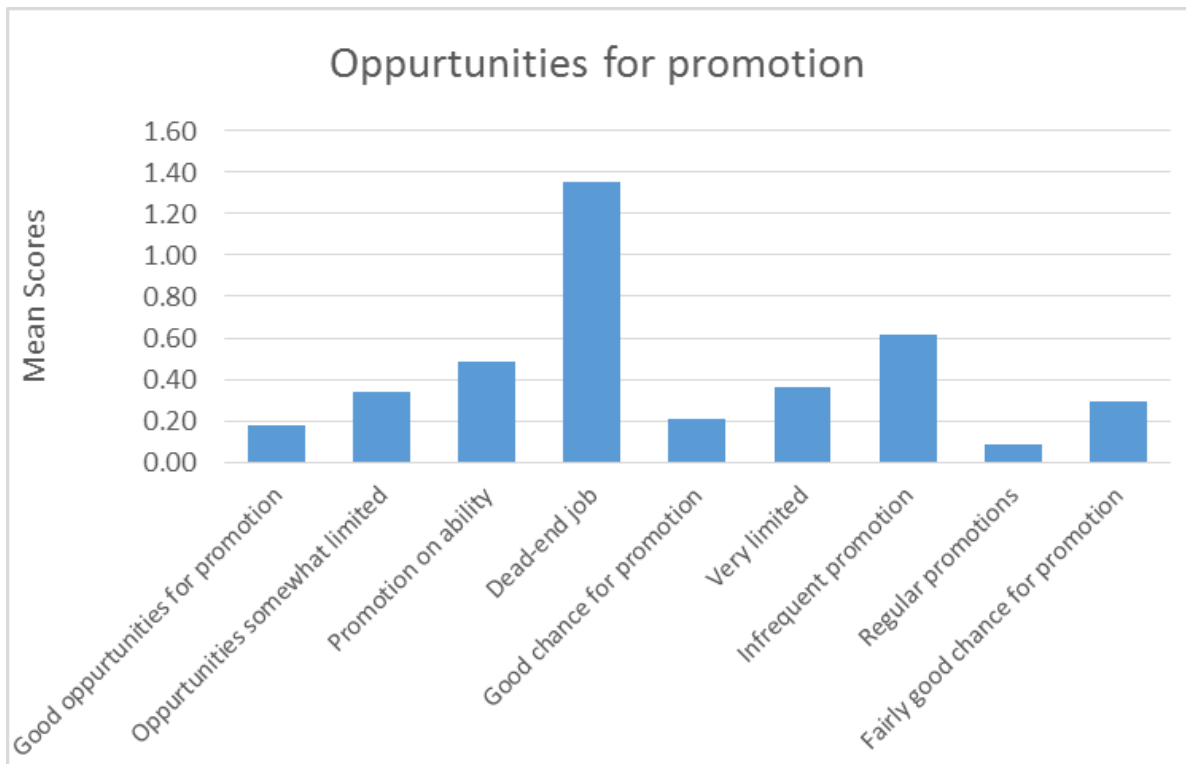


Figure 4.15 JDI Job facet (Opportunities for promotion), showing the mean scores

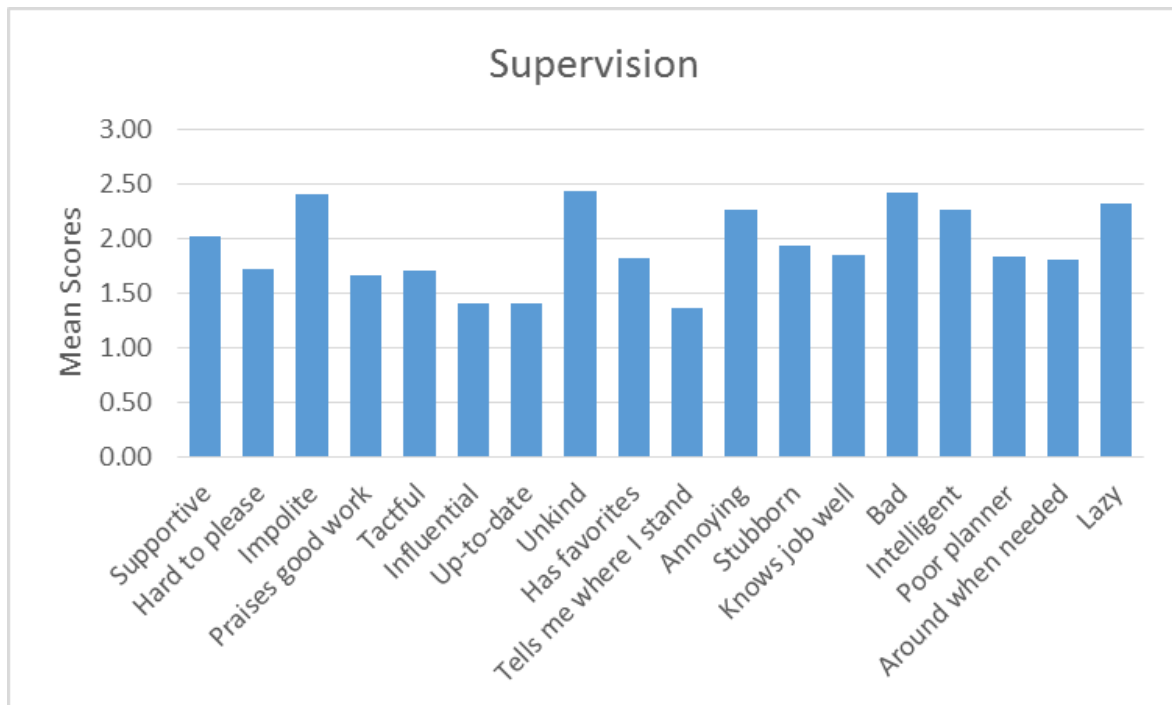


Figure 4.16 JDI Job facet (Supervision), showing the mean scores

### Open ended question analysis

The data from the open-ended was analysed according to the qualitative analysis technique as described by Braun & Clarke (2006).

Most of the participants indicated dissatisfaction with their jobs, with few specifying satisfaction. This confirms the results from the JDI and MSQ.

The following results were extracted from the data:

#### Reasons for dissatisfaction:

1. Managers/management
  - Incompetent managers
  - Poor management/ leadership
  - Managers do not take responsibility
  - Too many managers – leads to decisions not being made
  - Management misinformed
2. No job growth opportunities/promotional opportunities/no incentives
3. No skill growth opportunities

4. Colleagues attitudes
  - Bad communication
  - No respect
  - Do not get support from colleagues
  - Poor work culture (people being lazy and getting paid for doing nothing – hire contractors to do the job, because do not want to think of a solution themselves)
5. No space for being creative/cannot help with problem solving
6. Procedures and structures are not in place
7. Job description not clear/blurred
  - Do things not trained in
  - Do work that is not in job description of engineer.
8. Job is not stimulating/challenging
  - Do not get enough exposure to learn new skills/build up experience
  - Repetitive work
  - Do not get to use skills they are trained in
9. No sense of accomplishment

**Reasons for satisfaction:**

1. Applies themselves and can adapt to situations
2. Not dependent on management, therefore enjoying job.
3. Do extra work that is more satisfying and making overall job experience better
4. Have a positive attitude and make it satisfying for self.
5. Gets results in a short period of time, therefore earning a sense of accomplishment
6. Gets technical experience which person enjoys.

**Recommendations to management (from participant point of view):**

1. Reward achievement/performance
2. Improve communication – it must be clear on who is responsible for what, what the decisions are, what needs to be done/what is expected from who.
3. Involve engineers in decision making and designing, etc. so that they can learn how it is done.
4. Increase promotional opportunities
5. Divide work evenly/equally
6. Clarify proper role and responsibility
7. Measure outputs instead of hours – may lead to people not being so lazy

#### 8. Use engineer's skills at the right places

The exact answers from the open-ended question from every respondent is included in Appendix B.1, including the analysis that was done on the data according to the six step process by Braun & Clarke (2006).

## 4.4 Chapter four: Conclusions and Critique

This Chapter contains the results from an attempt at measuring the job satisfaction of young engineers at Eskom power stations. Section 4.1 includes details on the sample group, stating their age, where they work and on which employment level they are. Section 4.2 describes the results from the statistical analysis processes that were followed to validate, verify and analyse the factor structure of the research instruments. Section 4.3 comprises of results comparison to normative job satisfaction data. It shows than the target group is less satisfied with their jobs than their average counterpart.

The majority of critique on the results involves the group of respondents and the sample size. The way the empirical investigation was designed might have limited the sample to be representative of the entire target group. Since the link to the online survey was freely distributed among colleagues, it could have resulted in the survey not reaching all of the power stations. A question was added to the demographics section for respondents to state their workplace, but this was not compulsory. Only 21 respondents indicated their power station.

Creswell *et al.* (2007) stated that the size of a sample has to be between five and ten times the number of items in the instrument from which factor analysis is done. This means that the number of respondents should have been between 100 and 200 to conduct factor analysis on the MSQ, and between 450 and 500 for the JDI. Other authors recommended sample sizes of between 100 and 300 (MacCallum *et al.*, 1999; Hutcheson & Sofroniou, 1999; Garson, 2008). Since the total valid respondents obtained in this study were only 81, the factor analysis results of the MSQ could be suspect. The results from the factor analysis, which indicated three factors but assigned it to different items than reported in literature, were thus **rejected** from the present study.

Normative data for the MSQ has been developed in 1967 by Weiss *et al.* Since this data is almost 50 years old, the comparative results might be suspect. No other (more recent) normative data could however be found. The normative data for the MSQ was also only provided for engineers, with no distinction made for different industries, age groups, positions or levels of education, as with the JDI. This might attribute the discrepancies between normative comparison results of the JDI and MSQ.

As elaborated in Section 3.3, the design of the MSQ and JDI has shortcomings. The author's personal viewpoint is that literature relating to previous validation attempts of the instruments is unsatisfactory, particularly for the JDI, since no evidence could be found of failed validation attempts. This lead to the common acceptance that the MSQ and JDI are both valid on a global scale, which is a brave and dangerous generalisation.

To summarise the critique:

- There is some doubt about the sample group being representative of the target population
- The sample size was too small for factor analysis to be done
- The normative data of the MSQ was outdated
- Literature relating to previous validation attempts of the research instruments is unsatisfactory.

## Chapter 5. Conclusions and Recommendations

The purpose of this study was to provide insights into the factors that influence the job satisfaction levels of young engineers working on Eskom power stations. Formulated from an informal observation by the researcher, the research questions asked whether the engineers experience intrinsic, extrinsic and general job satisfaction, and what influences this general satisfaction / lack thereof. The investigative work was executed using two instruments, namely the Minnesota Satisfaction Questionnaire (MSQ) short form and the Job Descriptive Index (JDI). The MSQ provided knowledge of the intrinsic, extrinsic and general job satisfaction levels of the sample group, while the JDI went deeper to measure specific facets of their job satisfaction, namely co-workers, work nature, remuneration, promotion opportunities, supervision and their job in general.

In terms of answering the research questions, the results were compared to normative data (as indicated in Figure 4.9), from which the following conclusions were made:

- i) Young engineers at Eskom power stations experience **very low** levels of intrinsic job satisfaction
- ii) Young engineers at Eskom power stations experience **moderate** levels of extrinsic job satisfaction
- iii) Young engineers at Eskom power stations experience **low** levels of overall job satisfaction, mostly caused by a lack of intrinsic job satisfaction factors.

Deeper analysis of the influences of the samples' job satisfaction levels was made by separately analysing each of the job facets measured by the JDI. The conclusions were as follows:

- Co-workers. The sample experienced **low** satisfaction with regards to their co-workers. Specifically, it was indicated that they experience their co-workers to be slow, lazy, inactive, frustrating and stubborn. In contrast, their co-workers seemed to be likable, as indicated in Figure 4.11. The influence of relationships with co-workers on job satisfaction has been confirmed by Batemen (2009), as described in Section 2.3.1.
- Remuneration. The sample experienced a **high** degree of satisfaction with regards to the pay they receive. They indicated that they are comfortable with their pay and that it is adequate for normal expenses. This relationship of pay with job satisfaction is

consistent with Mafini and Dlodlo (2014), although it must be noted that Furnham (2006) found that the benefits of such a relationship is temporary, as was discussed in Section 2.3.1. This can be interpreted that managers should continuously stimulate this factor, as was the case at Eskom at the time of writing.

- Opportunities for promotion. The sample experienced a **moderately low** degree of satisfaction with regards to their opportunities for promotion. This was confirmed by Mafini and Dodlo (2014) who showed that satisfaction with promotion opportunities in the South African public sector is low, but it does not necessarily affect overall job satisfaction. Individual questions indicate that the respondents feel there is a lack of regular promotions and their opportunities are very limited. They did however disagree with the statement that their job has a “dead-end”, as illustrated in Figure 4.15. The results from the open question indicated that the sample was unhappy with overdue promotions.
- Managers. The sample experienced a **moderately low** degree of satisfaction with regards to their managers. Specifically, the participants indicated that their managers do not “tell me where I stand”, which is an indication of poor communication between supervisors and their employees. Conversely, the respondents indicated satisfaction with the politeness, kindness and intelligence of their superiors. Ellickson and Logsdon (2002) found similar relationships for employees in the public sector, as elaborated in Section 2.3.1.
- Work itself. The sample experienced a **very low** degree of satisfaction with regards to the work itself. From the individual JDI questions, it was clear that there is a significant lack of creativity in the way the respondents’ jobs are designed (Figure 4.13). They feel that their jobs lack rewards, excitement, and fascination, and are too routine-orientated. In the open ended question, the participants indicated dissatisfaction with the amount of routine work they have to do. As confirmation, the engineers who do a wide variety of technical work seemed to be satisfied. It is recommended that employers focus more on job enrichment, as described in Section 2.3.2.
- Job in general. The sample experienced a **low** degree of satisfaction with regards to their job in general. 41% of the answers from the open ended question indicated that the respondents feel they are underutilised. They feel that they studied towards a four year engineering degree but that most of their time is now spent doing administration, and that skills development is rare. Sections 2.2.8 and 2.3.1 elaborates on the importance of skills utilisation.

Further conclusions of dissatisfaction from the open-ended question include:

- The engineers were generally dissatisfied with their management team

- They were also dissatisfied with the limited opportunities for promotion and skill growth
- They showed dissatisfaction with their colleagues
- They indicated a lack of creativity in their job design
- Their job descriptions are unclear
- Their jobs are not stimulating and they therefore feel no sense of accomplishment

Those employees who experience satisfaction indicated the following:

- They can apply themselves in their work
- They are independent of management
- They have positive attitudes
- They see results from their efforts
- They get technical experience by doing their work.

In terms of statistical analysis of the research instruments, the following conclusions were made:

- Convergent and discriminant validity were successfully proved through the statistical analysis method by Campbell and Fiske (1959) (as cited in Gillet & Schwab, 1975).
- Confirmatory factor analysis of the MSQ failed due to the small sample size
- The data was successfully verified through two different techniques
- Acceptable internal reliability of both the JDI and MSQ was proved by calculating Cronbach's alpha coefficient and comparing it to literature

### **Limitations of this study**

The present study was subjected to various limitations. First, the sample was small because the researcher adhered to narrowed control categories as his problem statement was solely based on a particular group of people. It is recommended that the research of job satisfaction is extended towards all levels of employees throughout Eskom. As mentioned in Section 1.1, Eskom could face serious consequences should this lack of satisfaction be extended to other employees as well.

Buitendach and Rothmann (2009) proved significant differences in job satisfaction through varying age and race groups of South Africans. Since the current investigation procedure did not allow for analysis in terms of variation in age and race groups, it is recommended that future studies of job satisfaction are done by acknowledging this variation.

## **Recommendations for practice**

It is recommended that Eskom engineering managers and their respective line managers take detailed note of the results from this study. Many aspects were identified that require urgent attention. By optimising the job facets as mentioned in this study, managers may be able to increase the job satisfaction of young engineers at Eskom power stations. This might lead to more satisfactory work performance (Section 2.2.1).

From the open ended question analysis, the following recommendations were made:

- Managers need to reward achievements and above-average performance of employees
- The communication between management and employees need to improve. The responsibilities and expectations of each party must be clear
- Young engineers need to be involved in decision-making, especially with regards to designs
- Promotional opportunities must be increased
- The work load should be divided more equally among employees
- Management must focus more on results and less on working hours
- Management must make use of their employee's skills and challenge their young engineers.

If the results are considered from the context of the dual structure theory by Herzberg (1959) (discussed in Section 2.2.3), it can be concluded that hygiene factors are indeed present in the work situation of young engineers at Eskom power stations. This means that the sample group do not experience dissatisfaction in their work per se. But, they also do not experience satisfaction, which need to be addressed by their managers in focussing their attention in providing motivation and satisfaction through recognition, increased responsibility, advancement and growth. This technique is called job enrichment (see Sections 2.2.3 and 2.3)

## **Recommendations for further research**

It is recommended that the factor structure of the MSQ short form is further evaluated in a South African context. Although the sample size was too small to justify the factor analysis results of this study, it did indicate some degree of scepticism. This should be explored as it puts the instrument validity in jeopardy.

Respondent #28 indicated in both the questionnaires and the open question that he experienced a high level of job satisfaction. He stated that “it comes down to the attitude of the employee”. This suggests that the respondent has a high degree of core self-evaluation (Judge *et al.*, 1997), meaning that his job satisfaction level is an inherent trait of his personality and not influenced by job factors. This phenomenon is based on the Core Self-evaluations Model (see Section 2.2.7) for job satisfaction and Alias *et al.* (2012) proved that engineers have above-average levels of core self-evaluations. If this was the case, the job satisfaction levels of the sample group would have been higher, which is in contrast with the results of this study. It is therefore recommended that the level of core self-evaluations of young engineers at Eskom power stations are measured with the aim of identifying the factors that influence it, and reasons as to why the group differ from norms.

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# Appendix A: Survey

The following survey was administered online to the sample group.

## Job Satisfaction Survey

### Page 1

#### Survey Information

#### INFORMED CONSENT FORM

Good day. Thank you for taking time out of your busy schedule to complete this survey. The purpose of this survey is to measure the job satisfaction that young engineers at Eskom power stations experience. I am conducting this research as partial fulfilment of an M.Eng degree in Management and Development at the NWU.

I know that many people hate surveys, and I have therefore decided to give away a few takealot.com vouchers as incentive. The entry to this lucky draw is completely voluntary. If you decide to take part, you can provide your details on the last page. Please note that this will not influence the confidentiality of your answers.

RESEARCHER: C.J. de Jager. Email: careldj@gmail.com. Tel: 0793405103.

PURPOSE OF THE RESEARCH: To determine the job satisfaction of young engineers at Eskom.

BENEFITS: Incentives will be provided to participants in the form of a lucky draw for retail vouchers.

DURATION: The completion of this questionnaire will take approximately 10 minutes.

VOLUNTARY PARTICIPATION: Participation in this research is completely voluntary. You may at any stage refuse to participate and/or withdraw at any time without fear of repercussions and without providing any reason.

CONFIDENTIALITY: Data in this study will be confidential. No names will be used. The data will be analysed as a group and not independently.

CONSENT: By clicking on the "Next" button on the bottom of this screen, you thereby give informed consent to participate in the research, and your responses might be used for the benefit of this study.

**Page 2**

**Section 1: Demographics**

Section 1 of the questionnaire is for the author to get to know you better. Please be advised that the survey is anonymous, and all questions are compulsory.

1. What is your age?

20 or younger	21-25	26-29	30-35	36-49	50 or older
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2. Where is your permanent work station situated?

On an Eskom Power Station	At one of Eskom's head offices (Simmerpan, Megawatt Park or similar)	Other (please specify)
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3. For which company (or division) do you work?

Eskom Generation	Eskom Distribution	Eskom Transmission	Eskom PEIC / COE	Eskom Contractor	Other (please specify)
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If you work on a power station, please specify which one:

4. For which department do you work?

Engineering	Maintenance	Operating	Human Resources	Production
Project Management	Advisory	Risk Assurance	Contractor	Other (please specify)

5. On which level are you employed?

T-Band	P13	P14	P15	P16	P17 or above	G12	G13
G14	G15	G16	G17 or above	M-and	S-Band	Contractor	Other (please specify)

**Page 3**

**Section 2: Minnesota Satisfaction Questionnaire Short Form**

This section of the questionnaire measures the total rewards you experience when doing your job. It consists of questions from the Minnesota Satisfaction Questionnaire Short Form.

The purpose of this section is to give you a chance to tell how you feel about your present job, what things you are satisfied with and what things you are not satisfied with.

On this page you will find statements about your present job.

- Read each statement carefully
- Decide how satisfied you feel about the aspect of your job described by the statement.

Keep the statement in mind:

- If you feel that your job gives you more than you expected, check the box "very satisfied",
- If you feel that your job gives you what you expected, check the box "satisfied"
- If you cannot make up your mind whether or not the job gives you what you expected, check the box "neither satisfied not dissatisfied"
- If you feel that your job gives you less than expected, check the box "dissatisfied"
- If you feel that your job gives you much less than you expected, check the box that says "very dissatisfied"

Remember: Keep the statement in mind when deciding how satisfied you feel about that aspect of your job.

Do this for all statements on this page.

Be frank and honest. Give a true picture of your feelings about your present job.

On my present job, this is how I feel about.....

6. Being able to keep busy all the time

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
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7. The chance to work alone on the job

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
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8. The chance to do different things from time to time

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

9. The chance to be "somebody" in the community

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
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10. The way my boss handles his/her workers

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
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11. The competence of my manager in making decisions

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

12. Being able to do things that don't go against my conscience

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

13. The way my job provides for steady employment

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

14. The chance to do things for other people

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

15. The chance to tell people what to do

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

16. The chance to do something that makes use of my abilities

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

17. The way company policies are put into practice

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

18. My pay and the amount of work I do

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

19. The chances for advancement on this job

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

20. The freedom to use my own judgement

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

21. The chance to try my own methods of doing the job

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

22. The working conditions

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

23. The way my co-workers get along with each other

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

24. The praise I get for doing a good job

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

25. The feeling of accomplishment I get from the job

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
-------------------	--------------	------------------------------------	-----------	----------------

**Page 4**

**Section 3: Job Descriptive Index**

This section of the questionnaire measures the overall job satisfaction you experience. It consists of questions from the Job Descriptive Index

**26. People on Your Present Job**

Think of the majority of people with whom you work or meet in connection with your work. How well does each of the following words or phrases describe these people? Please choose one of the following options for each describing word:

“Yes” if it describes the people with whom you work

“No” if it does not describe them

"Cannot Decide" if you cannot decide

<b>Co-workers descriptive words</b>	<b>Yes</b>	<b>No</b>	<b>Cannot Decide</b>
Stimulating			
Boring			
Slow			
Helpful			
Stupid			
Responsible			
Likable			
Intelligent			
Easy to make enemies			
Rude			
Smart			
Lazy			
Unpleasant			
Supportive			
Active			
Narrow interests			
Frustrating			
Stubborn			

**27. Job in General**

Think of your job in general. All in all, what is it like most of the time? Choose one of the following options for each describing word:

“Yes” if it describes your job

“No” if it does not describe it

"Cannot Decide" if you cannot decide

<b>Job In General descriptive words</b>	<b>Yes</b>	<b>No</b>	<b>Cannot Decide</b>
Pleasant			
Bad			
Great			
Waste of time			
Good			
Undesirable			
Worthwhile			
Worse than most			
Acceptable			
Superior			
Better than most			
Disagreeable			
Makes me content			
Inadequate			
Excellent			
Rotten			
Enjoyable			
Poor			

28. Work on Present Job

Think of the work you do at present. How well does each of the following words or phrases describe your work? Choose one of the following options for each describing word:

“Yes” if it describes your job

“No” if it does not describe it

"Cannot Decide" if you cannot decide

<b>Work On Present Job descriptive words</b>	<b>Yes</b>	<b>No</b>	<b>Cannot Decide</b>
Fascinating			
Routine			
Satisfying			
Boring			
Good			
Gives sense of accomplishment			
Respected			
Exciting			
Rewarding			
Useful			
Challenging			
Simple			
Repetitive			
Creative			

Dull			
Uninteresting			
Can see results			
Uses my abilities			

29. Pay

Think of the pay you get now. How well does each of the following words or phrases describe your present pay?

Choose one of the following options for each describing word:

“Yes” if it describes your job

“No” if it does not describe it

"Cannot Decide" if you cannot decide

<b>Pay descriptive words</b>	<b>Yes</b>	<b>No</b>	<b>Cannot Decide</b>
Income adequate for normal expenses			
Fair			
Barely live			
Bad			
Comfortable			
Less than deserve			
Well paid			
Enough to live on			
Underpaid			

30. Opportunities for Promotion

Think of the opportunities for promotion that you have now. How well does each of the following words or phrases describe these?

Choose one of the following options for each describing word:

“Yes” if it describes your job

“No” if it does not describe it

"Cannot Decide" if you cannot decide

<b>Opportunities For Promotion descriptive words</b>	<b>Yes</b>	<b>No</b>	<b>Cannot Decide</b>
Good opportunities for promotion			
Opportunities somewhat limited			
Promotion on ability			
Dead-end job			
Good chance for promotion			
Very limited			

Infrequent promotion			
Regular promotions			
Fairly good chance for promotion			

### 31. Supervision

Think of the kind of supervision that you get on your job. How well does each of the following words or phrases describe this? Choose one of the following options for each describing word:

“Yes” if it describes your job

“No” if it does not describe it

“Cannot Decide” if you cannot decide

<b>Supervision descriptive words</b>	<b>Yes</b>	<b>No</b>	<b>Cannot Decide</b>
Supportive			
Hard to please			
Impolite			
Praises good work			
Tactful			
Influential			
Up-to-date			
Unkind			
Has favourites			
Tells me where I stand			
Annoying			
Stubborn			
Knows job well			
Bad			
Intelligent			
Poor planner			
Around when needed			
Lazy			

### 32. Open ended question:

Think about your job at general. Do you experience job satisfaction? What do you think contributes to this satisfaction / lack thereof? What, in your opinion, can be done by your managers to improve this?

**Section 4: Incentives**

Thank you for completing this survey. Please complete the following questions voluntarily if you want to be eligible for a lucky draw where you can win one of three R200 Takealot.com vouchers

33. Who referred you to this survey? (Name and Number/Email Address)

34. What is your Number/Email address? (Only provide if you want to be eligible for the lucky draw. This information will not affect the anonymity of your answers)

# Appendix B: Detailed results data

## B.1 Open ended question answers

Results from open ended question (Question 32), where respondents were asked the following:

Q32 Open ended question: Think about your job at general. Do you experience job satisfaction? What do you think contributes to this satisfaction / lack thereof? What, in your opinion, can be done by your managers to improve this?

Answered: 45 Skipped: 3

The results from this question were qualitatively analysed by following the recommendations of Braun & Clarke (2006). It incorporates a six step process as described in Section 3.5. Table A.1 contains the answers from each respondent to the question, as well as information from the author which portrays the process which was utilised to extract results from the data.

**Table B.1 Responses to open ended question**

Participants' response data			Data analysis		
#	Responses	Date	Yes/no	Reason	What can be done
1	Be reasonable with engineers. Allow for actual engineering to be done and not stay stuck in firefighting mode. Reward achievements to ensure that it can continue or else people will lose interest the next time a jo needs the extra effort	10/5/2015 11:21 AM		Work itself, achievement	reward achievement
2	Good job satisfaction because of competent managers who wants us to grow in our jobs. Even though our manager has our best interest at heart, the oppertunities for promotions are next to nothing and thus you can't stay in this job for too long.	10/5/2015 10:54 AM	Yes	managers are competent, but no job growth opportunities	Provide oppurtunities for promotion
3	No, top management not knowing what is going on. More opportunities for performance bonuses.	10/5/2015 9:48 AM	No	top management do not know what is going on	reward achievement/perfor mance

4	<p>Managers need to show that they are taking responsibility and not keep passing the buck. The culture in Eskom really needs to change as there are many areas in which we could launch light-years ahead only if management shows us what their priorities are. Management and especially senior-senior management need to be transparent about decisions that are made so that the engineers who are actually supposed to guide the technical capacity of the company can do their jobs. People work best when they know what is expected of them and why its required, and in Eskom trying to find this is like finding a Unicorn. Projects need to be handled much more efficiently and managers need to stop worrying about trying to make the next higher up happy and start putting down the foot and saying what you are asking for is not achievable in this time, why does the project manager dictate what the project end date should be? He has no technical ability yet they seem to think that they can make the call on how much time is required for a project... makes no sense to any engineer in Eskom, yet it is the "Eskom" way. I am really happy to see that a survey like this is being done and I really hope you help bring issues to light. Why doesn't HR do this every month? Or is it just their job to worry about how people keep time?</p>	10/1/2015 12:17 PM	No	Mangers do not take responsibility/ are not competent	Management and especially senior-senior management need to be transparent about decisions that are made so that the engineers who are actually supposed to guide the technical capacity of the company can do their jobs
5	<p>Difficult to answer. There are both good and bad days. Good communication is very important.</p>	9/30/2015 4:18 PM	so-so	some days are good, others are bad	good communication is important
6	<p>Job is ok. Need more stimulationg work. Involve junior engineers in the big design projects as well not just the older/senior engineers. Young engineers need the experience.</p>	9/28/2015 12:48 PM	so-so	not enough stimulating work, and do not get exposure to learn new skills or build up experience.	Involve younger engineers in project designing and decision making so they can learn
7	<p>No, Repetitave work and because of equity no change of promotion</p>	9/28/2015 8:56 AM	No	repetitive work, no promotion opportunities	Provide opportunities for promotion

8	I am satisfied with my job and progress this far, however more oppertunities should be created to develop individuals and prepare for possible promotions	9/25/2015 12:41 PM	Yes		more opportunities should be created to develop individuals and prepare for possible promotions
9	Yes, job satisfaction is there. Applying myself and adapting to altering situations contributes to satisfaction. I think if managers could appreciate and check laoding of each resource in the department, and make it fair for everyone to share.	9/25/2015 12:30 PM	Yes	Applying myself and adapting to altering situations contributes to satisfaction.	Show appreciation for hard work, and divide work load evenly/equally
10	Proper role and responsibility clarity will improve the job satisfaction.	9/25/2015 11:38 AM	No		Proper role and responsibility clarity will improve the job satisfaction.
11	I have job satisfaction because I like engineering and I think I am the type of person that might feel like this in many engineering companies. My job satisfaction is not that dependant on my manager.	9/23/2015 5:33 PM	Yes	he enjoys what he does and it is not dependent on management.	
12	External training; exposure to different areas such as projects	9/22/2015 5:28 PM			External training; exposure to different areas such as projects

13	<p>Eerstens: ek het te veel managers (M18, M16 asook nou 'n PEM). Tweedens word hulle meestal onder BEE aangestel, wat lei na managers wat nie kan lei nie(Uitgesluit my PEM). Volgens my doen hulle meestal net papier werk wat fokus op irelivate dinge. Maar in die managers se steun: hulle het nie werklik 'n doel (invloed) op besluite nie, so hulle probeer ander sinteties happy nou. Derdens kultuur: dit suig, mense sit meer energie in om iemand anders te blameer met 'n probleem as om dit op te los. Politiek in die werksplek is stuped. Meetings word gesien as werk. Papier werk lei 'n projek(nie anders om nie). Die inhoud van 'n dokument is nie belangrik nie, solank hy net daar is. Die Technical wrighting van die mense suig. Daar is 'n gevoel van dit is jou reg om betaal te word al werk jy nie daarvoor nie. Die tegniese werk word deur kontrakteurs gedoen, dus word mense slagpat, en</p> <p>verstaan nie wat regtig die probleem is nie, reel maar net dat die nodige kontrakteur inkom. Die kontrakter se werks kwaliteit is dan nie ook altyd op standaard nie, en word moer baie vir eenvoudige goed betaal. Vierdens: Eskom Training suig (ek vermy dit met my hele wese). Dit is afgewater meer proses gewys. Vyfde: Leiding, daar is nie spanwerk nie, omdat daar nie leiding is nie. daar is te veel tussen managers. Om werk satusfaksie te kry het ek deur my mentor 'n werk by Duvha se Commissioning team gekry, die werk is meer tegniese, dit help. Ek maak 'n verskil om in detail na my seksie te kyk en oplossings te vind. <b>No-</b> because Too many managers per person, and they are incompetent. No one is trying to find a solution, but rather seeks to blame someone else. No one does what they are supposed to do, they expect to get paid for nothing. Too many contractors, because people do not want to think of a solution. The training is not up to standard. Management is incompetent.</p>	9/18/2015 2:23 PM	so- so	<p><b>yes</b> - because do extra work that are more satisfying, such doing more technical and mind challenging work, which helps making the job better. Om werk satusfaksie te kry het ek deur my mentor 'n werk by Duvha se Commissioning team gekry, die werk is meer tegniese, dit help. Ek maak 'n verskil om in detail na my seksie te kyk en oplossings te vind. <b>No-</b> because Too many managers per person, and they are incompetent. No one is trying to find a solution, but rather seeks to blame someone else. No one does what they are supposed to do, they expect to get paid for nothing. Too many contractors, because people do not want to think of a solution. The training is not up to standard. Management is incompetent.</p>	Give better job descriptions and improve management
14	Manager must be more technically skilled	9/18/2015 1:03 PM		Management is incompetent	
15	Eskom is too top heavy - too many managers that have no decision power. Incentives are none and KPIs are absolutely hog wash - performance are based on nothing but a predetermined value (ex-gratia) and promotion based on excellence rarely appears. The good guys leave and the useless stay behind. Eskom pay a lot of engineers for doing nothing. Instead of measuring hours of work, measure the OUTPUTS (it's so obvious)!	9/18/2015 9:54 AM		too many managers. No incentives. No promotions.	Measure outputs instead of hours - may lead to people not being so lazy and expecting payment for nothing

16	No. It needs to be more varied and exciting. There needs to be less time spent fighting to get things done	9/16/2015 5:35 PM	No	too repetitive/boring	
17	yes i am Satisfied and i contibute to this success. for now i wouldn't like my manager to change anything	9/16/2015 5:00 PM	Yes	contribute to own satisfaction	
18	The pay is good; however, more can be done to ensure that I fulfill my ECSA outcomes to register professionally. Currently, if you are good at a job, you get stuck in that role. You are given little chance to develop in that sense and achieve Pr Eng.	9/16/2015 3:49 PM	No	no promotion opportunities, little chance to develop skills	
19	My discipline is required in a Power Station but under utilised. This is evident when looking at the growth prospects within the station. Head Office seem to be more appealing in that regard.	9/16/2015 3:25 PM		Do not get to use skills trained in	
20	No. No structure or discipline for engineering roles.	9/16/2015 3:23 PM	No	no structure or discipline	
21	Managers need to start engaging with employees to understand employees area of interest and start movin them to positions where they can thrive.	9/16/2015 12:03 PM			engage engineers so they can learn and gain experience, use their skills at the right places.
22	Absolutely no job satisfaction. I'm not doing anything remotely related to Engineering, nor gaining any experience for the actual position I applied for before moving from head office to the station. The position advertised's job specs intrigued in interest me therefore I applied. got the job and haven't done anything that was expected for that position in more than 1.5 years. I need challenging engineering work, not glorified secretary or PA work which anybody can do and not needing an engineering degree for.	9/16/2015 11:28 AM	No	Do not get to use skills trained in. Do not get experience. Not challenging	
23	My job satisfaction varies from day to day. Sometimes I enjoy it and sometimes I don't. I do not enjoy the drive and driving at night when asked to come in after hours. I feel that the roles and responsibilities of engineers at my powerstation is blurred and includes a lot of Maintenance tasks. I also feel that the CoE nad PEIC engineers do more engineering work and projects than the engineers on site thus leading to better design experience.	9/16/2015 11:02 AM	so-so	job description is not clear/blurred	

24	Lack of responsibility, career growth opportunities and respect.	9/16/2015 10:45 AM	No	Lack of responsibility, career growth opportunities and respect.	
25	Poor work culture	9/15/2015 4:56 PM		Poor work culture	
26	I do experience job satisfaction. Maybe it comes down to the attitude of the employee.	9/15/2015 3:52 PM	Yes	Personal attitude	
27	No. Repetitive work and no incentive for good work done, also lack of pressure to do work. Managers can improve incentive and pressure.	9/15/2015 1:50 PM	No	repetitive work, no incentives, no pressure/challenge	Managers can improve incentive and pressure.
28	I am not dissatisfied, though I do not get a sense of accomplishment regularly.	9/15/2015 12:24 PM	so-so	do not get a sense of accomplishment regularly	
29	Procedures severely limit the potential to be creative.	9/15/2015 12:15 PM		no space for creativity	
30	No. Unefficient business processes. Work not always challenging. Sometimes boring. Some work not relevant for an engineer. Unprofessional employees. Poor leadership by management	9/15/2015 11:58 AM	No	lack of good processes. Not challenging. Poor leadership by management. Do work that is not in job description of engineer.	
31	Yes, more results in a shorter time	9/15/2015 11:15 AM	Yes	get results in short period of time	
32	The job is very repetitive with very little room for growth. It actually makes me want to leave the company. So I rarely experience job satisfaction. Managers should allow us to do job rotations and not be stuck in one field. How else can one grow without being exposed to different things.	9/15/2015 11:11 AM	No	repetitive work. Little room for growth/promotion.	rotate jobs to give exposure to more things
33	Dissatisfaction - It's more focused on paperwork exercises and nothing concrete comes out of the exercises. The managers also focus on these spreadsheets more.	9/15/2015 10:59 AM	No	too much paper work and less outcomes.	

34	need better decision making from management to drive group in a direction. lack of leadership within management	9/15/2015 10:55 AM	No	Lack of leadership/poor management	
35	No structure in the eskom business, no professionalism, incompetant people in positions	9/15/2015 10:54 AM	No	no structure, no professionalism, and incompetent people	
36	No I do not. There is deadlines that has to be met but mangement can not decide in a template so hard work has to be redone mostly 3 times before sigend off. Assignments change all the time before they are complete and then after a year we have to continue with that again. Piority chahnges to every day. Work management is not good.	9/15/2015 10:35 AM	No	poor management	
37	Lack of job satisfaction. Not being used for my abilities and potential not realized. Too much administrative work. Give me a job where I can spend more time on engineering and less time on struggling with the people from different departments I work with. More focus on quality reccomendations and less focus on timely implementation. Let me do my part, and not all parts.	9/15/2015 10:29 AM	No	Do not get to use skills trained in.	
38	- Open up for the possibility of ad-hoc increases and promotions	9/15/2015 10:17 AM			Open up for the possibility of ad-hoc increases and promotions
39	Not very satisfied. The Culture in this company is not great. The support is not always there, sometimes but very little support. I do not get to do what others at my level get to do at other companies. Our skills are not being fully utilised. In summary falling behind with latest trends/technology, as there is no motivation from the company to further develop ones skills.	9/11/2015 4:06 PM	No	Do not get support. Do not get to use skills trained in. Do not get experience or opportunity for growth.	
40	No. Limited in terms of freedom to do what needs to be done to solve the problems, which is what an engineer likes/is supposed to do	9/11/2015 10:35 AM	No	no space for creativity	
41	Dont feel satisfied. Proceedure and structures are not in place. Get into trouble for admin not being done when i was not even aware of doing it. Get lost in doing paperwork because everyone has a different opinion on how it should be done preventing me from sign off	9/10/2015 5:34 PM	No	Procedure and structures are not in place.	

42	There are areas that gives me satisfaction, other tasks are work that must be done. The engineering opportunities (technical experience) makes me excited. My manager should not accept work that isn't in the roles and responsibilities of engineering, it will give me time for the exciting work. At present I have to do everything that anyone can think of.	9/3/2015 4:21 PM	so- so	Yes because getting engineering experience sometimes. No, because do other things that are not related to job description.	
43	Better communication and respect towards employees	9/3/2015 3:34 PM			Better communication and respect towards employees
44	I do not experience job satisfaction because when I do my job and make recommendations as to how to solve an issue, nothing gets done and I get asked to reinvestigate the problem. I believe that politics and poor management play a huge role in Eskom. Management should not be playing into politics or trying to cover up for people. Poor decisions should have repercussions and people should be disciplined for not complying. Grievances cannot be lodged at the moment as it is well known that once that is done, it will become a political thing and your life will be made much harder at work. Managers should know what is going on, especially in their sections, and be more involved, but should not micro manage, rather lead the team to become innovative thinkers and to take responsibility for their work.	9/3/2015 2:00 PM	No	poor management. No space for creativity/problem solving. People do not get disciplined for doing something wrong because of politics.	
45	Very little to no job satisfaction. Direct manager tries his best, but the fault lies with the upper management and the organisation as a whole.	9/3/2015 1:50 PM	No	Poor management.	

## **B.2 Normative data for the JDI**

The following normative data was developed by Gillespie *et al.* (2009). For more detail on the development of the JDI and the normative groups, refer to Section 2.5.2.

The highlighted rows in Table B.2 refer to the results from this study, indicating where the sample fits in terms of median scores for each job facet.

Table B.2 Normative data of the JDI

Median score	Co-workers (Percentile)				Pay (Percentile)				Promotion (Percentile)				Supervisor (Percentile)				Work (Percentile)				Job-In-General (Percentile)			
	Education	Manager	Industry	Organizational type	Education	Manager	Industry	Organizational type	Education	Manager	Industry	Organizational type	Education	Manager	Industry	Organizational type	Education	Manager	Industry	Organizational type	Education	Manager	Industry	Organizational type
	Graduate School	Non-Manager	Professional and Technical Services	Government	Graduate School	Non-Manager	Professional and Technical Services	Government	Graduate School	Non-Manager	Professional and Technical Services	Government	Graduate School	Non-Manager	Professional and Technical Services	Government	Graduate School	Non-Manager	Professional and Technical Services	Government	Graduate School	Non-Manager	Professional and Technical Services	Government
54	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
53	88	89	85	89	95	96	93	96	98	97	97	99	91	91	91	88	90	96	93	93	90	91	91	91
52	76	79	71	78	90	91	85	92	95	95	95	98	82	83	83	77	80	91	86	87	80	83	82	82
51	71	76	66	72	86	87	78	88	93	92	92	96	77	80	81	72	77	90	85	86	76	80	73	78
50	60	65	63	62	81	83	71	84	91	89	89	95	66	70	65	64	65	82	75	83	72	74	66	70
49	59	64	59	61	79	82	70	82	90	89	86	94	65	69	63	63	64	82	74	80	70	73	65	70
48	58	62	59	60	77	81	70	80	90	89	84	93	64	67	62	63	63	80	73	78	69	72	64	69
47	54	55	53	58	71	77	67	74	87	87	83	92	52	57	59	53	55	72	63	75	62	64	59	59
46	52	55	47	57	65	73	65	68	85	84	82	91	51	57	56	52	54	71	61	72	61	63	58	58
45	50	53	45	56	64	72	62	68	84	84	81	90	49	55	54	51	53	70	55	71	59	61	57	57
44	44	50	41	49	64	72	59	68	83	84	80	89	46	49	51	48	47	62	45	62	46	51	45	46
43	42	48	40	47	63	71	58	68	83	83	79	88	43	48	47	45	46	61	44	61	45	50	44	45
42	40	48	39	45	63	71	57	68	82	83	78	88	42	47	46	44	44	60	43	59	44	48	44	43
41	34	44	30	40	59	67	52	66	81	81	77	87	37	43	43	40	40	52	41	51	36	42	37	36
40	32	43	29	39	55	63	47	64	80	79	75	86	36	42	41	39	37	51	39	50	34	41	36	33
39	32	42	28	39	54	63	46	62	79	79	73	86	35	41	38	38	37	50	37	49	32	40	35	32
38	28	38	21	36	54	62	46	61	77	79	72	85	34	36	36	33	32	45	31	41	27	35	33	31
37	27	36	20	33	53	62	46	60	77	78	71	84	33	36	34	32	31	44	31	41	27	34	32	30
36	26	35	20	32	52	61	46	59	77	78	71	83	31	35	31	32	31	43	30	40	26	32	32	28
35	23	32	19	27	46	57	44	53	76	75	69	81	27	32	26	26	27	39	28	34	23	28	30	21
34	23	30	18	27	40	53	43	47	75	73	68	78	26	31	25	25	26	38	27	34	22	28	28	20
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