ASSESSING THE LEVEL OF COMPLIANCE WITH ISO 9001:2008 QUALITY MANAGEMENT SYSTEMS AT ESKOM DISTRIBUTION PROJECT EXECUTION AND PLANT

by

LG MOKHESI

MTech: Business Administration

In the

Faculty of Management Sciences

CENTRAL UNIVERSITY OF TECHNOLOGY, FREE STATE

SUPERVISOR: PROFESSOR DY DZANSI

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DECLARATION

I, Limpho Grace Mokhesi, student number , hereby declare that this research dissertation submitted to the Central University of Technology, Free State, for the Degree MTECH: BUSINESS ADMINISTRATION is my independent work and has not been submitted previously by me at another university/faculty. I furthermore cede copyright of the dissertation in favour of the Central University of Technology, Free State.

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SIGNATURE OF STUDENT DATE

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ABSTRACT

The literature reviewed for this study indicates that the ISO Quality Management System (QMS) standards can benefit any organisation that complies with them regardless of size. Benefits to complying organisations can be internal or external. Internal benefits include, but are not limited to, improved documentation management, planning of activities and the management of employees. Some external benefits include, but are not limited to, increased competitiveness of the business and customer satisfaction.

Research has revealed five ISO QMS versions since its inception in 1987. However, the focus of this research was based on the fourth one, ISO 9001:2008 which has six mandatory procedures, namely: control of documents; control of records; internal audit; control of non-conformity; corrective action; and preventative action. The main objective of this study was to assess the level of compliance with these procedures of QMS to improve Eskom's QMS.

The study was conducted in two departments, namely Project Execution and Plant at Eskom, Bloemfontein only. The following were investigated: level of awareness of QMS requirements; compliance with the six mandatory procedures; which requirements are challenging to employees; the involvement of management; and, lastly, what Eskom should do with non-compliance. The main finding was that despite it being management's main function to maintain required levels of QMS maturity, reviews were not conducted as mandated by the organisation. As a result, a recommendation was that management involvement in issues of QMS not only be top management's ordinance, but line managers, as well as the latter, should maintain QMS in their respective departments by monitoring maturity through procedures in place at Eskom.

CHAPTER 1: INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

The International Standards Organisation (ISO), a Non-Governmental Organisation (NGO) founded in 1947, is based in Geneva, Switzerland (ISO, 2016). ISO's objective is to create globally common standards which, when correctly implemented, should enable easy access to global markets, lead to economic growth organisations, and improve the lives of people and societies (El-Morsy *et al*., 2014:120). According to El-Morsy (2014), an organisation can achieve economic growth by increasing cost savings and optimising operations. Also, customer satisfaction is achieved through improved quality services or products, resulting in increased sales. As such, ISO compliance should lead to access to global markets by removing trade barriers; improved credibility and image; increased productivity and competitiveness; and improving the lives of people through services or products that are safe, reliable and of good quality (El-Morsy *et al*., 2014:120). Organisational activities which are well guided by procedures and processes will enable employees to go beyond what is expected of them. Hares-Saizarbitoria and Boirol (2013:49) concur, opining that in managing an organisation, Quality Management Systems (QMS) and formalised procedures may lead to said organisation's success.

Six years after ISO 9001:2008 (QMS) certification, Eskom's compliance in addition to that needed to be assessed. Simila *et al.* (2014:1) hold that the effectiveness of a QMS can be determined by the compliance of people involved in it. Based on this, the level of compliance with ISO 9001:2008 (QMS) in the Project Execution (PE) and Plant Departments of ESKOM required assessing.

1.2 PROBLEM STATEMENT

1.2 1 BACKGROUND TO THE PROBLEM

Eskom generates, transmits and distributes electricity in South Africa. It supplies power to different segments such as mining, the municipal sector, traction, commercial industry and households. It also sells to the Southern African Development Community (SADC). Commitment to meeting the country's and SADC's electricity demands while operating within the terms of numerous laws and regulations puts Eskom under operational pressure. This commitment also necessitates that Eskom considers tariffs, expansion activities, environmental compliance, regulation, and licensing. Also, there should be compliance with ISO 9001:2008 (Quality Management Systems) as this could place the organisation well for global recognition and ease of accessing global funding markets.

1.2.2 PROBLEM STATEMENT

Eskom Distribution Operations encompass both major and minor projects which can be executed by many departments, but for this study, however, the researcher concentrated on two, namely Project Execution and Plant. Major projects comprise the strengthening and refurbishment of substations and power lines. Minor projects include minor electrification and the reliability of supply projects. As mentioned by Moseley and Dessinger (2009:327), satisfactory execution of these projects is dependent on good Quality Management Systems. Although Eskom received ISO 9001:2008 certification in 2012, no compliance assessment in the Project Execution and Plant Departments has been recorded yet. The researcher, therefore, wanted to ascertain the level of ISO 9001:2008 compliance in the two departments mentioned above.

1.3 RESEARCH AIM AND OBJECTIVES

1.3.1 RESEARCH AIM

This research aimed to improve quality management in Eskom in general and in the Project Execution and Plant Departments of Eskom in Bloemfontein specifically.

1.3.2 RESEARCH OBJECTIVES

1.3.2.1 Main objectives

The main objective of this study was to determine the level of ISO 9001:2008 compliance in the Departments of Project Execution and Plant at Eskom Bloemfontein.

1.3.2.2 Secondary objectives

1. To determine the level of awareness of ISO 9001:2008 (QMS) among employees.
2. To investigate employee adherence to ISO 9001:2008 (QMS) procedures.
3. To explore ISO 9001:2008 (QMS) procedures, which employees still found challenging.
4. To determine managers' involvement in ISO 9001:2008 (QMS) implementation.

1.4 RESEARCH QUESTIONS

1.4.1 MAIN RESEARCH QUESTION

What is the compliance level with ISO 9001:2008 within the Project Execution and Plant Departments of Eskom?

1.4.2 SUBSIDIARY RESEARCH QUESTIONS

1. What is the level of awareness of ISO 9001:2008 (QMS) among employees?
2. To what extent do employees adhere to ISO 9001:2008 (QMS) procedures?
3. Which ISO 9001:2008 (QMS) procedures are a challenge to employees?
4. To what extent are managers involved in ISO 9001:2008 (QMS) implementation?

1.5 SUMMARY OF THE RESEARCH METHODOLOGY

In the section below, a summation of the research methodology follows. Chapter 3 of this research has more details on this topic.

1.5.1 RESEARCH DESIGN

A research design entails all activities that a researcher follows to get answers to research questions (Kumar 2014:122). For this study, the philosophy of choice was positivism. According to Sukamolson (2013:2), quantitative positivism research (as followed in this study) allows a researcher to use surveys for data collection. Based on this, the researcher, therefore, used questionnaires to collect data.

1.5.2 OVERVIEW OF THE TARGET POPULATION AND SAMPLING

According to Devore (2015:3), a population is a demarcated group of members on who the research is done. Initially, for this study, the target group was 49 people from the Project Execution office in Bloemfontein, but later 35 employees of the Plant Department were included as advised by the researcher's study supervisor. Both groups making up the population were given questionnaires.

1.5.3 DATA COLLECTION

Data was collected through questionnaires the researcher had given to the identified departments. The aim was to analyse both departments' levels of compliance with the Quality Management System as implemented at Eskom.

1.5.4 DATA ANALYSIS

For data analysis, the answers from participants were coded using the captured data as recommended by Wetcher-Hendricks (2011:15). This data was then analysed by a statistician. The results from the analysis are shared in detail in Chapter 4.

1.6 IMPORTANCE OF THE STUDY

Eskom is operating under numerous laws and regulations as stated earlier. These include but are not limited to: tariffs; expansion activities; and environmental and quality compliance. One of these, compliance with Quality Management Systems (QMS) in two departments at Eskom Bloemfontein, was the focus of this study. As stated earlier, the objectives were: to discover with which of the six procedures employees were still struggling; on which they were improving; and lastly, the role of management in issues of compliance.

This research was to promote awareness to managers who play a crucial role in ensuring Eskom reached its goal of quality on different levels. It also wanted to highlight employee adherence to rules, procedures and policies for achieving the quality desired by customers as a compromise of quality could result in loss of reputation as well as certification to QMS. Loss of certification would then put Eskom in the untenable situation of not being able to compete globally or getting financial support from funding entities because of poor quality services.

This study also wanted to determine employees' and managers' levels of compliance with QMS as well as their level of readiness for the latest QMS, ISO 9001:2015, released in 2015. Eskom only had until September (2018) to move to the new QMS.

1.7 LIMITATIONS OF THE STUDY

Kumar (2014:273) defines limitations as structural problems regarding the methodological aspects of a study. One challenge beyond the researcher's control, which might have affected the research results or methodological aspects of this study related to the number of people who gave feedback. A quantitative method requires the largest number of respondents to validate results. As some respondents from Project Execution were out on construction sites two to four days a week, resulting in a low response rate, Plant was also included in the study.

According to Howlette *et al.* (2014:45), limitations are aspects of a study that reduce generalisability, the latter which Sekaran and Bougie (2014:22) see as the scope of applicability of research findings from one organisational setting to another setting. This research will apply to Eskom Distribution's Project Execution and Plant only.

1.8 ETHICAL ISSUES

Corbin and Strauss (2014:28) aver that the most important human needs include, but are not limited to, being treated with dignity, confidentiality and respect. For this study, no one was asked to reveal who they were on the questionnaires and analysis was not done separately.

1.9 OUTLINE OF THE STUDY

Chapter 1 introduces the study, highlighting the importance of the study and the overall structure of the research. Issues such as problem statement, aims and objectives of the

study, research questions, summary of methodology and limitations of the study are discussed.

Chapter 2 gives a review of the literature, especially certain aspects of ISO 9001:2008, and the latest Quality Management System, ISO9001:2015.

Chapter 3 presents a detailed account of the research methodology for this study, as well as the challenges that the researcher was faced with during data collection and how these were dealt with.

Chapter 4 focusses on results and discussions obtained from the study.

Chapter 5 concludes and gives recommendations from the results and literature reviewed regarding the level of compliance with ISO 9001:2008 in two departments.

1.10 CHAPTER SUMMARY

This chapter introduced the research, giving the background and a brief outline thereof. The research question driving the research was presented, and the objectives specified. A layout of the chapters was also presented.

The next chapter presents the literature reviewed during the study.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter gave a general overview of the study. This chapter reviews the literature related to the study.

The literature review covers the setup and function of the International Standards for Organisations (ISO), Quality Management Systems (QMS), the benefits of being ISO certified, why organisations seek certification, and lastly the evolution of QMS, especially ISO 9001:2008 which was the focus of the study.

2.1.1 ISO SETUP AND FUNCTION

As mentioned in the previous chapter, ISO is a Non-Governmental Organisation founded on the 23rd of February 1947. It is based in Geneva, Switzerland and is composed of members from 170 countries of the world, each having a single vote. Currently, there are over 21000 standards available (ISO, 2016).

ISO standards relate to three categories, namely: organisations, society and environment with eleven issues for these categories (ISO, 2016). This study only looked at five issues as they relate to different types of organisations, namely: sustainable development, climate change, energy and renewables, services, and health and safety, which follow below.

2.1.2 SUSTAINABLE DEVELOPMENT

Pearce *et al.* (2015:1-3) believe that sustainable development is the rate of change and development over time. It pertains to desirable change as needed by an organisation, society and the environment. Warburton (2013:3) argues that sustainable development is not only about economic growth to meet human needs but also to curb environmental

destruction. Thus, it is not only about meeting current societal needs but also about considering future needs through the pursuit of environmental conservation (Grainger & Purvis, 2013:1).

ISO develops standards to help organisations of all sizes to deal uniformly with the three pillars of sustainable development, namely: environment, economy and society (ISO, 2016). ISO's 21000 standards aim to assist organisations with these pillars. The impact of the activities of an organisation on the environment is measured by the environmental footprint. Thus, there is a standard for carbon footprint (CFT) which stipulates the principles, requirements, guidelines and communication on CFT. This helps organisations determine their carbon footprint and ensure that it is reported uniformly across all organisations (ISO, 2016). Consequently, those that comply with international standards are better positioned to grow their global market share and increase economic growth (ISO, 2016). Notwithstanding size or whether they deliver services or goods such organisations, could benefit society because of high levels of safety, quality, environmental performance and efficiency (ISO, 2016).

Sustainability in Eskom refers to the provision of energy and other services at affordable tariffs to customers and stakeholders (Eskom, 2012) while contributing to economic development and bearing in mind environmental issues, quality and society. All these should be incorporated into Eskom's processes to continually improve performance and development (Eskom, 2012). Thus, taking care of natural resources is important for the sustainable development of any organisation, whether it renders a service or goods.

2.1.3 CLIMATE CHANGE

Pindycky (2013:1) postulates that climate change is caused by the accumulation of carbon dioxide (CO2) and other greenhouse gases (GHGs). Unwanted climate change manifests in higher global temperatures, greater climate variability and increased sea levels. According to Vijayavenkataraman *et al*. (2012:879-880), climate change refers to a statistically significant variation in either the mean state of the climate or variability over

extended periods. However, there are various ways in which organisations can reduce the impact of their activities on climate change. One way mainly used is the removal of carbon from the atmosphere by using sources of energy that do not cause pollution (Vijayavenkataraman *et al*., 2012:879-880).

Standards developed by ISO are to help organisations address climate change by providing measures, sharing information about greenhouse gas (GHGs) emissions, and managing energy and the environment (ISO, 2016). Two of these ISO standards, ISO 14064 (for quantification) and 14065 (for verification), outline how GHG emissions can be measured and verified globally. Standards used for sharing information are those developed for claims and communications: ISO 14020:2000 (for environmental labels and declaration of all general principles) and ISO 14063:2006 (environmental management standards and guidelines for communication). ISO 21930:2007 is for sustainability in building construction (ISO, 2016).

The impact of organisational activities on climate change is managed through the framework provided by ISO 14001 about an environmental management system (EMS) which aims to help organisations manage and assess environmental impact and performance (ISO, 2016). When this system is implemented correctly, whether the organisation is certified or not, the following benefits can be realised: reduction in the use of raw material; reduction in energy consumption; improvement in process efficiency; reduction in a waste generation; disposal costs; and utilisation of recoverable resources (ISO, 2016). ISO 14001 and other ISO management system standards implement the Plan-Do-Check-Act (PDCA)-cycle (ISO, 2016).

Eskom has a strategy in place to respond to climate change, which is a six-point plan. The steps of this plan are diversification; energy efficiency; adaptation; innovation; investment; and progress (Eskom, 2017). Diversification is achieved through a diverse energy mix of electricity generation to reduce greenhouse gases through energies such as clean coal, solar, hydro, nuclear and wind (Eskom, 2017). Energy efficiency is achieved through projects run by Eskom to reduce electricity demand, for example, the

installation of fluorescent tubes (Eskom, 2017). Adaptation to climate change is made by continuously evaluating the impact of Eskom emissions on the environment, for example at Lethabo power station where bag filters which remove 99.8% of fly ash released through filtration equipment (Eskom, 2017). Innovation is achieved through research done by the appropriate departments in Eskom, dealing specifically with new technologies (Eskom, 2017). To consistently review and update all related activities including finance, Eskom follows carbon market mechanisms through its Department of Climate Change and Sustainability, for investment and in partnership with national and international stakeholders (Eskom, 2017).

2.1.4 ENERGY AND RENEWABLES

Renewable energy is obtained from naturally repetitive and persistent flows of energy in the local environment. Examples of renewable energy include solar radiation from the sun, wind, biomass from plants, hydropower from rivers, waves from oceans, tides and geothermal heat (Twidell & Weir, 2015:3).

Non-renewable energy emits greenhouse gases which contribute to climate change through fossil fuels such as oil, coal, gas and others (Apergis & Payne, 2012:733). Interdependent usage of renewable and non-renewable is recommended with a combination of them, possibly leading to economic growth (Apergis & Payne, 2012:737).

Walwyn and Brent (2015:391) argue that the primary sources of energy in South Africa are coal and nuclear, hence the need to reduce carbon emissions in the country by introducing renewable energy generated by the Independent Power Producers Programme (REI4P) to diversify the power generation sector. The integration of other energy resources into the grid should take the following requirements into account: cost; environmental pollution; technological robustness; fuel supply stability; and energy supply efficiency. Thus far, renewable energy sources meet all the above requirements (Suberu *et al.*, 2013:631).

Adherence and strict compliance with international standards help organisations in the energy sector increase energy efficiency and promote the development of renewable energy (ISO, 2016). There are more than 150 ISO standards that deal with energy efficiency and renewability as part of the Energy Management System Standard (EnMS), ISO 150001. EnMS guides organisations on how to use energy more efficiently to save money and resources and incorporates systems such as those for quality and environmental management (ISO, 2016). EnMS also helps organisations:

- Develop a policy for more efficient energy use;
- Fix targets and objectives to meet policies;
- Use data to better understand and decide about energy use;
- Measure results;
- Review how well their policies work; and
- Continually improve energy management.
  (ISO, 2016).

Although it is not compulsory for organisations to be certified or to register with this system, they can put it into practice and reap the benefits thereof (ISO, 2016). However, those who get certification are in a better position to share information on good practices globally with other organisations (ISO, 2016).

Eskom has a department named Grid Access Unit (GAU) which was established in 2012 to manage energy renewable Independent Power Producers (IPPs). GAU helps IPPs integrate smoothly into the national grid. There are currently 62 IPP projects with a 4200 MW generation capacity connected to Eskom's national grid. They all contribute to the diversification mix of energies mentioned under climate change (Eskom, 2017).

2.1.5 SERVICES

ISO develops standards for various types of services in different divisions to contribute to dependable, reliable and high-quality services (ISO, 2016). Organisations that put these standards to practice reap substantial benefits. Some of these standards encapsulate

dealing with complaints (ISO 1002:2014), drinking water and waste (ISO 245410:2007), and a range of customer-related issues are contained in the ISO/IEC Guide 76:2008 (ISO, 2016).

The standard for dealing with complaints lays out a process to resolve complaints associated with planning, design, operations, maintenance and improvement (ISO, 2016). Even though employee well-being, salaries and leave are not addressed by this standard, organisations of any size can still benefit from putting it into practice (ISO, 2016). One benefit that can accrue is improved customer service when customer complaints are treated as urgent and dealt with efficiently (ISO, 2016). That is, the ISO/IEC Guide 76:2008 is a standard for addressing customer issues. It provides a checklist for customer representatives during the development of service standards in an organisation and could be beneficial in that customers will have confidence in the services rendered, and organisations would benefit economically since their competitiveness might increase (ISO, 2016).

Sharabi (2015:312) argues that quality service is complemented by the quality of work life. This means that how employees are managed in the organisation impacts customer satisfaction, which then leads to the rendering of quality services. A happy employee translates into a happy customer because if the saying “the customer is king” should be believed, customers’ needs and expectations should be central as the subjective interpretation of each customer determines the quality of service rendered by a particular organisation to a particular customer (Malik *et al.,* 2012:123). If the customer is happy, the service was good, and the reverse is also true. However, good or bad is determined by the client’s experience and not the organisation.

Eskom has seven regional customer service sites: Gauteng, Cape Town, Bloemfontein, Durban, Polokwane, East London and Witbank which are interconnected to avoid overloading one during severe peak call times from customers, like during a storm (Eskom, 2017). This is to minimise customer waiting time and to provide customers with the choice of their preferred language. These sites are open 24 hours a day, seven days

a week. To assess the quality of service as experienced by the customer, monthly telephonic, online or automated surveys are conducted with the customer. Feedback from these surveys is then used to develop strategies for service improvement as well as performance management purposes (Eskom, 2017).

The researcher believes that for customers' needs to be met, management should make sure that employees' needs are also met as this would positively contribute towards providing quality service as a corollary of job satisfaction.

2.1.6 HEALTH AND SAFETY

ISO 45001 is a standard for occupational health and safety and a management system that can be used to achieve the following: reduced risks in the workplace; improved employee safety; and safer working conditions for employees (ISO, 2018).

Reason (2016:1) claims that accidents befall both the organisation and its employees. Employee accidents are those in which a specific person or group is often both the agent and the victim of the accident. In these, the employee involved suffers more than the organisation. On the other hand, organisational accidents are those that have devastating effects on uninvolved populations, assets and the environment (Reason 2016:1). For the reduction of workplace risks, there should be mechanisms in place to ensure protection is in place for various activities in the organisation. Mechanism may help:

- Create understanding and awareness of local hazards.
- Give clear guidance on how to operate safely.
- Provide alarms and warnings when danger is imminent.
- Restore the system to safe in an abnormal situation.
- Interpose safety barriers between the hazards and the potential losses.
- Contain and eliminate the hazards should they escape barriers.
- Provide the means of escape and rescue should hazard containment fail. (Reason, 2016:7).

To improve employees' safety in the workplace, Griffin and Hu (2013:1) believe that the employees' and their leaders' reactions towards safety should be positive. Leaders should have a safety culture that is "safety inspiring" and "safety monitoring". In return, employees should be encouraged to participate in safety issues and comply with safety monitored by leaders (Griffin & Hu 2013:1).

Better and safer working conditions suggest that organisations should address any lack in safety, health and comfort issues such as improper lighting and ventilation, and excessive noise which could inconvenience and affect employees' performance if not addressed (Leblebici, 2013:38). At Eskom, performance is measured against safety and security in all activities with the Occupational Health and Safety (OHSAS 18001) standard helping to control both occupational and safety risks in the workplace (Eskom, 2016). Key performance indicators (KPIs) are also in place to measure lost time, injury rate, and employee fatalities (Eskom, 2016).

2.2 OVERVIEW OF QUALITY MANAGEMENT SYSTEMS (QMS)

To comprehend QMS, quality should first be defined for this study.

2.2.1 THE MEANING OF QUALITY

According to Rumane (2010:6), quality means different things to different people, manufactures, suppliers and organisations. The same can be said about poor quality. Therefore, any company that aspires to compete and be globally recognised should pay attention to quality precisely because reputation damage could result from poor quality issues, which could ultimately be dire to it. Quality adds to a company's competitive advantage (Evans & Lindsay, 2012:4).

Kay (2014:125) argues that quality is the responsibility of every person involved in a task. From top management to the lowest ranking person in an organisation, quality should be

of the utmost importance, with management making sure that employees understand what is required of them regarding quality. It is important for any company to know and understand that deficient commitment and involvement from management could lead to poor quality which then reflects on the company and how it is viewed (Viada-Stenger *et al*., 2010:1).

Goetsch and Davis (2014:5) see quality as a dynamic state associated with products, services, people, processes, meeting customer needs and expectations and helping produce superior value. In the face of frequent power outages and irregularities of funds at Eskom in recent times, the concern is whether employees adhere to ISO 9001:2008 (QMS), subscribed to in 2012 and meant to ensure effectiveness in Eskom's operations of power supply.

2.2.2 QUALITY MANAGEMENT SYSTEMS (QMS)

Barton (2014:22) states that the main purpose of QMS is the documentation of processes. From this perspective, QMS is all about managing the activities of the business following the right procedures as documented and made clear to all employees at all levels. QMS is, therefore, a set of policies, processes and procedures required for planning and execution in the core business area of the organisation.

Roudias (2015:100) argues that QMS outlines the goals and objectives of a business and gives clear direction in terms of which processes and policies should be followed by all in the business for goals to be achieved. The responsibilities of different role-players must be clearly defined for all involved in any business activities. When the activities of an organisation are well-guided by procedures and processes, this enable employees to go beyond what is expected of them (El-Morsy *et al*., 2014:120). That is why Quality Management Systems (QMS) and formalised procedures in the management of business contribute to success (Hares-Saizarbitoria & Boirol 2013:49).

Eskom's quality statement states that it is the responsibility of all employees to integrate quality into their daily activities in compliance with QMS. The statement shows that Eskom will support employees on different levels through training in matters regarding quality. Adherence to the Safety Health Environment and Quality (SHEQ) policy (32-727) shows that Eskom is committed to implementing management systems that outline the accountability of management and responsibility of all employees regarding compliance. Principles and rules to be followed to achieve SHEQ requirements are also provided in the organisation.

2.2.3 BENEFITS OF ISO 9001 - QUALITY MANAGEMENT SYSTEM (QMS)

Basaran (2016:34) opines that the benefits of ISO 9001(QMS) can be external and internal to an organisation with the external benefits being:

- Consistency and satisfaction of customers;
- The organisation will be able to expand easily to other areas for business;
- Increase in competitiveness and recognition; and
- Maintenance of the image.

The internal benefits are:

- The quality of the outputs of employees change;
- The level of QMS awareness in the organisation is raised;
- Improvement in document management, planning of activities and managers' management of employees; and
- A decrease in cost to the organisation.
  (Basaran, 2016:34)

Quality Management Systems (QMS) are important to Eskom because of the following benefits (Eskom, 2015):

- Ensuring customer satisfaction;
- Reduced cost due to poor performance;
- Reduced repeated business faults;

- Increased profitability; and
- Increased effectiveness.

2.2.4 REASONS WHY ORGANISATIONS SEEK QMS CERTIFICATION

Fonseca (2015:170) believes that QMS has achieved great international visibility as standards are recognised globally, and organisations seek ISO certification for various reasons as indicated below.

2.2.4.1 Motivation for seeking IS O9001 certification:

- To improve the organisations quality image;
- To improve the organisation's efficiency and management;
- To improve internal and external communication;
- To resolve the quality problem resulting from poor work;
- To reduce liability risks and insurance costs;
- To meet internal policy requirements from parent companies.

(Fonseca, 2015:564)

Eskom is no different in seeking ISO certification for these reasons. The next section reviews the evolution of the different versions of the ISO Quality Management Systems (QMS).

2.3 EVOLUTION OF ISO QUALITY MANAGEMENT SYSTEMS (QMS)

The ISO 9000 series of standards concern customer needs (ISO, 2016). Wiele *et al*. (2005:101) assert that these standards provide for specific well-documented procedures in organisations. Thus, this QMS, which has had five versions since inception, namely ISO 1987, 1994, 2000, 2008, 2015, is about documenting all activities in organisations.

Discussions of the respective versions follow below.

2.3.1 ISO 9000:1987

ISO 9000:1987, based on the British System “BS5750” the international standard in use at that time, is the first attempt at quality management standards for both local and international use (Tricker, 2014:36). That system had these benefits:

- Reduction in customer complaints;
- Reduced cost to the organisation;
- Improvement in controlling activities in the organisation;
- Improvement in employee behaviour;
- Improved control of documentation and procedures; and
- A better working environment for all.

  (Long *et al*., 1991:1)

According to Tricker (2014:36), ISO 9000:1987 was approved and accepted by the *Commission European* de *Normalization Electro Technique (CEN) a*fter this version came ISO 9000:1994.

2.3.2 ISO 9000:1994

ISO 9000:1994 was published in March 1994 with about 250 changes made on the 1987 version to make it easier to understand (Tricker, 2014:36). Three of the main changes to this newer version were:

- All employees in the organisation, from top management to the lowest employee, should have a job profile stating their duties and level of authority.
- Reviews of the designs in this standard were obligatory.
- Data should be kept up to date through document control.

The version, following this one, was ISO9000:2000.

2.3.3 ISO 9000:2000

Sroufe and Curkovic (2008:1) indicate that the main goal of ISO 9000:2000 was to evaluate an organisation's ability to effectively design, produce, and deliver quality products and services. They argue that the involvement of top management in all organisational activities relating to quality should bring customer satisfaction.

According to Vouzas and Gotzamani (2005:260), ISO 9000:1994 was revised because of the following loopholes that were identified:

- Strategic quality planning;
- Absence of top management commitment;
- Lack of systematic training in quality;
- Human resource issues not addressed;
- Vital issues regarding competitiveness not addressed;
- Absence of benchmarking and quality cost measurements; and
- Issues relating to health, safety and the environment not being covered. (Vouzas & Gotzamani, 2005:260)

In December 2000, ISO 9000:2000 was reduced to three principles, namely: ISO 9000:2000; ISO 9001:2000; and ISO 9004:2000 (Gotzamani, 2005:646). ISO 9000:2000 is about the fundamentals of and vocabulary used in Quality Management Systems, whereas ISO 9004:2000 gives QMS guidelines for performance improvement. ISO 9001:2000 focusses on quality management through a set of principles which can be used by organisations to improve their performance. These principles refer to customer focus; leadership; involvement of people; process approach; system approach to management; continual improvement; factual approach to decision-making; and mutually beneficial supplier relationships. It would, therefore, behove organisations to integrate these principles with compliance to the requirements of Quality Management Systems (Laszlo, 2000:14).

2.3.3.1 Summary of the eight quality management principles

2.3.3.1.1 Principle 1: Focus on customers

Organisations should know their customers' needs to meet their requirements and exceed their expectations. To achieve this, performance feedback from customers is of the utmost importance (ISO, 2016).

Fink (2014:435) believes that management's commitment to customer focus impacts employees' attitude and spills over to customer satisfaction and retention. In turn, customer satisfaction improves chances of meeting internal and overall budget goals as well as quality and deadline goals. This works best when management takes on the responsibility to empower employees and give them opportunities to engage with customers and develop a deep understanding of what customers truly value. New customers' needs should also be sensed, and strategic capabilities developed to fulfil these needs (Mukerjee, 2013:50).

The Eskom Distribution Business Management System Manual (DIS-BMS-01) used by the Free State Operating Unit (FSOU) outlines how customer focus can be achieved. First, top management should ensure that effective communication takes place between the organisation and its customers concerning their satisfaction during and after services are rendered. Then the customer services division in the FSOU should guarantee that the key needs of customers are continuously addressed and regularly solved. Regular meetings should take place and records kept of the minutes.

2.3.3.1.2 Principle 2: Leadership

Leaders should direct employees towards achieving organisational goals and objectives while creating a conducive work environment for employees to put the interests of customers first (ISO, 2016).

According to Bryman (2013:2), leadership involves a social influence process in which someone steers group members towards a goal. Consequently, those in leadership positions can influence the people reporting to them. Bryman (2013:6) argues that leadership is all about managers or leaders creating and making visible a desired future state of the organisation visible to all members; in this case, employees.

According to the Eskom Business Management Manual, job profiles which clearly define responsibilities and authorities in the organisation are maintained at the corporate level and reviewed as required for adequacy to meet customers' needs.

2.3.3.1.3 Principle 3: Involving people

Quality issues do not only concern management and certain employees but all the people in an organisation. All these stakeholders, from top management to the lowest employee, play a role in determining and attaining quality (ISO, 2016).

Kronholm and Wästerlund (2013:430) believe that employees' development and growth are determined and aided by involving them in organisational activities other than what is on their job description. Therefore, the responsibility to motivate employees to get attracted to those activities and volunteer rests on the organisation.

In Eskom, functional managers are responsible for making sure that employees reporting to them are competent to deliver the outputs and are trained in quality related issues. They should also provide an adequate working environment for employees to achieve quality objectives (Eskom Business Management Manual).

2.3.3.1.4 Principle 4: Process approach

For the organisation to achieve its goals, all activities should be documented and dealt with as processes, and everyone should be clear of what is expected of him/ her (ISO, 2016).

Sinha *et al*. (2016:344) argue that if all activities and resources in the organisation are managed as a process, the desired quality will be reached. In Gorny's (2015:139) view, since a process approach is followed to meet customer needs, it is part of the performance. It is argued that if all the activities of an organisation are documented and clear to everyone, then the demands or needs of customers will be met and performance reached.

Eskom uses a High-Performance Utility Model (EHPUM) that contains all the processes for all the employees and all the different activities in Eskom. These processes are explained in the Process Control Manuals (PCMs), which stipulated clearly what needs to be done and who should do it. The roles and responsibilities are defined, indicating responsibility and accountability as well as who should be a consultant and informed.

2.3.3.1.5 Principle 5: System approach

All systems in the organisation should be regarded as processes and should be carried out as such (ISO, 2016). No one should tweak the system for his/ her purposes or remove or add activities without following the right processes so that there is uniformity in all areas (ISO, 2016). In support, Gorny (2015:139) claims that organisations can only benefit from their processes if all practise these.

The Business Management Manual stipulates the systems to be used for different activities in Eskom. For example, if there was non-conforming, employees should use Maximo, K2, Workplace, Q-Pulse and Achiever Plus to trace and record all instances of non-conformance.

2.3.3.1.6 Principle 6: Continuous improvement

ISO 2016 calls for employees to aim to do better all the time to improve an organisation's performance. According to Owen (2013:3), continuous improvement is not brought about by controlling processes only but also taking performance to new levels that keep and

continuously creating opportunities for further improvement. The aim of continuous improvement is perfection even through practical or economic constraints that the organisation might face.

At Eskom, any improvement opportunities that arise are supposed to be acted on by corrective and preventive action procedures. Also, audit results should be shared within the business so that other employees can learn from them and improve the effectiveness and efficiency of their Quality Management Systems.

2.3.3.1.7 Principle 7: Factual approach to decision-making

Decisions of the organisation should not be based on individuals' emotions or feelings, but rather on data analysis and verification (ISO, 2016). This is supported by Sinha *et al*. (2016:344) who state that management should consider that operational decisions regarding quality management must be based on the analysis of sufficient data and information. This requires that data be accurate and reliable and based on logical analysis balanced with experience and intuition. Therefore, management should regard information as a basis for informed decision-making (Gory, 2016:139).

Eskom's Business Management System Management recommends that data should be analysed before any decision is made.

2.3.3.1.8 Principle 8: Mutually beneficial Supplier's relationship

According to ISO 2016, organisations and supplies should have a good relationship since they benefit from each other. Sinha *et al*. (2016:344) corroborate that organisations and their suppliers are interdependent, stating that if the relationship is beneficial to both values will be created. It falls on management to establish and maintain good working relations with all suppliers at all levels and ensure that payments, conflicts and disputes concerning supplier are settled timeously (Pavlovic, 2013:644).

Commercial processes in Eskom outline the control which is required for all service providers and stipulate the partner relationships with all other divisions within Eskom.

In 2008, ISO 9000:2000 was replaced by ISO 9001:2008 which is discussed below.

2.3.4 ISO 9001:2008

According to Psomas and Fotopoulos (2009:130), ISO 9001:2008 brought no new requirements but introduced simplified and easy to follow documented QMS procedures as follows: control of documents; control of records; internal audit; control of non-conformity; and corrective and preventive actions (Thorpe & Sumner, 2014:18).

2.3.4.1 Control of documents

Approval and re-approval of procedures before issue need to be controlled (ISO, 2016). Based on this, Hermansson and Hellström (2014) indicate that an ISO compliant organisation should have systems to access, distribute and control documents.

The Documentation Management Policy outlines the management and control of all documented activities of Eskom (Eskom, 2012). This policy sets out the intents and gives direction in managing and controlling documents. Eskom uses a system known as Hyperwave to share documents across departments and sections. During the empirical study, Eskom's document control systems (Hyperwave especially) were examined against ISO 9001:2008's standard to verify compliance or non-compliance.

2.3.4.2. Control of Records

A record is a procedure used to control the identification, storage, protection, retrieval, retention and disposal of certain information or data (ISO, 2016). For record control, Eskom uses the Document and Record Management System number [32-6], which is aimed at ensuring that approved documents are available to the right people at the right

time and place. This system ensures that all Eskom business functions and activities are documented to facilitate the sharing of knowledge, training and standardising the implementation of business processes. It outlines the process and requirements for the creation, registration, support review, authorisation, publication, archiving and disposal of documents. During the empirical study, records were examined against this system and ISO 9001:2008 record requirements.

2.3.4.3 Internal Audit

This is defined as a procedure to define a planned programme of audits to ensure that processes meet both ISO and company requirements (ISO, 2016).

Eskom's performance audit procedure is called the Business Management System (BMS). It is an independent, structured process that measures performance against objectives, targets, activities, controls and is also used to identify opportunities for improvement. This system was measured against ISO 9001:2008 standards and the results are shared in Chapter 4.

2.3.4.4 Control of non-conforming products

This procedure aims to ensure that no non-conforming products are used, and action is taken when they are (ISO, 2016).

Battini *et al*. (2012:1682) argue that customer satisfaction is maintained by controlling product defects. This is done during two phases, namely acceptance and inspection phases. In the acceptance phase, defects are defined, and items that need checking identified. In the inspection phase, defective items should be detected as soon as possible, and appropriate treatments formulated (Battini *et al*., 2012:1682).

Eskom's Control of Non-Conforming Products or Service System 2015 outlines how defects should be controlled in case of non-conformance. It also describes the process

of identifying and controlling non-conforming products or services. This system was tested against ISO 9001:2008 standards.

2.3.4.5 Corrective and preventive action

Corrective and preventative action is written procedures to ensure that the root causes of problems are identified, and verified actions are taken to correct those problems effectively (ISO, 2016). These procedures indicate steps to identify potential problems and eliminate them before they occur (ISO, 2016).

Dimaria and Sivasankar (2014:18) suggest that corrective action is necessary for addressing violations of standards. On the other hand, preventative actions should prevent problems from recurring and should be specific, measurable, achievable, realistic and timed (SMART) (Raampersad *et al*., 2014:144).

For this study, document analysis was conducted to assess the extent to which Eskom promotes the identification of potential problems and opportunities for employee improvement. Also, of interest was how employees dealt with potential quality challenges as required by ISO 9001:2008 standards. In other words, employee compliance with ISO 9001:2008 standards.

2.3.5 MEASURING OF ISO 9001:2008

Hammer 2014 believes that an organisation must have quality objectives, which represents the desired results of the organisation to measure quality management. For this, organisations should compare actual results with desired ones and be able to improve if required.

Top management at Eskom is supposed to ensure that quality objectives are established at relevant levels within the organisation and that they are measurable and consistent with the Quality Policy (QP). They should also ensure that authority and responsibilities

are defined and communicated to the relevant levels in the organisation. On the other hand, management representatives in different departments are responsible for (Eskom, 2012):

- Establishing, implementing and maintaining QMS processes.
- Reporting QMS performance and any need for improvement to top management.
- Promoting and ensuring customer awareness requirements in their departments.

According to ISO (2016), organisations should specify their processes to monitor, measure, analyse and improve services and products as this will enable them to achieve customer satisfaction and compliance with Quality Management Systems, and this would continuously improve their processes. On the plus side, these organisations would be QMS compliant and may achieve customer satisfaction as discussed below.

2.3.5.1 Customer satisfaction

ISO requires organisations to determine their way of measuring customer satisfaction as part of QMS (ISO, 2016). A good QMS could translate to happy customers because of services rendered to them (ISO, 2016). This would compel organisations to greater awareness of how customer complaints are handled, surveys conducted, and communication occurs to measure the quality scale (ISO, 2016).

2.3.5.2 Compliance with ISO 9001:2008 (QMS)

Organisations need to use both external and internal auditing to measure their compliance with QMS (ISO, 2016). Internal auditing is a mandatory procedure done by trained employees declared capable of carrying out an audit. However, a cautionary measure that prevents internal auditors from auditing their work should be in place. This auditing should also be scheduled, and the things that will be covered by the audit made clear to people being audited (ISO, 2016). In line with mandatory document control, audit records should be recorded, and any findings of non-conformity addressed by management through corrective action (ISO, 2016).

2.3.6 THE BENEFITS OF USING ISO 9001:2008

The benefits ISO 9001:2008 compliance are as follows:

- Procedures of all activities of an organisation are well-documented for all employees, including new ones, to implement with ease.
- In case of emergencies, there is a procedure to guide everyone in what to do to minimise risks and correct mistakes before they become worse and costly.
- The organisation is globally recognised with increased market share and growth. (ISO, 2016)

Eskom was able to standardise all processes, policies and procedures used by employees in generation power stations, transmission and distribution of power and there are guidelines in place for all employees to follow in emergencies (Eskom, 2017).

ISO 9001:2015 followed version 2008 and is discussed below.

2.3.7 ISO 9001:2015

The newest ISO standard, ISO 9001:2015 was published on the 23rd of September 2015 (ISO, 2016). ISO 9001:2008 certified organisations, like Eskom, was granted a three-year transition period to migrate to this edition. Eskom, therefore, had until 2018 to fully comply.

Since, like ISO 9001:2008, ISO9001:2015 is a generic standard that guides organisations to provide services that meet the needs of their customers and legal requirements, it can be used by small or big organisations (ISO, 2016).

2.3.7.1 Quality management principles

According to Fonseca (2014:394), the quality management principles in this new version have been reduced from 8 to 7. Below are the management principles, according to ISO 9001:2015:

- Customer focus (same as version 2008);
- Leadership (same as version 2008);
- Engagement of people (in version 2008 it was called involvement of people);
- Process approach (same as version 2008);
- Improvement (in version 2008, it was called continuous improvement);
- Evidence-based decision-making (in version 2008 it was called factual approach to decision-making);
- Relationship management (in version 2008 it was called mutually beneficial supplier relationship);

The principle dropped from version 2015 was system approach. According to Fonseca (2014:394) a decision was taken to merge system and process approach since there were no clear differences between the two.

At the time the research was done, Eskom had already started with awareness of ISO 9001:2015. Every month there were quality themes for each department to discuss during safety stand-downs and monthly outage meetings. In these meetings, employees were made aware of new language and new terms that were going to be used with the new version, in addition to sharing new requirements.

2.3.7.2 Process approach

Fonseca (2014:393) claims that ISO 9001:2015 puts more emphasis on process approach and less on documentation. A process approach is all about procedures or processes in an organisation and how they interact, a Plan-Do-Check-Act (PDCA) cycle and risk-based thinking (ISO, 2016).

Discussions of PDCA and risk-based thinking follow.

2.3.7.2.1 PDCA

PDCA allows organisations to allocate resources developing and establishing processes and earmarking enough personnel to help speed up improvements of processes (ISO, 2016).

PDCA entails the following:

- Plan: organisations should have quality objectives and purposes in place for their processes. There should be resources to fulfil those objectives and the needs of customers.
- Do: organisations should execute/ do what is planned.
- Check: processes should be monitored and, where applicable, be measured, and the results kept.
- Act: actions should be taken to improve performance.
  (ISO, 2016)

Eskom has already incorporated PDCA by regulating the amount of workforce in the regions. At the time of this research, only posts for critical positions and the Free State region were advertised with competence and qualifications as the determining factors. The organisation monitors resources and measure performance every quarter.

2.3.7.2.2 Risk-based thinking

Risk-based thinking is about identifying risks associated with the processes and the mitigating factors which can be put in place (ISO, 2016). This helps the organisation to come up with preventative measures to overcome these risks and take full advantage of chances for improvement (ISO, 2016).

Eskom's Distribution Business Management System (DIS-BMS-01) embraces the Integrated Risk Management Process (IRMP), which involves the following:

- Identification of all potential risk exposures through a systematic approach (this includes both external and internal risks which can impact the business).
- The analysis of and standard approach to quantifying identified risks.
- The identification of line responsibility for risk areas.
- The adoption of a plan of action for addressing or minimising risks.
- Monitoring the implementation and effectiveness of the adopted plan of action
- Audits to ensure the sustainability of integrated risk management may be initiated by the Executive Committee (EXCO), Holdings Risk Management Committee, and General Manager Risk Management.
- Business Area or Departmental risks are consolidated to give one Distribution Division Risk picture.

2.4 MEASURING EMPLOYEE COMPLIANCE WITH ISO (QMS)

To find answers to the research questions, a questionnaire was designed based on the six mandatory procedures of Quality Management Systems and the eight principles. The final version of the questionnaire consisted of six parts, namely:

- Demographic variables;
- Employee levels of awareness of ISO 9001:2008 (QMS);
- Employees adherence to ISO 9001:2008 (QMS) procedures;
- ISO 9001:2008 (QMS) procedures posing a challenge to employees and why they were challenging;
- Managers involvement in ISO 9001:2008 (QMS) implementation; and
- What Eskom does with employees who are not ISO 9001:2008 (QMS)compliant.

2.5 CHAPTER SUMMARY

Relevant literature on ISO was reviewed, and an overview given by Quality Management Systems (QMS) and the evolution thereof in this chapter. ISO standards are not limited to certain organisations, but can be used by small or large organisations, certified or not to reap the benefits. Although ISOs cater for businesses, society and the environment

only five issues under businesses namely sustainable development, climate change, renewable energy, services and health and safety were of import for this study.

Sustainable development means different things to different people with some believing that it is all about the economic growth of businesses while others believe that while businesses grow, they should also meet the needs of the people, and take care of the environment and the natural resources used to render the services for future generations. Eskom shares the same sentiments.

It was shown that climate change affects everyone, from society and business to the environment. Businesses should try to reduce the impact of their activities on climate change by removing carbon from by-products to stop pollution. Eskom is attempting this at generation stations by using both renewable and non-renewable sources of energy which are interdependent.

ISO standards are said to cater to all types of services and indicate that the quality of life of employees contributes to the quality of services rendered. Although ISO Health and Safety Standards had not been published, it is believed that they would reduce risk in the workplace, improve the safety of employees and establish a safer work environment. Based on Quality Management Systems, quality adds to the competitive advantage of organisations. Therefore, all employees in the organisation should take quality serious with management at the forefront. Clear quality objectives and goals and should be communicated at all levels. Also, QMS certification has many advantages.

All five versions of ISO Quality Management Systems (QMS) that have been in existence were discussed. The first version was published in 1987 and was based on the British system. Later version 1994 brought about three major changes looked at in the study. Version 2000 was published because loopholes were identified. It also introduced eight principles of QMS. The 2008 version included documentation containing the six mandatory procedures of QMS as discussed in the chapter. The latest version, version 2015, is a generic standard which can be used by small or large organisations. In this

version the eight principles of QMs were reduced to seven. This version also introduces the Plan-Do-Check-Act (PDCA) cycle and risk-based thinking.

Lastly, the importance of employee compliance with QMS was discussed, and the questionnaire designed to answer the research questions based on the six mandatory procedures and the eight principles of QMS explained.

CHAPTER 3: METHODOLOGY

3.1 INTRODUCTION

This chapter looks at the research design, population, sampling, data collection, and interpretation thereof as well as the ethical considerations of this study. Below are the philosophical underpinnings of this research which explores the level of compliance with ISO 9001:2008 at Eskom Distribution: Project Execution and Plant in Bloemfontein.

Literature indicates that QMS calls for documenting all business activities in such a way all employees, from top management to the lowest level, will easily understand what is required of them (Barton, 2014:22). QMS also helps ensure that goals and objectives of a business are communicated to employees through processes and policies (Roudias, 2015:100). Hares-Saizarbitoria and Boirol (2013:49) and El-Morsy *et al*. (2014:120) opine that employees who undoubtedly understand what is expected of them regarding their outputs can exceed expectation, thereby contributing to the success of the business.

In Chapter 2, the benefits associated with QMS requirement compliance, regardless of certification and size, were identified. Benefits that go with compliance were said to be both external or internal. Literature reviewed identifies, among others, the following external benefits: competitiveness; recognition; and customer satisfaction, and internal ones which include: a decrease in cost to the business; and an increase in quality output of employees (Basaran, 2016:34).

The same chapter also highlighted various reasons different businesses seek ISO certification. These may include, but are not limited to:

- Improving the image of the business;
- Improve business efficiency; and
- Improving communication internally and externally

(Fonseca, 2015:564).

Eskom, like any other business, also has its reasons for wanting ISO certification. One is an aspiration to be recognised globally to be able to secure funding from foreign investors. Literature suggests that Eskom and other businesses that want to compete globally should pay attention to issues around quality (Rumane, 2010:6) as there is a reputational risk associated with poor quality and businesses are quite averse to incurring this liability (Evans & Lidsay, 2012:4).

As previously stated, this research investigated compliance with QMS requirements in two departments, namely Project Execution and Plant in Eskom Distribution, Bloemfontein. Of import to this research was the six mandatory procedures of QMS namely: control of documents; control of records; internal audit; control of non-conformity; and corrective and preventive actions as the research questions were based on them (Thorpe & Sumner, 2014:18).

The section below details the methodology followed to answer the research questions.

3.2 RESEARCH PHILOSOPHY

Sekaran and Bougie (2014) explain research philosophy as the way people view the truth and acquire knowledge. These differ from person to person. According to Bailey (2014:1), philosophy allows researcher to be thinkers. And in Marsh and Stoker's (2010:185) view, there is a relationship between two broadly used philosophical assumptions that underpin research, namely ontology and epistemology. They explain two concepts of ontology, namely foundationalism and anti-foundationalism.

Foundationalism enables the researcher to answer questions about the form and nature of reality. The view is that there is a world out there that the researcher needs to explore and examine to make sense of it (Marsh & Stoker, 2010:185). On the other hand, in anti-foundationalism, the world is seen as a social construct of which the researcher part. Because of this, the researcher cannot observe the world objectively since there is no reality outside the researcher.

In contrast, epistemology is the theory of knowledge (Marsh & Stoker, 2010:185). In this philosophy, it is about what is known by the researcher, what still needs to be learnt, and whether the researcher can be real or objective. Both philosophies help the researcher choose the best methodology to follow (Marsh & Stoker, 2010:186).

In broad terms, there are two epistemological positions in research, namely positivism and interpretivism. This study follows the positivist philosophy. Easterby-Smith *et al*. (2012:26) believe that the positivist philosophy exists independently of the observer. Thus, according to Tekin and Kotaman (2013:82), the researcher's values should be isolated from the issue under investigation to ensure objectivity, which is a hallmark of sound research. The choice of positivist philosophy has implications for the research design as illustrated below (in paragraph 3.3).

3.3 RESEARCH DESIGN

Kumar (2014:122) asserts that research design schedules activities which, when followed, results in answers to research questions. Research design, therefore, details the methods of collecting, analysing and interpreting data (Kumar, 2014:122). For this study, the researcher used a quantitative design (of which there are many) informed by the positivist philosophy (or paradigm) alluded to above. Taylor and Medina (2013:2) believe that the positivist paradigm mostly involves quantitative methodologies. Sukamolson (2010:1) sees quantitative research as an exercise of collecting numeric data, which is analysed using mathematically based methods. Even if data is not in a numeric form, the researcher can design a research instrument that can convert non-numeric to numeric data. Various kinds of quantitative research designs could be used, such as correlational, causal-comparative, surveys or experiments. For this study, surveys were used.

According to Sukamolson (2010:1), survey research is done through a questionnaire to measure characteristics of the population with statistical precisions. Therefore, for this study, questionnaires were used to gather information from the population. Since there are many types of surveys, a self-administered questionnaire was used.

3.4 POPULATION

Devore (2015:3) describes the population as a well-defined collection of objects. The employees working in the Project Execution (45 employees) and the Plant (29 employees) departments based in Bloemfontein were the target population for this study resulting in a target population size of 74.

3.5 SAMPLING

Sekaran and Bougie (2010:266) refer to sampling as a selection of sufficient numbers to represent the population. For this research, a census (Crano *et al*., 2015:224; Sekaran & Bougie, 2014:245; Baig *et al*., 2015:28) was done where all the 45 employees in Project Execution and the 29 from plant section both in Bloemfontein totalling 74 were given questionnaires.

3.6 DATA COLLECTION

According to (Lynch, 2013:21) the questionnaire is a popular data collection method in quantitative research. Bahari (2010:19) and Lynch (2013:21) believe that in quantitative design, the researcher collects information that produces statistical data from respondents. For this research, a structured Likert-type questionnaire was used to collect data.

Becker *et al*. (2012:12) refer to the questionnaire as a structured interview. Initially, the intention was to distribute the questionnaire using email to the respondents. Flaherty *et al.* (2015:261) states that sending questionnaires via email affords participants an easier

and more immediate means to respond. Bearing in mind the many changes in the aforementioned department, the researcher opted for the drop off/ picking up (DOPU) method of data collection for this study. According to Allred and Ross-Davis (2011:1), DOPU results in a higher response rate since the researcher meets face-to-face with respondents when dropping off the questionnaires.

Out of 45 questionnaires which were given to the employees in Project Execution, only 27 were collected, while out of the 29 questionnaires distributed to the Plant Department, as many as 26 were completed by the respondents, resulting in 72% response rate. Considering that Johnson and Wislar (2012:1805) suggest that there is no scientifically proven minimally acceptable response rate, the 72% response rate was considered acceptable.

3.6.1 THE CHALLENGES

The researcher encountered some challenges during the data collecting stage, and these are discussed below with the idea that it will benefit ESKOM in the end.

Some employees in Project Execution were not very keen to respond to the questionnaire believing that they have nothing to gain by participating. However, the response from employees in the Plant Department was more positive, and the questionnaires were completed quickly, some were so quick that they returned the questionnaires before the arranged date. They also completed them not needing daily reminders. Not surprisingly, the researcher received the 90% responses within a week from Plant as opposed to the 60% after a month from Project Execution.

It seems that good relations with employees benefitted the researcher in achieving the high response rate in the Plant Department, where the researcher is currently working as a senior technician. Face-to-face interaction with employees at Project Execution also produced a return rate, which was acceptable.

3.7 DATA ANALYSIS

Data analysis was carried out as advised by the researcher's supervisor. Statistical techniques for analysing quantitative data were used by coding the questionnaires. Wetcher-Hendricks, (2011:15) and Pallant (2013:1) recommend this first step in which response alternatives are coded according to a scoring system. This process was done by a data-capturer from the Central University of Technology in Bloemfontein (CUT) who used the statistical package for social science (SPSS). For purposes of analysis, a statistician was consulted. The results of the analysis are discussed in detail in Chapter 4.

3.8 ETHICAL CONSIDERATIONS

Corbin and Strauss (2014:28) advice that both respondents and data collected be treated with value, dignity, respect and confidentiality. This was done in this study as neither the population nor data collected was disclosed to anyone except the data-capturer. The respondents were not asked to reveal their names on the questionnaire to guarantee their anonymity.

3.9 CHAPTER SUMMARY

In this chapter, the philosophical underpinnings used in this study were explored in detail. The following aspects were also discussed: research design, population; sampling; data collection; challenges encountered by the researcher; interpretation of data; and lastly, ethical considerations.

The next chapter presents the results of the data analysis.

CHAPTER 4: RESULTS

4.1 INTRODUCTION

The primary objective of this study was to assess the level of compliance with ISO 9001:2008 Quality Management Systems (QMS) within Eskom Bloemfontein's Project Execution and Plant Departments. In this chapter results from data analysis are shared and discussed concerning the literature.

The secondary objectives of the study were to: (1) determine the level of awareness to QMS among employees in the mentioned departments; (2) investigate employees adherence towards QMS requirements; (3) explore those QMS procedures which challenge employees and the reasons behind those challenges; (4) find out how managers were involved in QMS implementation, and lastly (5) investigate what Eskom does with employees who do not comply with QMS requirements. All these mentioned objectives were informed by the aim of this study, which was to assist in improving quality management in the two departments specifically and in ESKOM in general.

4.2 RESPONSE RATE

As indicated in the previous chapter, a total of 74 questionnaires were administered to all employees in the Project Execution and Plant Department. The overall response rate was 72% as 53 questionnaires were returned.

4.3 BIOGRAPHIC DISTRIBUTION OF RESPONDENTS

Table 4.1 represents a summary of the biographic distribution of respondents.

Table 4.1: Summary of biographic distribution of respondents

Personal details	Category	Frequency	Percentage
Gender	Male	30	56,6%
	Female	23	43,4%
Job status	Technician	9	17,3%
	Senior Technician	11	21,2%
	Engineer	2	3,8%
	Senior Engineer	3	5,8%
	Project Services	6	11,5%
	Clerk of Works	5	9,6%
	Project Coordinator	12	23,1%
	Contract Management and Admin	3	5,8%
	Senior Supervisor	1	1,9%
Years at Eskom	Two years	1	1,9%
	Three years	1	1,9%
	Five years	17	32,7%
	Ten years and above	33	63,5%
Highest education level	Matric/G12	2	3,8%
	College qualification	6	11,3%
	Diploma	15	28,3%
	BTech Eng./PM	22	41,5%
	BSc and Above	8	15,1%
Age	18-25 years	2	3,8%
	26-35 years	18	34,0%
	36-45 years	24	45,2%
	46-55 years	7	13,2%
	56 and Older	2	3,8%

4.3.1 GENDER DISTRIBUTION

Figure 4.1 shows a not so fair representation between males (56.6%) and females (43.4%). The 16% difference shows a workplace that is still dominated by males, contrary to national efforts towards gender parity at work.

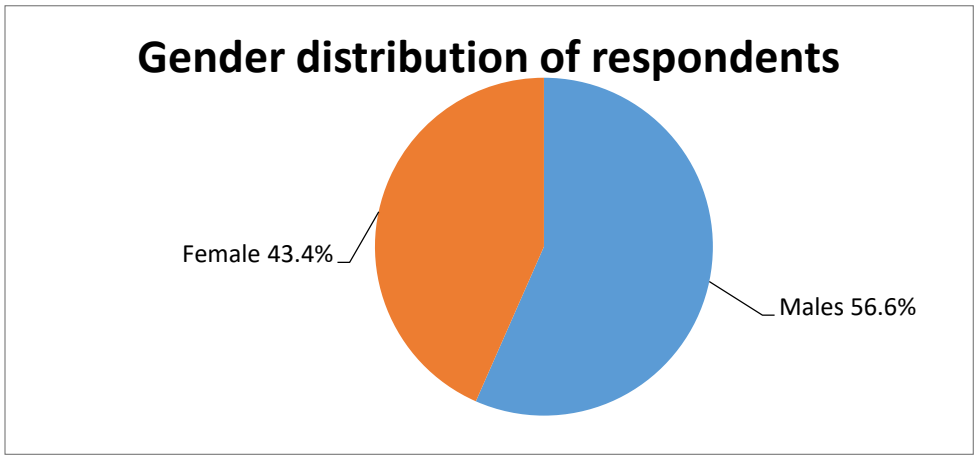

Figure 4.1: Gender distribution of respondents

4.3.2 JOB STATUS

Figure 4.2 shows that the largest proportion (23.1%) of respondents were Project Coordinators with Senior Technicians making up the second largest group (21.2%) represented, followed by Technicians (17.3%), then Project Services Personnel (11.5%) and, lastly, only one Senior Supervisor (1.9%).

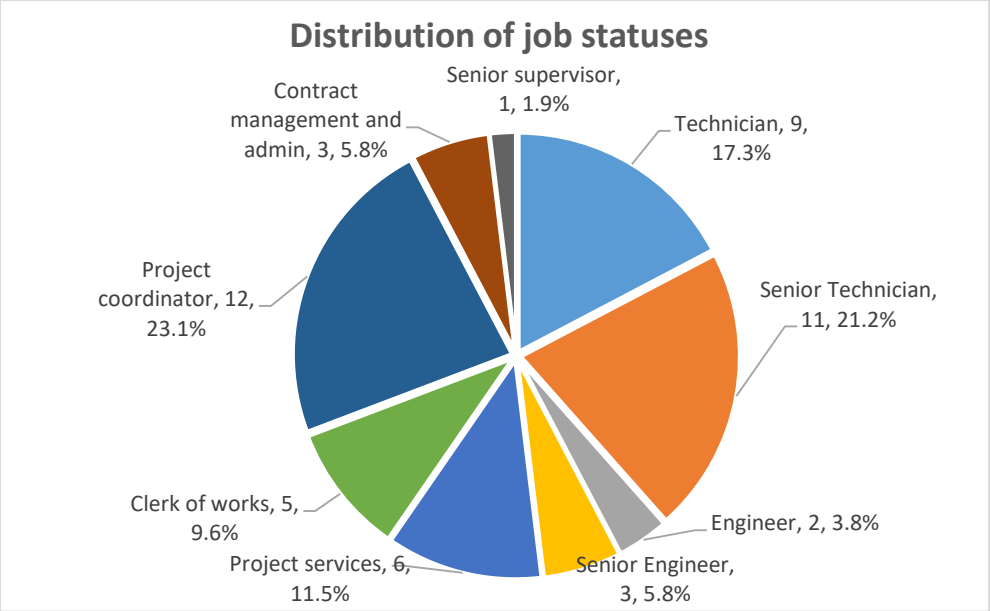

Figure 4.2: Job status distribution of respondents

4.3.3 YEARS AT ESKOM

Figure 4.3 shows that most of the research participants (63.5%) were seasoned Eskom workers have been with the organisation for at least ten years. This means that these respondents must have gained valuable knowledge about the organisation and quality assurance over the years.

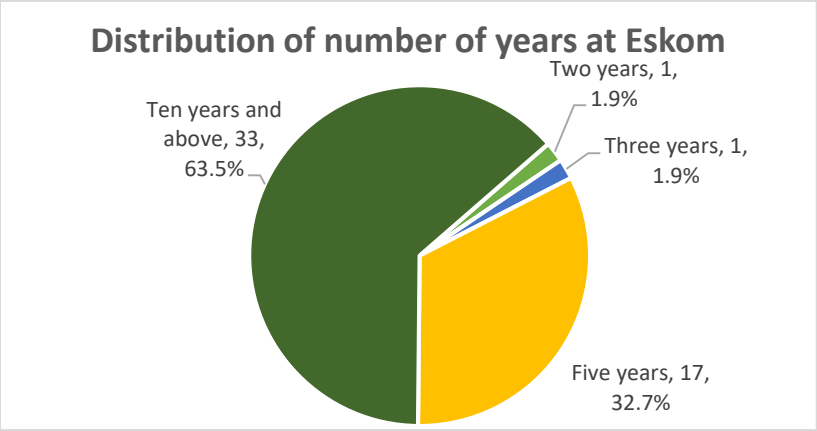

Figure 4.3: Distribution of respondents' number of years at Eskom

4.3.4 HIGHEST EDUCATION LEVEL

Figure 4.4 shows that most of the respondents (96.2%) were fairly well educated with only (3.8%) having only Matric as their highest level of education. The most (41.5%) held BTech Engineering degrees, followed by those (28.3%) with a diploma, then (15.1%) BSc degrees or above and the least (11.3%) with college qualifications.

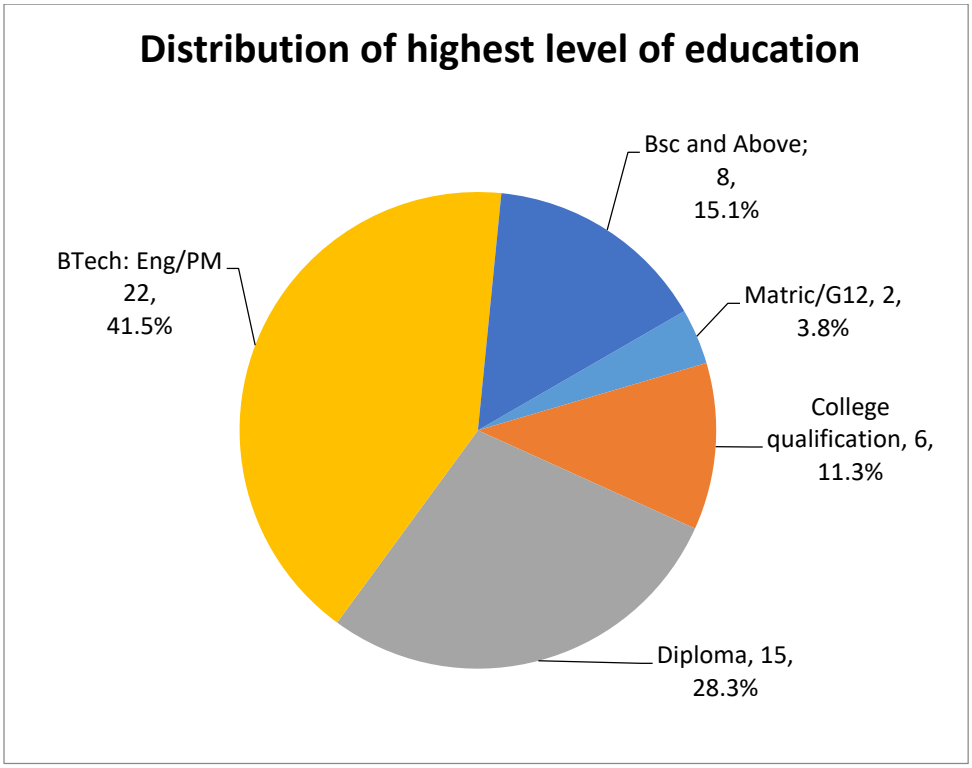

Figure 4.4: Distribution of respondents' highest level of education

4.3.5 AGE

Figure 4.5 shows the age distribution of the respondents. It is shown that most (79.2%) were either young adults with the 26-35 age group at 45.2%, second-most the 36-45 age group at 34%, followed by the middle-aged group 46-55 at 13.2%. Those older than 56 years and the youthful age group of 18-25 were tied at 3.8%. Based on these figures, the labour force of Eskom could therefore be described as quite young.

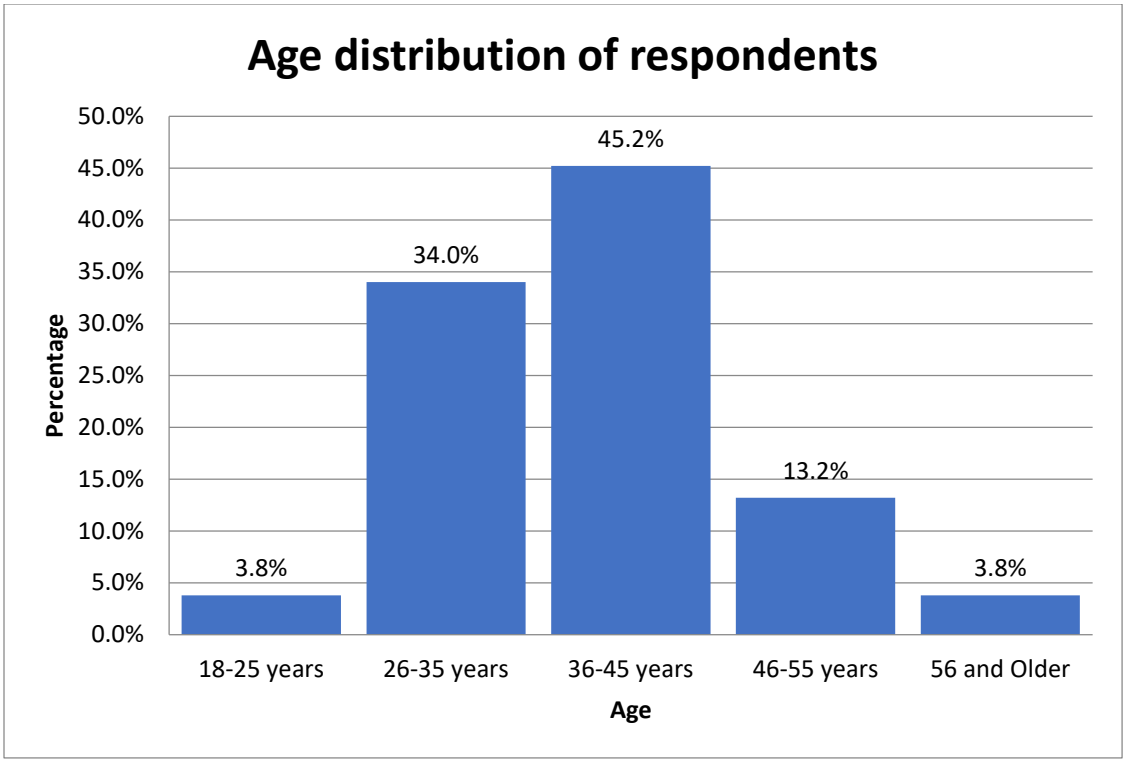

Figure 4.5: Age distribution of respondents

4.4 FINDINGS RELATED TO THE RESEARCH QUESTIONS

4.4.1 EMPLOYEE LEVEL OF AWARENESS OF ISO 9001:2008 (QMS)

Results from this section helped to answer the research question: ***What is the level of awareness of ISO 9001: 2008 (QMS) among employees***?

Awareness of ISO 9001: 2008 QMS was measured concerning: quality policy and statement; QMS procedures; QMS requirements; QMS promotion; QMS communication process; and importance of employees in QMS. It was then calculated using percentage analysis. Results regarding awareness of each of these dimensions are discussed below.

It is important to identify the procedure followed. Firstly, the Likert-scale used rated awareness on a scale of **not at all**; **low**; **moderate**; **high** and **excellent**. Secondly, **not**

at all and **low** were combined and considered **unacceptable** while **moderate; high** and **excellent** were combined and considered **acceptable** levels of awareness.

4.4.1.1 Awareness of quality policy and quality statement

Summary of the awareness of the quality policy and statement is presented in Table 4.2 below. It was captured by the first construct in the questionnaire, which consisted of questions 6a and 6b.

Table 4.2: Awareness of quality policy and statement

Awareness of quality policy		Frequency Distribution					Descriptive		Latent Factor (Principal Component) Coefficient
		Not at all	Low	Moderate	High	Excellent	Mean	Standard deviation	
6a. Actual level of Eskom quality policy understanding	Count	0	3	24	22	4	2.5	0.7	0.8
	%	0.0%	5.7%	45.3%	41.5%	7.5%			
6b. Actual level of understanding of Eskom quality statement	Count	1	4	20	24	4	2.5	0.8	0.8
	%	2%	7.5%	37.7%	45.3%	7.5%			
Average		1%	6.6%	41.5%	43.4%	7.5%			
Awareness of quality policy		**unacceptable**		**acceptable**					
		7.6%		**92.4%**					
		Cronbach's Alpha					0.67		

From Table 4.2, it is quite clear that the majority (92.4%) of the participants' level of awareness of ESKOM's quality policy and quality statement ranges between *moderate* (41.5%), *high* (43.4%) and *excellent* (7.5%). And a small percentage of (7.6%) represents a small number of employees who are not fully aware of Eskom's quality policy and statement.

As was alluded to in Chapter 2, Section 2.4.5, Eskom's quality policy and statements state the principles, objectives and rules to be followed to achieve quality and other attributes

(Eskom, 2012). The figures mentioned above paint a picture which gives the impression that the participants understood the organisation's principles and rules concerning quality.

4.4.1.2 Awareness of QMS procedures

A summary of awareness of QMS procedures is presented in Table 4.3. It was captured by the second construct in the questionnaire, being question 7a only.

Table 4.3. Description statistics of QMS procedures

Awareness of QMS procedures		Frequency Distribution					Descriptive		Latent Factor (Principal component) Coefficient
		Not at all	Low	Moderate	High	Excellent	Mean	Standard deviation	
7a. Level of actual understanding of the procedures to be followed in Eskom's QMS	Count	0	4	30	14	5	2.4	0.8	
	%	0%	7.5%	56.6%	26.4%	9.5%			
Average		0%	7.5%	56.6%	26.4	9.5%			
Awareness of QMS procedures		**unacceptable**		**acceptable**					
		7.5%		**92.5%**					

Table 4.3 shows that majority of the participants viewed the level of actual understanding of the procedures to be followed in Eskom's QMS to be between moderate (56.6%), high (26.4%) and excellent (9.4%, which gives an average of 92.5%, which is an acceptable level of awareness. A small percentage (7.5%) indicated a minute number of employees with little understanding.

According to Mahesh *et al*. (2010:24), employee commitment to processes strengthens with increased awareness, understanding and perceived importance of QMS. If only 35.9% of employees have a good enough (high and excellent) level of awareness, it raises the question of why the other 56.6% of employee's only a moderate level of commitment to processes have geared towards quality.

4.4.1.3 Awareness of QMS requirements

Table 4.4 provides a summary of the awareness of the requirements of QMS. The data was derived from question 8a to 8d in the questionnaire. Table 4.4 presents the participants' responses to QMS requirements. From the table above, the majority of the employees averaging 95.3% were aware of QMS requirements while a small percentage 4.7% were not fully aware.

Table 4.4: Descriptive statistics of awareness of QMS requirements

Awareness of QMS requirements		Frequency Distribution					Descriptives		Latent Factor (Principal component) Coefficient
		Not at all	Low	Moderate	High	Excellent	Mean	Standard deviation	
8a. Awareness of who customers are	Count	1	2	3	31	16	3.1	0.8	0.9
	%	1.9%	3.8%	5.7%	58.5%	30.2%			
8b. Familiarity with customers' needs	Count	1	4	4	30	14	3.0	0.9	0.9
	%	1.9%	7.5%	7.5%	56.6%	26.4%			
8c. Awareness of what will happen when customers' needs are not met	Count	0	1	8	29	15	3.1	0.7	0.9
	%	0.0%	1.9%	15.1%	54.7%	28.3%			
8d. Awareness of importance of meeting customers' needs	Count	0	1	1	22	29	3.5	0.6	0.7
	%	0.0%	1.9%	1.9%	41.5%	54.7%			
Average		1%	3.7%	7.6%	52.8%	34.9			
Awareness of QMS requirements		**unacceptable**		**acceptable**					
		4.7%		**95.3%**					
	Cronbach's Alpha						0.88		

Most of the respondents (58.5%) knew who their customers are and most respondents (56.6%) indicated that they are familiar with their customers' needs while 26.4% displayed excellent awareness of customer needs. Most of the participants also revealed that they were aware of the consequences of not meeting customer needs. This is reflected by the 54.7% of participants who indicated that they are highly aware of what would happen if customer needs were not met and the 28.3% who specified an excellent awareness. The

respondents seemed to appreciate the importance of meeting customer needs, with 54.7% claiming to have an excellent awareness of it and 41.5% saying that they placed high importance on meeting customer needs.

The literature reviewed in Chapter 2; Section 2.3.3.1.1 indicates that one of the QMS requirements is for employees to know their customers and their needs to meet and even exceed their expectation (ISO, 2016). The descriptive statistic table above shows that participants met this QMS requirement.

4.4.1.4 Promotion of awareness

A summary of the promotion of awareness is presented in Table 4.5. It was captured by the construct in the questionnaire, consisting of questions 9a to 9c. Table 4.5 shows that the promotion of QMS awareness is acceptable since most of the employees (92.9%) showed awareness and a small unacceptable percentage (6.9%) did not.

Table 4.5 shows that the needs of Eskom customers were well communicated to staff with 35.8% showing communication awareness to be moderate while 30.2% and 24.5% rated highly and excellently, respectively. The results also show that 43.4% of the participants had a moderate level of actual understanding of the benefits Eskom was gaining due to QMS implementation, whereas 43.4% rated highly and 9.4% excellent. Most of the participants' level of understanding of QMS was moderate at 47.2% and 35.8% high. Only 7.5% of respondents' level of understanding of QMS was rated low.

Table 4.5: Descriptive statistics for promotion of QMS awareness

Promotion of awareness of QMS		Frequency Distribution					Descriptive		Latent Factor (Principal component) Coefficient
		Not at all	Low	Moderate	High	Excellent	Mean	Standard deviation	
9a. The needs of Eskom customers are communicated to me	Count	2	3	19	16	13	2.7	1.0	0.8
	%	3.8%	5.7%	35.8%	30.2%	24.5%			
9b. Level of actual understanding of the benefits Eskom is gaining due to implementation of QMS	Count	1	1	23	23	5	2.6	0.8	0.9
	%	1.9%	1.9%	43.4%	43.4%	9.4%			
9c. Level of understanding of QMS	Count		4	25	19	5	2.5	0.8	0.9
	%	0.0%	7.5%	47.2%	35.8%	9.4%			
Average		1.9%	5%	42.1%	36.4%	14.4%			
Promotion of QMS awareness		**unacceptable**		**acceptable**					
		6.9%		**92.9%**					
	Cronbach's Alpha						0.75		

Through the descriptive statistics in Table 4.5, an observation can be made that Eskom was doing enough to promote QMS. Most (92.9%) of the employees interviewed knew who their customers were and what benefits Eskom was gaining because they were implementing QMS. It was revealed in the literature (see Chapter 2, Section 2.3.3.1.1) that one of the principles of QMS was customer focus. Thus, an organisation that knows its customers' needs and meet them would be in a better position to manage budgetary issues in the organisation, and its employees would also be empowered by management (Fink, 2014:435).

4.4.1.5 The communication process

A summary of the awareness of communication processes is presented in Table 4.6 below. It was captured by the construct in the questionnaire that was made up of question 10a and 10b.

Table 4.6: Awareness of QMS communication process

Awareness of QMS communication process		Frequency Distribution					Descriptive		Latent Factor (Principal component) Coefficient
		Not at all	Low	Moderate	High	Excellent	Mean	Standard deviation	
10a. Level of employees' understanding of QMS in your department	Count	1	5	33	12	2	2.2	0.7	0.9
	%	1.9%	9.4%	62.3%	22.6%	3.8%			
10b. Level of QMS establishment in Eskom Distribution	Count	1	7	21	18	6	2.4	0.9	0.9
	%	1.9%	13.2%	39.6%	34.0%	11.3%			
Average		1.9%	11.3%	50.9	28.3%	7.6%			
Awareness of the QMS communication process		**unacceptable**		**acceptable**					
		13.2%		**86.8%**					
	Cronbach's Alpha						0.77		

Table 4.6 shows that the majority of respondents (86.8%) reported moderate to excellent awareness of the quality of the communication process.

4.4.1.6 Awareness of relevance and importance of employee contribution to QMS

The section below outlines the results of employees' awareness of the relevance and importance of their contribution to QMS. The results of the awareness of the relevance and importance of employee outputs are presented in Table 4.7.

It is quite clear from Table 4.7 that there is awareness of the importance and relevance of maintaining a good quality management system at Eskom where 95.5% of the respondents rated it as moderate, high or excellent and only 4.5% rated it as low or not important at all.

Table 4.7: Descriptive statistics of awareness of relevance and importance of QMS

Awareness of the relevance and importance of QMS		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		Not at all	Low	Moderate	High	Excellent	Mean	Standard deviation	
11a. Job output contribution to the quality of service in Eskom	Count	1	2	8	30	12	2.9	0.8	0.9
	%	1.9%	3.8%	15.1%	56.6%	22.6%			
11b. Significant effect of your job on customer satisfaction	Count	0	2	5	31	15	3.1	0.8	0.9
	%	0.0%	3.8%	9.4%	58.5%	28.3%			
11c. Customers can rate your job contribution to QMS	Count	1	1	8	32	10	2.9	0.8	0.8
	%	1.9%	1.9%	15.4%	61.5%	19.2%			
Average		1.3%	3.2%	13.3%	58.9%	23.3%			
Awareness of the relevance and importance of QMS		**unacceptable**		**acceptable**					
		4.5%		**95.5%**					
		Cronbach's Alpha					0.82		

An organisation which implements QMS does not only support its employees but also improves customer satisfaction. The following points could go a long way in contributing to and guaranteeing customer satisfaction (ISO, 2018):

- Minimal mistakes in the services rendered to the customer, seen as a quality issue;
- Communication or reporting is efficient;
- Scheduling and delivery of services are on time;
- A reduction in customer complaints; and
- Prompt revision of standards.

(ISO, 2018).

4.4.2 EMPLOYEE ADHERENCE TO ISO 9001:2008 (QMS) PROCEDURES

Results in this section helped to answer **question two,** which was: ***To what extent do employees adhere to ISO 9001:2008 (QMS) procedures?*** This question attempted to identify adherence to the following four aspects of ISO 9001:2008 (QMS) procedures namely: (1) documents and record requirements; (2) management review; (3) dealing with non-conformity; and (4) corrective and preventive actions.

As with awareness, adherence to ISO 9001:2008 (QMS) procedures was calculated using percentage analysis. The results of adherence to each of the dimensions (documents and records requirements; management review; non-conformity; corrective and preventive actions) are discussed below. However, before that is done, the researcher would like first to explain the procedure followed. The Likert-scale was used to rate awareness on a scale of no answer; not at all; when asked to; most times; and always. For measuring compliance, always was considered the only acceptable measure and all the others unacceptable as, from a quality perspective, there cannot be any other alternative to total compliance.

4.4.2.1 Adherence to document and record requirements

The section below outlines the results for document and record requirements. Table 4.8 is a summary of the findings as, from a QMS perspective, it is important to keep records and documents according to prescribed requirements since failure to do so will constitute non-compliance.

Table 4.8 presents results from the questionnaire items that dealt with document control and recordkeeping requirements. On average, the results indicate that adherence to the controlling of documents and keeping of records is not acceptable. A small percentage (14.7%) of employees always adhered to the requirement. This is an indication that a large number (85.3%) did not adhere to document and record requirements.

Table 4.8: Adherence to document and record requirements

Adherence to document and record requirements		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		No answer	not at all	when asked to	Most times	All time	Mean	Standard deviation	
12a. Do you use and keep documents according to the requirements of QMS?	Count	0	2	14	30	7	3.7925	0.7168	0,8
	%	0.0%	3.8%	26.4%	56.6%	13.2%			
12b. Do you use and keep records for projects according to the requirements of QMS?	Count	1	2	12	29	8	3.7885	0.8245	0,8
	%	1.9%	3.8%	23.1%	55.8%	15.4%			
12c. Do you have evidence of your implementation of the process mentioned above?	Count	2	6	8	28	8	3.6538	1.0075	0,8
	%	3.8%	11.3%	15.1%	52.8%	15.1%			
Average		2%	6.3%	22%	55%	14.7%			
Adherence to document and record requirements		**unacceptable**				**acceptable**			
		85.3%				**14.7%**			
	Cronbach's Alpha						0.78		

The results indicate that 56.6% of participants used and kept documents according to the requirements of QMS most of the time, whilst 13.2% did this all the time. Only 3.8% said they did not use and keep documents according to the requirements of QMS. Most of the participants (55.8%) used and kept records of projects as per the requirements of QMS most of the time and few (23.1%) did so when asked to. Furthermore, 52.8% of the participants had evidence that they implemented this process most of the time, whereas 11.3% did not have such.

The literature indicates that, for a company or business to control its documents and records effectively, a system that allows all employees access to documents and records should be in place (Hermansson and Hellström, 2014). At Eskom, there is a system called Hyperwave, which is used to store documents and records. Below are the requirements

of Eskom's 32-6 Document and Record Management Procedure. All documents should have:

- Document title: which is descriptive of document content, intention and type;
- Unique identifier: a unique identification number given to a specific document;
- Version control: this is used for internal review processes;
- Revision control: control number of the document with numeric value;
- Effective date: this is a date after the date of authorisation once all documents requirements have all been achieved;
- Disclosure classification: classification categories to be used, e.g. public domain, controlled disclosure, confidential, secret and top secret;
- File naming: all documents should have a unique identifier and title, e.g. 32-6 Document Management Procedure, and lastly,
- Document format: applicable ones should be used for the purpose.

Additional information regarding documents and records management in Eskom 32-6, states that all documents should have a default review after every three years unless otherwise stipulated. A technical standard has a five-year review cycle. All documents should be reviewed and updated before the assigned document review cycle expires or if changes had been identified six months before the review date.

The following are some of the findings regarding the use of Hyperwave:

- Some folders in Hyperwave were empty (no documents inside them).
- In some folders, excel spreadsheets were used for tracking those documents that did not have dates, and in some instances, those with nothing showing if the actions were completed or not.
- Some standards and templates used have unique identifiers (which is a QMS requirement), but these need to be revised. The standard for personal protective equipment's (PPE) unique number DISASAAT8, for example, was supposed to have been revised by May 2009 and was not. Template (34-158) for permission to transport high loads was also outdated.

- Many records, mostly from the asset and management section, did not have unique identifiers, e.g. maintenance plans, cover pages, line inspection sheets, etc.
- Some standards saved in the section's folders were last reviewed in 2009, e.g. (DISASAT8) the standard for protective clothing.
- There were also outdated templates, e.g. customer network centre permission doc (34-158).

The above findings suggest that some employees did not keep records and control documents according to QMS requirements. For example, the record retention matrix template (240-43723778) mandates that appointment letters in the departments be kept for five years and that the disposal method thereof should be shredding at the appropriate time. However, some expired appointment letters were still stored in folders in Hyperwave. Document register (240-44047082) is a list of documents used in the Plant department and shows classification, revision status, effective date, revision number, and revision date. Going through the list, it was found that many of the documents were supposed to have been revised in 2013 and some 2016. This indicates that even though Eskom has numerous procedures and processes, compliance remains a big problem.

4.4.2.2 Management review

Management review is outlined below with a summary thereof presented in Table 4.9.

Table 4.9 shows that adherence to management review is not acceptable as most of the participants (86.6%) indicated that management reviews were not performed as required by QMS. A small percentage (13.4%) believed that management reviews were adhered to.

Table 4.9: Descriptive statistics of adherence to management review

Adherence to management review		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		No answer	not at all	when asked to	Most times	All times	Mean	Standard deviation	
13a. Has quality policy been communicated within your section?	Count	0	3	10	26	14	3.9623	0.8312	0.77735
	%	0.0%	5.7%	18.9%	49.1%	26.4%			
13b. Has management defined quality objectives?	Count	1	4	9	32	6	3.7308	0.8429	0.78836
	%	1.9%	7.7%	17.3%	61.5%	11.5%			
13c. Have you received any report from management concerning the performance of QMS?	Count	2	11	7	25	6	3.4314	1.0818	0.75322
	%	3.9%	21.6%	13.7%	49.0%	11.8%			
13d. Has top management established a process for communicating information on the effectiveness of the QMS?	Count	6	6	8	24	7	3.3922	1.2178	0.69406
	%	11.8%	11.8%	15.7%	47.1%	13.7%			
13e. Are you able to demonstrate that you have taken part in a full cycle of management review?	Count	5	12	20	13	2	2.9038	1.0148	0.73936
	%	9.6%	23.1%	38.5%	25.0%	3.8%			
Average		5.4%	13.9%	21%	46.3%	13.4%			
Adherence to management review		**unacceptable**				**acceptable**			
		86.6%				**13.4%**			
	Cronbach's Alpha						0.79		

In Table 4.9 above, 49.1% of the respondents confirmed that quality policy had been communicated to them at most times, whereas 26.4% agreed that this was done all the time. Only 5.7% claimed that quality policy had not been communicated at all within their section. Most of the respondents (61.5%) confirmed that management defined quality objectives to them most of the timeswhile 17.3% claimed that management did so only when asked to. Most of the participants (49.0%) claimed to have received reports from management concerning the performance of QMS most times, 11.8% that they received them all the time, and 47.1% that top management had established a process for communicating information on the effectiveness of QMS most of the time.

According to Eskom's Management System Review Guideline (240-5345865), a management review is a function of executive management that should be done at planned intervals at least once every financial year. It includes the assessment of any opportunities for improvement and any changes which might be required on management systems. Thus, as part of this process, management should investigate if systems meet the objectives of the organisation. Management review meetings are formal and should produce minutes and tracking sheets for tracking action items by relevant stakeholders, both internal and external. When the meetings are over, Eskom should retain documented information as evidence of the results of the management system. Besides the questionnaire, the researcher went through folders in Hyperwave to check if there was any documented information regarding management reviews, but none were found under section folders. Only one review was found which was held in 2012. This leaves one with questions regarding compliance on the side of management. If management failed to comply with QMS requirements how are employees expected to comply?

4.4.2.3 Procedure for non-conformity

The section below outlines the results for action in cases of non-conformity. Table 4.10 presents the procedures followed for non-conformity.

Table 4.10: Descriptive statistics of adherence to the procedure for non-conformity

Adherence to the procedure for non-conformity		Frequency Distribution					Descriptive		Latent factor (Principal
		No answer	not at all	when asked to	Most times	All the time	Mean	Standard deviation	
14a. Do you maintain records of non-conformity on projects?	Count	9	13	12	14	5	2.8679	1.2563	0.9
	%	17.0%	24.5%	22.6%	26.4%	9.4%			
14b. Do you validate any repair or rework to rectify non-conformity?	Count	13	8	12	14	6	2.8491	1.3643	0.8
	%	24.5%	15.1%	22.6%	26.4%	11.3%			
14c. Is there any person in your section who deals with non-conformity issues?	Count	11	11	9	13	9	2.9623	1.4137	0,7
	%	20.8%	20.8%	17.0%	24.5%	17.0%			
14d. Do you identify and control any activities that do not conform to requirements before completion of the project?	Count	10	4	13	17	9	3.2075	1.3496	0.9
	%	18.9%	7.5%	24.5%	32.1%	17.0%			
14e. Do you have evidence of implementation of this process?	Count	8	10	8	20	7	3.1509	1.3067	0.9
	%	15.1%	18.9%	15.1%	37.7%	13.2%			
Average		19.2%	17.4%	20.4%	29.4%	13.6			
Adherence to the procedure for non-conformity		**unacceptable**				**acceptable**			
		86.4%				**13.6%**			
		Cronbach's Alpha					0.90		

Table 4.10 shows that 13.6% of the participants did not adhere to the requirements for non-conformity, and 86.4% did so sometimes.

From the table mentioned above, 22.6% of the respondents claimed that they maintained records of non-conformity on projects when asked to, 26.4% to do this most times, with 9.4% doing this all the time, and 24.5% claiming to never doing so. When asked whether

they validated repair or rework to rectify non-conformity, 24.5% did not answer, 15.1% claimed not to do this at all, and 22.6% when asked to do so. The results also show that 17% of the participants confirmed that there was always a person in their section to deal with non-conformity issues and 24.5% that this was so most of the time. However, 20.8% did not answer with 17% claiming that this was the case if asked to do so, and 20.8% said this was not the case at all.

Eskom has a procedure named control of non-conforming outputs (240-44175038). This procedure outlines the process for identifying and controlling non-conforming products or services. It also clarifies the responsibilities of relevant stakeholders involved in the process. According to the procedure, all employees should be empowered to report non-conformity of products or services following the sequence determined by the procedure. Activities to be followed by the originator and recipient are summarised in the paragraphs that follow.

Stipulated by the procedure, the originator is any Eskom employee who may discover non-conformity of a service or product. The procedure states that such a person should characterise non-conformity in terms of whether it requires minor or major action. Minor actions are treated as corrective actions that can be rectified without investigation and can be done informally within a reasonable time. Major actions, on the other hand, require formal reporting and investigation, which involves a form called the Non-Conforming Report (NCR). Upon completion, this form is given to the recipient for action.

A recipient is any person able to accept responsibility to correct a fault found. Furthermore, the procedure indicates that whether the recipient accepts or rejects the non-conformity form from the originator, the form should still be filed, indicating the decision before returning it to the originator. Once the non-conformity is resolved, the NCR should be closed and kept according to the requirements of the 32-6 Document and Record Management Procedure.

The researcher went through folders in Hyperwave to see if there were any recorded or kept NCRs, and none were found. The NCRs that were found were saved under the Plant Management folder and were identified by the Risk section in the Plant. These were all concerning transformers. As for other sections, no NCRs were found. Whether the absence of NCRs indicative there not being major non-conformance issues calls for a study into whether following processes is challenging to employees.

4.4.2.4 Control of corrective actions

The section below outlines and summarises control of corrective action in Table 4.11 below.

Table 4.11: Descriptive statistics of control of corrective actions

Control of corrective actions		Frequency Distribution					Descriptive		Latent factor (Principal
		No answer	not at all	when asked to	Most times	All the time	Mean	Standard deviation	
15a. Do you adhere to the documented procedure for control of corrective actions in your section?	Count	5	5	8	28	6	3.5	1.1288	0.8
	%	9.6%	9.6%	15.4%	53.8%	11.5%			
15b. Do you review non-conformities with your stakeholders?	Count	8	13	13	12	7	2.9	1.2772	0.9
	%	15.1%	24.5%	24.5%	22.6%	13.2%			
15c. Do you determine the causes of non-conformity?	Count	12	8	14	11	7	2.9	1.358	0.9
	%	23.1%	15.4%	26.9%	21.2%	13.5%			
15d. Do you take actions to prevent non-conformity occurring?	Count	8	2	13	19	10	3.4	1.2873	0.9
	%	15.4%	3.8%	25.0%	36.5%	19.2%			
15e. Do you record the results of action taken?	Count	11	6	13	14	9	3.1	1.3847	0.9
	%	20.8%	11.3%	24.5%	26.4%	17.0%			
Average		16.8%	12.9%	23.3%	32.1%	14.9%			
Control of corrective actions		**unacceptable**				**acceptable**			
		85.1%				**14.9%**			
	Cronbach's Alpha						0.94		

The averages presented in Table 4.11 above shows that only 14.9% of the participants complied with the requirements of corrective actions and a majority of 85.1% did not.

Many of the participants (53.8%) adhered to the documented procedure for control of corrective actions in their section most of the time and 11.5% did so all the time. The results further show that 15.4% adhered to the documented procedure for control of corrective actions in their section only when asked to do so, and 9.6% never bothered to do so at all. Only 13.2% of the participants reviewed non-conformities with their stakeholders all the time, 22.6% most of the time, 24.5% when asked to and 24.5% never. The results also show that 13.5% determined causes of non-conformity all the time, 21.2% sometimes, 26.9% only when asked to do so, and 15.4% did not even attempt to do so.

The literature reviewed in Chapter 2 Section 2.4.4.5 showed that corrective actions taken should be documented and stipulate root causes (ISO, 2016). Since violations of standards in Eskom are addressed through corrective actions, it is imperative that those actions are written down and saved on Hyperwave so that other employees can learn from them. The researcher went through Hyperwave to look for corrective actions and found none. This is a concern since the objectives of documenting corrective actions, e.g. to allow employees to learn from others, are not being realised.

4.4.2.5 Control of preventive actions

The section below outlines the results for control of preventive actions. A summary of the control of preventive actions follows below in Table 4.12.

Table 4.12: Descriptive statistics of control of preventive actions

Control of preventive actions		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		No answer	not at all	when asked to	Most times	All the time	Mean	Standard deviation	
16a. Do you adhere to documented procedures for control of preventive actions in your section?	Count	4	4	6	27	11	3.7	1.1	0.8
	%	7.7%	7.7%	11.5%	51.9%	21.2%			
16b. Do you identify potential non-conformities in your environment?	Count	7	5	8	22	9	3.4	1.3	0.9
	%	13.7%	9.8%	15.7%	43.1%	17.6%			
16c. Do you implement measures to prevent non-conformances?	Count	9	4	7	21	11	3.4	1.4	1.0
	%	17.3%	7.7%	13.5%	40.4%	21.2%			
16d. Do you review the measures?	Count	11	3	8	20	10	3.3	1.4	0.9
	%	21.6%	5.9%	15.7%	39.2%	19.6%			
Average		15%	8%	14%	43%	20%			
Control of preventive actions		**unacceptable**				**acceptable**			
		80%				**20%**			
	Cronbach's Alpha						0.93		

The averages in table 4.12 show that only 20% of the participants complied with the requirements of preventive action and a majority, 80% did not comply.

It is clear from the table above that 51.9% of the participants adhered to documented procedures for control of preventive actions in their sections most times, followed by 21.2% did so all the time and 11.5% when asked to. Only 7.7% indicated that they did not do so at all. The results also show that 43.1% identified potential non-conformities in their environment most of the time, while 17.6% did do so all the time. A worrying 9.8% indicated that they never identified potential non-conformities in their environment. As far

as implementing measures to prevent non-conformances is concerned, 40.4% indicated that they did so most of the time, with 21.2% always doing so. A mere 13.5% said that they implemented measures to prevent non-conformances only when asked to do so, and 7.7% never do. Those who reviewed the measures taken were in the majority, followed by 39.2% for most of the time and 19.6% all the times. Also, 5.9% said they did not implement any measures, and 21.6% were not bothered to give a response.

It was shown in Chapter 2, under the sub-heading *involvement of people*, that employees at all levels in the organisation should be involved in QMS. In ISO 9001:2015, this principle is called the engagement of people. In both versions, employees are expected to deliver their outputs in line with QMS to benefit the organisation and themselves as employees. Thus, employees should be cognizant of their importance and contribution to the success of QMS in the organisation (ISO, 2018). They should also be empowered to identify things that hinder them in performing their duties. When employees know what is preventing them from doing their jobs optimally, they should feel free to communicate this to management and come up with solutions (ISO, 2018).

Looking at Table 12.4, two principles of QMS, namely the involvement of people and leadership, were not functioning as they ought to have. Some employees did not deliver what was expected of them concerning preventative actions, begging the question of whether Eskom employees were engaged or involved.

4.4.3 ISO 9001:2008 (QMS) PROCEDURES POSING A CHALLENGE

The results of this section helped to answer **question 3,** which was: ***Which ISO 9001:2008 (QMS) procedures are a challenge to employees****?* Questions were restricted to the following aspects of ISO 9001:2008 (QMS) procedures: documents and record requirements; management review; non-conformity; corrective actions; and preventive actions.

In order to interpret the results, ratings for not a challenge and minor challenge were combined and interpreted as not a challenge while challenging, very challenging and extremely challenging were combined and regarded as a challenge.

4.4.3.1 Documents and records requirements

The section below outlines the results for documents and records requirements. Summary of documents and records requirements is presented in Table 4.13 below.

Table 4.13: Descriptive statistics of documents and records requirements

Document and record requirements		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		Not a challenge at all	Only a minor challenge	Challenging	Very challenging	Extremely challenging	Mean	Standard deviation	
17a.Compliance with control of documents for projects according to requirements of QMS	Count	2	8	13	22	8	3.5	1,0	0.9
	%	3.8%	15.1%	24.5%	41.5%	15.1%			
17b. Adherence to the use and keeping of records for projects according to the requirement of QMS	Count	4	13	5	23	8	3.3	1.2	1.0
	%	7.5%	24.5%	9.4%	43.4%	15.1%			
17c. Keeping evidence of implementation of this process	Count	3	12	5	24	7	3.4	1.2	1.0
	%	5.9%	23.5%	9.8%	47.1%	13.7%			
Average		5%	21%	14%	44%	16%			
Documents and records requirements		**not a challenge**		**a challenge**					
		26%		**74%**					
	Cronbach's Alpha						0.95		

The averages from Table 4.13 show that most of the participants (74%) found meeting document and record requirements a challenge, whereas 26% did not.

Only 15.1% of the participants found compliance with the control of documents for projects according to QMS requirements not challenging, while 15.1% found it very challenging. Those who were unsure constituted 24.5%, and those who found doing so fairly challenging were 41.5%. The results also show that 24.5% found adherence to the

use and keeping of records for projects according to the requirements of QMS not challenging, with 11.1% unsure, 37.0% fairly challenging, and 18.5% very challenged. As far as keeping evidence of implementation of the process is concerned, 60% felt challenged, (40%) fairly challenged, (20%) very challenged, and only (24.0%) not challenged at all.

From the results shown above, it is clear that more than half of employees are challenged by keeping evidence of implementation of QMS requirements. And this talks to (37%) of employees challenged by keeping of records and (18.5%) which find it a challenge to keep documents according to QMS requirement. The inescapable conclusion to be drawn from the above data is that most employees find adhering to the requirements of keeping evidence of implementation of QMS challenging, which is quite problematic within the broader scheme of things, i.e. compliance with QMS.

4.4.3.2 Management review

The section below outlines the results for management review. It was captured by the construct in the questionnaire that is made up of question 18a to 18e. Summary of management review is presented in Table 4.14 below.

The results in Table 4.14 show that most participants (80.6%) found management reviews a challenge and 19.4% not so. Most respondents (50.9%) indicated that quality policy was difficult to understand and therefore challenging, and for 9.4% it was very challenging. Regarding the understanding of quality objectives, 49.1% found doing so fairly challenging, for 13.2% it was very challenging and only 24.5% indicating that they did not find it challenging at all.

As far as the report from management concerning the performance of QMS is concerned, 52.8% found it fairly challenging, 15.1% very challenging, 18.9% were unsure, and only (13.2%) did not find it challenging at all. Most of the respondents did not fully understand a full cycle of management review as 49.1% found it fairly challenging, 13.2% very

challenging, with only 15.1% not challenging at all. Overall, the respondents indicated that there were challenges with the management review.

Table 4.14: Descriptive statistics of policy

Management review		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		Not a challenge at all	Only a minor challenge	Challenging	Very challenging	Extremely challenging	Mean	Standard deviation	
18a. Understanding quality policy	Count	0	12	9	27	5	3,5	1,0	0,8
	%	0.0%	22.6%	17.0%	50.9%	9.4%			
18b. Understanding quality objectives	Count	0	13	7	26	7	3,5	1,0	0,8
	%	0.0%	24.5%	13.2%	49.1%	13.2%			
18c. Understanding reports from management concerning performance of QMS	Count	0	7	10	28	8	3,7	0,9	0,7
	%	0.0%	13.2%	18.9%	52.8%	15.1%			
18d. Understanding the effectiveness of QMS	Count	2	6	11	28	6	3,6	1,0	0,9
	%	3.8%	11.3%	20.8%	52.8%	11.3%			
18e. Understanding the full cycle of management review	Count	2	8	10	26	7	3,5	1,0	0,7
	%	3.8%	15.1%	18.9%	49.1%	13.2%			
Average		2%	17.3%	17.7%	50.9%	12%			
Management review		**not a challenge**		**a challenge**					
		19.4%		**80.6%**					
		Cronbach's Alpha					0.86		

According to QMs requirements for internal auditing, there should be a procedure in place to describe a planned programme of audits (ISO, 2016). For this purpose, Eskom employs a procedure called Business Management System, which is supposed to assist with performance auditing. However, from the results above, it is clear that this procedure is not used or if used is not understood by most of the employees.

4.4.3.3 Procedure for non-conformity

The section below outlines the results for non-conformity as captured by constructs in the questionnaire consisting of questions 19a to 19e.

A summary of non-conformity is given below and presented in Table 4.15.

Table 4.15: Descriptive statistics of procedure for non-conformity

Procedure for non-conformity		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		Not a challenge at all	Only a minor challenge	Challenging	Very challenging	Extremely challenging	Mean	Standard deviation	
19a. Maintenance of records for non-conformity on projects	Count	14	4	12	17	6	2.9	1.4	0.8
	%	26.4%	7.5%	22.6%	32.1%	11.3%			
19b. Validating of any repair or rework to rectify non-conformity.	Count	11	8	9	18	7	3.0	1.4	0.9
	%	20.8%	15.1%	17.0%	34.0%	13.2%			
19c. The role of the person in your section who deals with non-conformity activities	Count	9	6	18	16	4	3.0	1.2	0.8
	%	17.0%	11.3%	34.0%	30.2%	7.5%			
19d. Identifying and controlling of activities that do not conform to requirements before completion of the project	Count	14	8	12	16	3	2.7	1.3	0.8
	%	26.4%	15.1%	22.6%	30.2%	5.7%			
19e. Keeping evidence of implementation of this process	Count	6	11	13	18	5	3.1	1.2	0.7
	%	11.3%	20.8%	24.5%	34.0%	9.4%			
Average		20%	14%	24%	32%	10%			
Procedure for non-conformity		**not a challenge**		**a challenge**					
		34%		**66%**					
	Cronbach's Alpha						0.87		

The averages for Table 4.15 shows that most participants (66%) saw the procedure for non-conformity as challenging and 34% not so. As outlined in Table 4.15, a substantial percentage of respondents (32.1%) indicated that they found the maintenance of records for non-conformity on projects fairly challenging, very challenging 11.3%, with 22.6% unsure. As for the validation of any repair of rework to rectify non-conformity, 15.1% indicated that they did not face any challenges at all, 17% were unsure, but 34% found it fairly challenging and 13.2% very challenging. Furthermore, results also show that 34% were unsure of whether they understood the role of the person in their section who dealt with non-conformity activities, with only 11.3% not having challenges in understanding

this at all. Some respondents (30.2%) found that the identification and control of activities that did not conform to requirements before completion of the project fairly challenging with another 5.7% having serious challenges and 26.4% not having any challenges at all.

Finally, these results show that 24.5% were not sure about keeping evidence that a process was implemented, and 20.8% had no challenges at all. The results above indicate that although employees reasonably knew what to do with non-conformance, the challenge was keeping a record of those incidents.

4.4.3.4 Control of corrective actions

The section below outlines the results for the control of corrective actions. It was captured by a construct in the questionnaire that was made up of questions 20a to 20e. A summary of these follows below.

Table 4.16: Descriptive statistic of control of corrective action

Control of corrective action		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		Not a challenge at all	Only a minor challenge	Challenging	Very challenging	Extremely challenging	Mean	Standard deviation	
20a. How is adherence to documented procedures for control of corrective actions in your section?	Count	4	8	9	26	6	3.4	1.1	0.8
	%	7.5%	15.1%	17.0%	49.1%	11.3%			
20b. How is compliance with the review of non-conformities with your stakeholders?	Count	5	2	12	25	9	3.6	1.1	0.8
	%	9.4%	3,8%	22,6%	47.2%	17.0%			
20c. How do you find determining the causes of non-conformity?	Count	6	9	14	21	3	3.1	1.1	0.8
	%	11.3%	17.0%	26.4%	39.6%	5.7%			
20d. How does taking action to prevent non -conformity occurring?	Count	4	8	16	16	9	3.3	1.2	0.9
	%	7.5%	15.1%	30.2%	30.2%	17.0%			
20e. How do you find recording the results of action taken?	Count	4	11	12	19	7	3.3	1.2	0.8
	%	7.5%	20.8%	22.6%	35.8%	13.2%			
Average		9%	14.3%	23.7%	40.3%	12.7%			
Control of corrective action		**not a challenge**		**a challenge**					
		23.3%		**76.7%**					
	Cronbach's Alpha						0.89		

The averages in Table 4.16 above show that mast of the participants (76.7%) found the procedure for controlling corrective actions a challenge and 23.3% not. From the results above, participants also found it challenging to control corrective actions taken to address non-conformity from their stakeholders.

Moreover, the results indicate that 49.1% found adherence to the documented procedure for the control of corrective actions in their section fairly challenging. Another 11.3% found this process to be very challenging, and only 15.1% had no problems with it at all. Compliance with a review of non-conformities with their stakeholders was fairly challenging for 47.2% of the participants, very challenging for 17% and not challenging at all for 3.8%. On how they found the determination of the causes of non-conformity, 26.4% were unsure, 39.6% found it to be fair, with only 17% deeming the process to be challenging.

Some of the participants (30.2%) were also unsure about how they experienced taking action to prevent non-conformity from occurring, and others (17%) found this very challenging. A fair number of respondents (35.8%), found the recording of the results of action taken fairly challenging with a small number (13.2%) being very challenged by the process.

4.4.3.5 Control of preventive action

The section below outlines the results for control of preventative action. This information was captured by a construct in the questionnaire based on questions 21a to 21e. A summary and Table 4.17 containing the results follow below.

The findings in Table 4.17 show that most of the participants (75.4%) were challenged by documenting preventative action to non-conformity. A fair number (24.6%) were able to determine preventative actions but had challenges when documenting them. This might explain why even reviewing actions would be a challenge as they were not documented.

This leads one to believe that if management review or internal auditing were implemented as they were supposed to, some challenges participants were facing would be resolved or lessened.

Table 4.17: Descriptive statistics of control of preventive action

Control of preventive action		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		Not a challenge at all	Only a minor challenge	Challenging	Very challenging	Extremely challenging	Mean	Standard deviation	
21a. How is documenting procedures for control of preventive action in your section?	Count	2	8	12	25	6	3,5	1,0	0,9
	%	3.8%	15.1%	22.6%	47.2%	11.3%			
21b. How is identifying potential non-conformities in your section?	Count	4	10	12	21	6	3,3	1,1	0,9
	%	7.5%	18.9%	22.6%	39.6%	11.3%			
21c. How do you find determining the causes of non-conformity in your section?	Count	4	11	14	18	5	3,2	1,1	0,9
	%	7.7%	21.2%	26.9%	34.6%	9.6%			
21d. How do you find implementing actions to prevent non-conformances?	Count	4	7	11	19	11	3,5	1,2	0,9
	%	7.7%	13.5%	21.2%	36.5%	21.2%			
21e. How do you find reviewing the actions?	Count	4	10	11	18	7	3,3	1,2	0,9
	%	8.0%	20.0%	22.0%	36.0%	14.0%			
Average		6.9%	17.7%	23.1%	38.8%	13.5%			
Control of preventative action		**not a challenge**		**a challenge**					
		24.6%		**75.4%**					
	Cronbach's Alpha						0.94		

Table 4.17 shows that 47.2% of the participants found that documenting of procedures for control of preventive action in their section was a fairly challenging process, 11.3% that it was very challenging, 22.6% were unsure, and only 15.1% found this to be no challenge at all. These results also show that 36.5% of the participants found the implementation of actions to prevent non-conformities from being a fairly challenging and 21.2% were unsure. Only (21.2%) found this very challenging.

The determination of the causes of non-conformity had some people (21.2%) who indicated that they did not find this challenging, with 26.9% unsure, 34.6% were fairly challenged, and (9.6%) very challenged. Reviewing action also had a large percentage of people being fairly challenged (36%) and very challenged (14%).

4.4.4 GENERAL COMMENTS CONCERNING QMS

Table 4.18 General comments concerning QMS

Management involvement and actions concerning QMS		Frequency Distribution					Descriptive		Latent factor (Principal Component) Coefficient
		Strongly disagree	Disagree	Not applicable	Agree	Strongly agree	Mean	Standard deviation	
Management involvement									
22. Management explains all six mandatory procedures	Count	14	17	2	13	6	2.6	1.4	0.8
	%	26.9%	32.7%	3.8%	25.0%	11.5%			
23. Management indicated procedures which are directly involved with my job outputs	Count	3	7	2	32	9	3.7	1.1	-0.5
	%	5.7%	13.2%	3.8%	60.4%	17.0%			
24. According to management I should comply with six mandatory procedures	Count	1	6	5	33	7	3.8	0.9	-0.6
	%	1.9%	11.5%	9.6%	63.5%	13.5%			
Average		**11%**	**19%**	**6%**	**50%**	**14%**			
Management involvement		**disagree**		**don't know**	**agree**				
		30%		**6%**	**64%**				
25. Eskom disciplines employees who do not comply	Count	6	14	4	21	8	3.2	1.3	0.3
	%	11.3%	26.4%	7.5%	39.6%	15.1%			
26. Eskom disciplines managers for any non-compliance by employees with QMS	Count	3	10	5	21	14	3.6	1.2	0.4
	%	5,7%	18,9%	9,4%	39,6%	26,4%			
27. Eskom constantly raises awareness about QMS	Count	1	1	1	26	24	4.3	0.8	0.4
	%	1.9%	1.9%	1.9%	49.1%	45.3%			
28. QMS be part of my job contract.	Count	2	8	2	28	13	3.8	1.1	0.1
	%	3.8%	15.1%	3.8%	52.8%	24.5%			
Average		**5.6%**	**15.7**	**5.7%**	**45.2%**	**27.8%**			
What Eskom should do to non-conforming employees		**disagree**		**don't know**	**agree**				
		21.3%		**5.7%**	**73%**				
		Cronbach's Alpha					0.47		

Results in this section helped to answer **questions 4 and five** respectively, which were: ***To what extent are managers involved in ISO 9001:2008 QMS implementation?***

Information to answer this question was retrieved from questions 22 to 24 on the questionnaire and: ***What does Eskom do with employees who do not comply with ISO 9001:2008 QMS?*** This was captured by the construct in the questionnaire made up of questions 25 to 28. A summary is presented in Table 4.18.

To interpret the results, ratings of strongly disagree and disagree were combined and interpreted as **disagree**. Not applicable was interpreted as **don't know**. And lastly, agree and strongly agree were combined and interpreted as **agree**.

Table 4.18 presents results from questionnaire items that sought participants' general comments concerning QMS. The averages in this Table show that most of the participants (64%) agreed that management was involved in QMS issues. Of these participants, 73.2% indicated that both managers and employees should be disciplined for non-conformance with QMS requirements and that QMS requirements should be part of their job compacts.

The results show that 25% agreed that their management did not explain all six mandatory procedures, 11.5% strongly agreed, 32.7% disagreed, and 26.9% strongly disagreed. This shows that there was a fair balance between those who thought management explained all six mandatory procedures and those who did not think so. Most of the participants agreed (60.4%) or strongly agreed (17%) that their management indicated procedures directly involved with their job outputs. This shows that management followed the procedures. Most of the participants also agreed (63.5%) or strongly agreed (13.5%) that, according to their management, they should comply with all six mandatory procedures.

The results further show that 57.7% of the participants disagreed with the assertion that they did not know procedures applicable to their job with 25% who agreed. Therefore,

there is an even split between those who know the procedures which apply to their jobs and those who do not. Most of the participants disagreed (58.8%) or strongly disagreed (27.5%) with the statement that they do not have any interest in ISO 9001:2008 (QMS). This means that despite challenges, employees have an interest in the system.

Most of the participants also disagreed (54.7%) or strongly disagreed (26.4%) that QMS did not help them perform their jobs well. This indicates that they appreciate the importance of the system. Most of the participants agreed (52.8%) and strongly agreed (24.5%) that they needed more training on QMS.

A fair number of people who believed that Eskom should discipline managers for any non-compliance by employees with QMS agreed (39.6%) and strongly agreed (15.1%). Most of the participants also agreed (49.1%) or strongly agreed (45.3%) that Eskom should raise the level of awareness about QMS and were very supportive of the system as shown by 52.8% agreement and 24.5% strong agreement that QMS should be part of their job compacts.

Top management or its representatives have three responsibilities regarding Quality Management Systems, namely; establish, implement and maintain QMS (ISO, 2018). The establishment and implementation phases are for new organisations which are at the very beginning of QMS, i.e. quality policy, objectives, resources and communication are of the utmost importance (ISO, 2018). Once the organisation is registered, maintenance of QMS, which includes improvement, kicks in. At this phase, customers, and statutory and regulatory requirements should be well communicated to employees, and management reviews conducted to help with ensuring that QMS integrity is maintained (ISO, 2018). Eskom is in the maintenance phase and therefore, it is expected that all employees are fully aware of who their customers are and what they expect from the organisation.

As far as management involvement in the QMS system is concerned, there is room for improvement since there was a gap between employees who felt that their managers explained QMS requirements and those who disagree. The researcher believes that this

gap can be filled by management review which should be scheduled as per the requirements of QMS. Employees, in general, see the importance of QMS, and they do have an interest in it despite the challenges they encounter. Also, management can determine the need for training and encourage staff to utilise opportunities that present themselves. Most of the employees indicated that Eskom should discipline managers for any non-compliance with QMS requirements.

All departments in Eskom have ISO 9001:2008 dashboards, which are action plans or roadmaps that show where they are in terms of QMS requirements and compliance. The researcher went through the Plant Department's dashboard and found the level of compliance with QMS according to the spreadsheet on Hyperwave to be at 36%. This shows that there is still more to be done in this department concerning QMS. The dashboard of the Project Execution Department showed 100% compliance with QMS requirements for only three sections.

Conclusions drawn regarding the dashboard are discussed in detail in the next chapter, Chapter 5.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the conclusions and recommendations derived from collected and analysed data in the previous chapter regarding the research questions. Practical recommendations are made as well as suggestions for further studies.

5.2 CONCLUSIONS

The following conclusions were arrived at about various research questions surveyed:

5.2.1 EMPLOYEE'S ISO 9001:2008 (QMS) LEVEL OF AWARENESS

The first research question was: *What is the level of awareness of ISO 9001:2008 QMS among employees?* Results for questions 6a to 11c were detailed in Tables 4.2 to 4.7. These questions were aimed at measuring the level of awareness to the following: quality policy and statement; QMS procedures; QMS requirements; QMS promotion; QMS communication process; and the importance of employees in QMS.

As indicated in Chapter 4 (4.4.1), the researcher considered **moderate, high** and **excellent** results as acceptable levels of awareness and **not at all** and **low** as unacceptable. As, QMS procedures, quality policy and statement, QMS requirements, promotion and lastly relevance and importance had high percentages of moderate, high and excellent, this led to the conclusion that:

Eskom employees have an acceptable level of awareness of ISO9001:2008 (QMS) as it relates to Eskom.

From the above conclusion, it was evident that employees were aware of what was required of them regarding QMS. This, in return, shows that Eskom has done enough in communicating and promoting QMS.

5.2.2 EMPLOYEE ADHERENCE TO ISO 9001:2008

The second research question was: ***To what extent do employees adhere to ISO 9001:2008 QMS procedures?*** The results, as shown in Tables 4.8 to 4.12, was analysed for evidence of compliance. The results show that Eskom employees adhere sufficiently to four out of the five aspects of ISO 9001:2008 (QMS) procedures namely: management review; dealing with non-conformity, and taking corrective action; and preventive actions but do not adhere sufficiently to documents and records requirements.

Therefore, for this research, it is concluded that to a large extent, Eskom employees adhere to ISO 9001:2008 (QMS) procedures as it relates to Eskom.

5.2.3 ISO 9001:2008 (QMS) PROCEDURES POSING A CHALLENGE TO EMPLOYEES AND WHY

The third question was: ***Which ISO 9001:2008 QMS procedures do employees find challenging?*** In respect to this question, the analysis was done, and the results discussed in Tables 4.13 to 4.17. In this section, the data collected reflected a high percentage of challenging, very challenging and extremely challenging, which suggested that employees found all the QMS procedures challenging. The conclusion reached was that**:**

Eskom employees find all mandatory procedures of Eskom's QMS challenging namely: documents and record requirements; management review; dealing with non-conformity; taking corrective actions; and taking preventive actions.

5.2.4 MANAGERS INVOLVEMENT IN ISO 9001:2008 IMPLEMENTATION

The fourth question was: ***To what extent are managers involved in ISO 9001:2008 QMS implementation?*** Analysis of the results presented in Table 4.18 from questions 22 to 24 indicated that management involvement in introducing QMS to employees was acceptable since most of the respondents knew about QMS and that they should comply. The researcher concluded that**:**

Eskom managers are well involved in employee QMS implementation

5.3 RECOMMENDATIONS

The ensuing recommendations are informed by the literature reviewed, empirical research findings, and researcher's observations of Hyperwave.

5.3.1 RECOMMENDATIONS FOR PRACTICE

The main objective, as indicated in Chapter 1, was to assess QMS compliance in Eskom to contribute to improving quality management in Eskom. To this end, the following recommendations are made.

On QMS maturity

Firstly, it is apparent that management pays attention to QMS maturity within departments with more emphasis on management reviews, and control of documents and record to solve quality challenges. This is imperative because as stated in Section 5.2.3, Eskom employees find the organisation's QMS a challenge to deal with.

While it is comforting that Eskom has adopted the latest ISO quality management system, Juran (2002:1) cautions that being ISO certified does not automatically solve all quality problems with which a particular organisation might be faced. Rather, Juran (2002) states that management involvement at all levels in quality matters could solve the problems

and place such organisation amongst those that are leaders in quality. Ultimately, responsibility rests upon the Chief Executive Officer (CEO) of Eskom to get all managers trained and competent in issues of quality.

As mentioned in Chapter 4 of this study, all departments in Eskom have a QMS implementation dashboard. This dashboard is a roadmap or a plan which is to be followed at all levels to comply with QMS requirements. It is a spread sheet which calculates percentages showing the level at which each section is in terms of QMS maturity.

QMS maturity comprises maintenance, efficacy and training roadmaps. A maintenance roadmap is a list of activities which should be executed in each section. A roadmap could include process manuals, finance manuals, documents and records controls, legal and another requirement, and reviews. These maps have space where one can show one's source of evidence and target dates if necessary. Efficacy roadmaps show the following in the section: financial performance, human resource management and QMS implementation. Management at a sectional level should be able to track respective financial performance throughout the financial year as this would help them manage operational expenses, employee benefits and, lastly, time management. QMS implementation reveals the status of the section with regards to QMS requirements and the training needs of employees.

Lastly, checking QMS maturity encompasses tracking employees' training needs at all levels. Spreadsheets used to have a section that shows which courses are to be done and by who in the organisation. One of the duties of the manager is to identify courses that are relevant to his/her section and make sure employees know about them, and for employees to book those courses themselves. This matrix can be tracked on a monthly basis as it is done currently with courses about safety.

It is recommended that managers at all levels update their dashboards monthly. This should be part of their key performance indicators (KPIs) in their job compacts. Managers could then filter this KPI down to employees reporting to them.

On management reviews

Not only can QMS audits be used to measure the performance of the system, but also to assess organisational culture and ethics (Mo-Ching, 2011:1). For an organisation to gain the trust of the public, its employees should be responsible and ethical. With the current situation at Eskom, where there is lots of negative news, audits could be used as a tool to redeem Eskom from this dark cloud hanging over it.

Rahmawati (2015:15) believes that performance audits assist management in auditing and encouraging the achievement of objectives effectively, efficiently and economically. Therefore, it is recommended that each manager perform reviews of QMS in his/ her respective section as required, at least once every financial year. This would inform the yearly reviews meant to be performed by top management. Tracking QMS compliance could be much easier and less expensive if all sections evaluate their compliances.

On the control of documents and records

It is also recommended that sections, through their representatives, follow their control of records retention matrix as this will enable responsible persons to revise and dispose of records on time. Managers should also give viewing rights to their folders on Hyperwave since some of the documents on this system were not retrievable during analysis.

At Megawatt, Eskom has a department called Enterprise Content Management (ECM) which is committed to the realisation the following goals of the document management policy (32-1):

- Ensuring that documents are traceable and retrievable through maintained document management and storage systems;
- Use and control throughout the life cycle of the document;
- Compliance with legal and regulatory requirements concerning documents;
- Ensuring that document controllers and users are competent;

- Ensuring that current documents are available to all Eskom documents users, and lastly
- Managing documentation information through unique identification of structure, type, format, corporate identity, medium, retention periods, classification of control, authorised access and ensuring physical security.

ECM should evaluate its mandate to see if there is still a commitment to deliver on the points mentioned above.

Lastly, all sections should have documented procedures detailing how to deal with non-conformity as well as preventative and correctives actions. Barton (2014:22) states that in addition to documented processes enabling organisations to share lessons learned, they also facilitate the standardisation of the processes.

5.3.2 RECOMMENDATIONS FOR FURTHER RESEARCH

Eskom has many processes, procedures, management systems and standards which are intended to guide both managers and employees on how to perform their duties effectively and efficiently. It makes it more difficult for Eskom to measure the effectiveness of its processes, procedures, management systems, and standards when there are still issues of compliance to be resolved. This is said bearing in mind Kokotsis' (2014:17) argument that compliance is related to but not identical to effectiveness. Further research could be conducted to answer the following questions,

- Are managers at Eskom at all levels aware of their responsibilities towards QMS compliance?
- Do managers view meeting QMS requirements as an extra job for which they should be compensated?
- How do employees perceive management systems in Eskom?

5.4 CONCLUDING REMARKS

The findings of this research indicated that some sections of management neglected to maintain Quality Management Systems. QMS, like any other management system, needs to be driven by management as alluded to by Juran (2002:1). If there is no commitment from management to systems like this in an organisation, there will always be issues with compliance.

REFERENCE LIST

Allred, S.B. and Ross-Davis, A. 2011. The drop-off and pick-up method. *An approach to reduce nonresponse bias in natural resource surveys*. Small-scale forestry, (abstract) 10(3):305-318. Available at: https://rd.springer.com/article/10.1007/s11842-010-9150-y. Date of access: 20 June 2017.

Apergis, N. and Payne, J.E. 2012. Renewable and non-renewable energy consumption-growth nexus: Evidence from a panel error correction model. *Energy Economics. 34(3): 733-738.*

Bahari, S.F. 2012. Qualitative versus quantitative research strategies. *Contrasting epistemological and ontological assumptions*, 52(1):17-28.

Baig, S.U., Suarez, M. and Abbas, S.F. 2015. Integration of area frame sampling technique and classification of satellite images for crop area estimation: *2011 Applied Geoinformatics for Society and Environment*. Fourth international summer school and conference. Karlsruhe, Germany: AGSE. p.27).

Bailey, R. (*ed.)*. 2014. *The philosophy of education: an introduction*. London: Bloomsbury.

Barton, B. 2014. Quality and participation. Journal for quality & participation. 2 (37):22-33. Basaran, B. 2016. The effect of ISO quality management system standards on industrial property rights in Turkey. *World patent information*. 45(2016):33-46

Basaran, B. 2016. The effect of ISO quality management system standards on industrial property rights in Turkey. *World patent information*. 45(2016):33-46.

Battini, D., Faccio, M., Persona, A. and Sgarbossa, F. 2012. Design of an integrated quality assurance strategy in production systems. *International journal of production research*. 50(6):1682–1701.

Becker, S., Bryman, A., and Ferguson, H. 2012. Understanding research for social policy and social work*: themes, methods and approaches*. 2nd ed. Bristol: Policy Press.

Bryman, A. (ed.). 2013. *Leadership and organisations*. London: Routledge.

Corbin, J. and Strauss, A. 2014. *Basics of qualitative research: techniques and procedures for developing grounded theory.* 3rd ed. London: Sage.

Crano, W.D., Brewer, M.B., and Lac, A. 2015. *Principles and methods of social research*. 3rd ed. New York: Routledge.

Dabholkar, P.A. 2015. How to improve perceived service quality by increasing customer participation. In Proceedings of the 1990 Academy of Marketing Science (AMS) Annual Conference (pp. 483-487). Springer.

Devore, J. 2015. *Probability and statistics for engineering and the sciences*. 9th ed. Boston: Cengage.

Di Maria, J. and Sivasankar, R. 2014. Professional safety. *Corrective & preventive action* 2(59):18-18.

Easterby-Smith, M., Thorpe, R. and Jackson, P.R. 2012. *Management research*. 4th ed. London: Sage.

El-Morsy, A., Shafeek, H., Alshehri, A. and Gutub S.A. 2014. Implementation of quality management system by utilizing ISO 9001:2008 model in the emerging faculties. *Life science journal.* 11(8):119-125.

Eskom. 2012a. Documentation management policy. Eskom: Johannesburg.

Eskom. 2012b. Documentation and records management procedure. Eskom: Johannesburg.

Eskom. 2012c. Business management system audits procedure. Eskom: Johannesburg.

Eskom. 2012d. Control of non-conforming product or service procedure. Eskom: Johannesburg.

Eskom. 2012e. Corrective and preventive action procedure. Eskom: Johannesburg.

Eskom. 2012f. Management system review procedure. Eskom: Johannesburg.

Eskom. 2012g. Eskom corporate plan 2015/16 – 2019/20. Eskom: Johannesburg.

Eskom. 2015. Company information. Available at: http://www.Eskom.co.za/OurCompany/CompanyInformation/Pages/Business_Vision.aspx. Date of access: 16 April 2016.

Eskom. 2016. Sustainable development overview. Available at: http://www.eskom.co.za/OurCompany/SustainableDevelopment/Pages/Sustainable_Development_Overview.aspx. Date of access: 27 May 2016.

Eskom. 2017a. Climate change & COP17. Available at: http://www.eskom.co.za/OurCompany/SustainableDevelopment/ClimateChangeCOP17/Pages/Climate_Change_COP_17.aspx. Date of access: 31 May 2017.

Eskom. 2017b. Control of non-conforming product or service procedure. Eskom: Johannesburg.

Eskom. 2017c. Customer care. Available at: http://www.eskom.co.za/CustomerCare/CustomerServiceInformation/Pages/How_To_Contact_Us_For_Service_153.aspx. Date of access: 31 May 2017.

Eskom. 2017d. Documentation and records management procedure. Eskom: Johannesburg.

Eskom. 2017e. Eskom customer service. Available at: https://csonline.eskom.co.za/staticPages/StaticPages/HomePage.htm. Date of access: 31 May 2017.

Eskom. 2017f. Eskom integrated report enabling economic growth. Available at: http://www.eskom.co.za/IR2017/Documents/Eskom_integrated_report_2017.pdf. Date of access: 27 September 2017.

Eskom. 2017g. Management system review procedure. Eskom: Johannesburg.

Eskom. 2018. Corrective and preventive action procedure. Eskom: Johannesburg.

Evans, J. and Lindsay, W. 2012. *Managing for quality and performance excellence*. 9th ed. Northern Kentucky: Cengage.

Fink, L. 2014. The Effect of Customer Focus Competence on Construction Project Performance. *Procedia-Social and Behavioural Sciences*. *119*(2014):427-436.

Flaherty, T.B., Honeycutt Jr, E.D. and Power, D. 2015. Exploring text-based electronic mail surveys as a means of primary data collection. *In Proceedings of the 1998 Academy of marketing science (AMS) annual conference*. International (p. 260-264). New York: Springer

Fonseca, L.M. 2014. ISO 9001: 2015 Revision. In *Proceedings of the 1st International Conference on Quality Engineering and Management* (p. 391).

Goetsch, D.L. and Davis, S.B. 2014. *Quality management for organisational excellence*. 7th ed. Harlow: Pearson.

Gorny, A. 2015. Use of quality management principles in the shaping of work environment. *In HCI International 2015-Posters' Extended Abstracts*. Los Angeles: Springer international.

Gotzamani, K.D. 2005. The implications of the new ISO 9000: 2000 standards for certified organisations: A review of anticipated benefits and implementation pitfalls. *International Journal of Productivity and Performance Management*, *54*(8):645-657.

Griffin, M.A. and Hu, X. 2013. How leaders differentially motivate safety compliance and safety participation: the role of monitoring, inspiring, and learning. *Safety science,* 60:196-202.

Hammar, M. 2014. Monitoring and measurement: the basis for evidence-based decisions. Available at: http://advisera.com/9001academy/blog/2014/04/15/monitoring-measurement-basis-evidence-based-decisions/. Date of access: 13 July 2016.

Heras-Saizarbitoria, I. and Boiral, O. 2013. ISO 9001 and ISO 14001: Towards a research agenda on management system standards*. *International journal of management reviews*. 15(1):47-65.

Hermansson, R. and Hellström, J. 2014. Discretionary version control: access control for Versionable documents. Available at: http://www.diva-portal.org/smash/record.jsf?pid=diva2:751697. Date of access: 30 May 2015.

Howlett, B., Rogo, E.J and Shelton, T.G. 2013. Evidence-based practice for Health Professionals, An Interprofessional approach. Burlington: Jones & Bartlett.

ISO (International Organisation for standards). 2016a. About ISO-ISO. Available at: http://www.iso.org/iso/home/standards/management-standards.htm. Date of access: 15 January 2016.

ISO (International Organisation for standards). 2016b. Quality management system (ISO 9001): Certification vs. compliance. Available at: http://www.qualicertus.co.za/ISO-9001-Certification-vs-Compliance.php. Date of access: 15 January 2016.

ISO (International Organisation for standards) 9001 Consultant. 2016c. Basic principles of ISO 9001 Quality. Available at: http://www.iso9001consultant.com.au/FAQ-quality-basics.html. Date of access: 09 June 2016.

ISO (International Organisation for standards). 2016d. The need for standards on the environmental footprint. Available at: http://www.iso.org/iso/home/news_index/iso-in-action/sustainable_development.htm. Date of access: 30 May 2016.

ISO (International Organisation for standards). 2016e. Standards in Action. Available at: http://www.iso.org/iso/home/news_index/iso-in-action.htm. Date of access: 30 May 2016.

ISO (International Organisation for standards). 2016f. Climate change. Available at: http://www.iso.org/iso/home/news_index/iso-in-action/climate_change.htm. Date of access: 30 May 2016.

ISO (International Organisation for standards). 2016g. Energy efficiency and renewables. Available at: http://www.iso.org/iso/energy. Date of access: 30 May 2016.

ISO (International Organisation for standards). 2016h. Environmental management: the ISO 14000 family of international standards. Available at: www.iso.org/managementstandards. Date of access: 30 May 2016.

ISO (International Organisation for standards). 2016i. Services. Available at: http://www.iso.org/iso/home/news_index/iso-in-action/services.htm. Date of access: 30 May 2016.

ISO (International Organisation for standards). 2016j. Section 8 Measurement, analysis and improvement. Available at: http://www.isorequirements.com/iso_9001_8_measurement_analysis_and_improvement.html. Date of access: 13 July 2016.

ISO (International Organisation for standards). 2016k. ISO 9001:2015 Quality Management Systems-requirements. Available at: https://www.iso.org/obp/ui/#iso:std:iso:9001:ed-5:v1:en. Date of access: 13 July 2016.

ISO (International Organisation for standards). 2017. New international standard for occupational health and safety management systems. Available at: https://www.bsigroup.com/en-GB/ohsas-18001-occupational-health-and-safety/ISO-45001/. Date of access: 10 February 2017.

ISO (International Organisation for standards). 2018a. Benefits of ISO 9001. Available at: http://www.iso9001.com/benefitsofiso9001.asp. Date of access: 09 July 2018.

ISO (International Organisation for standards). 2018b. Quality management principles. Available at:https://www.iso.org/files/live/sites/isoorg/files/archive/pdf/en/pub100080.pdf. Date of access: 09 July 2018.

ISO (International Organisation for standards). 2018c. Leadership's Responsibilities and commitment. Available at: http://the9000store.com/iso-9001-2015-requirements/iso-

2015-requirements-for-leadership/iso-9000-tips-management-responsibility/. Date of access: 06 July 2018.

ISO (International Organisation for standards). 2018d. ISO 45001 - Occupational health and safety. Available at: www.certificationeurope.com/certification/iso-45001-occupational-health-safety/ Date of access: 31 August 2018

Juran, J.M. 2002. A call to action: the summit: Carlson school of management, University of Minnesota-Minneapolis, Minnesota 26 June 2002. *Measuring business excellence. (abstract)* 6(3): 4–8. Available at: http://www.emeraldinsight.com/doi/full/10.1108/13683040210697848#_i10

Kay, R. 2014. *Pmp® Examination Preparation for Pmbok®.* 5th ed. Raleigh, North Carolina: lulu.com.

Kokotsis, E. 2014. *Keeping international commitments: compliance, credibility and the G7*, 1988-1995. 2nd ed. London: Routledge.

Kronholm, T. and Wästerlund, D.S. 2013. District council members and the importance of member involvement in organisation renewal processes in Swedish forest owners' associations. *Forests*. *4*(2):404-432.

Kumar, R. 2014. *Research methodology:* a step-by-step guide for beginners. 4th ed. Los Angeles: Sage.

Laszlo, G.P. 2000. ISO 9000-2000 version: implications for applicants and examiners. *Measuring Business Excellence*. *4*(4):11-14.

Leblebici, D. 2012. Impact of workplace quality on employee's productivity: case study of a bank in Turkey. *Journal of business economics and finance*, *1*(1):38-49.

Long, A.A., Dale, B.G. and Younger, A. 1991. A study of BS. 5750 aspirations in small companies. *Quality and reliability engineering international*. *7*(1):27-33.

Lynch, S.M. 2013. *Using Statistics in Social Research: a concise approach.* New York: Springer.

Mahesh, B.P, Prabhuswamy, M.S. and Mamatha, M. 2010 Improvement of quality awareness using six sigma methodology for achieving higher CMMI level. *International Journal of Advanced Research in Management (IJARM)*. Volume 1, Issue 1, pp.20-41.

Malik, M.E., Ghafoor, M.M. and Hafiz, K.I. 2012. Impact of Brand Image, Service Quality and price on customer satisfaction in Pakistan Telecommunication sector. *International journal of business and social science*, *3*(23):123

Marsh, D and Stoker, G. 2010. Theory and methods in political science.3rd ed. New York: Palgrave Macmillan.

Mo-Ching, S.Y. 2011. Meeting customers' requirements with ISO audit-quality management system (QMS) performance and organisational culture assessment. *African Journal of business management*, 5(9):3497-3503.

Moseley, J.L. and Dessinger, J.C. eds. 2009. *Handbook of improving performance in the workplace: measurement and evaluation (Vol.3)*. New Jersey: Wiley.

Mukherjee, K. 2013. Customer-oriented organisations: a framework for innovation. *Journal of Business Strategy*. *34*(3):49-56.

Oakland, J.S. 2014. *Total quality management and operational excellence: text with cases.* 4th ed. London: Routledge.

Owen, M. 2013. *SPC and continuous improvement*. Verlag Berlin: Springer Science & Business Media.

Pallant, J. 2013. SPSS survival manual: *a step by step guide to data analysis using IBM SPSS*. 5th ed. China: Everbest.

Pavlovic, A. 2013. Total quality management in the hotels in Niska Banja based on the basic principles of TQM. Eighth International Quality Conference. *Center for quality, faculty of engineering*, University of Kragujevac.

Pearce, D., Barbier, E. and Markandya, A. 2013. *Sustainable development: economics and environment in the Third World*. London: Routledge.

Pindyck, R.S. 2013. Climate change policy: What do the models tell us? (No. w19244). National Bureau of Economic Research. *Journal of Economic Literature*, American Economic Association. 51(3): 860-72.

Psomas, E.L. and Fotopoulos, C.V. 2009. A meta-analysis of ISO 9001: 2000 research-findings and future research proposals. *International Journal of Quality and Service Sciences*, *1*(2):128-144.

Purvis, M. and Grainger, A. 2013. *Exploring sustainable development: geographical perspectives*. London: Routledge.

Rahmawati, A. 2015. Effect on performance audit implementation of good corporate governance in kab. Luwu (Case Study Inspectorate Kab. Luwu). *Journal of economics & behavioural studies*. 1(7):13.

Rampersad, S., Rossi, M.G., Yarnell, C., and Uejima, T. 2014. Wrong site frenulectomy in a child: *a serious safety event. Anesthesia & Analgesia*. 1(119):141-144.

Reason, J. 2016. *Managing the risks of organisational accidents*. London: Routledge.

Roudias, J. 2015. *Mastering principles and practices in PMBOK, prince 2, and scrum: using essential project management methods to deliver effective and efficient projects*. New Jersey: Pearson Education/ FT Press.

Rumane, A.R. 2010. *Quality management in construction projects*. Boca Raton: CRC Press.

Sekaran, U. and Bougie, R. 2010. *Research methods for small business: a skill-building approach.* 5th ed. Italy: Wiley.

Sekaran, U. and Bougie, R. 2014. *Research methods for small business: a skill-building approach*. 6th ed. Italy: Wiley.

Sharabi, M. 2013. Managing and improving service quality in higher education. *International journal of quality and service sciences*. *5*(3):309-320.

Similä, J., Pölönen, I., Fredrikson, J., Primmer, E. and Horne, P. 2014. Biodiversity protection in private forests: an analysis of compliance. *Journal of environmental law*, (abstract), 26(1):83-103. Available at: https://www.researchgate.net/publication/275319554_Biodiversity_Protection_in_Private Forests_An_Analysis_of_Compliance. Date of access: 12 March 2016.

Sinha, N., Garg, A.K. and Dhall, N. 2016. Effect of TQM principles on the performance of Indian SMEs: the case of the automotive supply chain. *The TQM Journal*. *28*(3):338-359.

Sroufe, R. and Curkovic, S. 2008. An examination of ISO 9000: 2000 and supply chain quality assurance. *Journal of operations management. 26*(4):503-520.

Suberu, M.Y., Mustafa, M.W., Bashir, N., Muhamad, N.A. and Mokhtar, A.S. 2013. Power sector renewable energy integration for expanding access to electricity in sub-Saharan Africa. *Renewable and Sustainable Energy Reviews*, 25:630-642.

Sukamolson, S. 2010. Fundamentals of quantitative research. *Language Institute, Chulalongkorn University*.

Taylor, P.C. and Medina, M.N.D. 2013. Educational research paradigms: from positivism to multiparadigmatic: *The journal of Meaning-centered education*. 1(2):1-13.

Tekin, A.K. and Kotaman, H. 2013. The epistemological perspectives on action research: *Journal of Educational and Social Research*. *3*(1):81-91.

Thorpe, B. and Sumner, P. 2004. *Quality management in construction*. 6th ed. England: Gower.

Tricker, R. 2014. 5th ed. *ISO 9001: 2008 for Small Businesses*. New York: Routledge.

Twidell, J. and Weir, T. 2015. 3rd ed. *Renewable energy resources*. London: Routledge.

Viada-Stenger, M.C., Balbastre-Benavent, F. and Redondo-Cano, A.M. 2010. The implementation of a quality management system based on the Q tourist quality standard. The case of the hotel sector. *Service business*, (abstract), 4(3):177-196. Available at: https://www.researchgate.net/publication/225461232_The_implementation_of_a_quality_management_system_based_on_the_Q_tourism_quality_standard_The_case_of_hotel_sector_Serv_Bus_Int_J_4177-196. Date of access: 17 March 2016.

Vijaya Venkataraman, S., Iniyan, S. and Goic, R. 2012. A review of climate change, mitigation and adaptation. *Renewable and Sustainable Energy Reviews*. 16(1):878-897.

Vouzas, F.K. and Gotzamani, K.D. 2005. Best practices of selected Greek organisations on their road to business excellence: the contribution of the new ISO 9000: 2000 series of standards. *The TQM Magazine*. *17*(3):259-266.

Walwyn, D.R. and Brent, A.C. 2015. Renewable energy gathers steam in South Africa. *Renewable and Sustainable Energy Reviews*. 41, pp.390-401.

Warburton, D. 2013. *Community and sustainable development: participation in the future.* London: Routledge.

Wetcher-Hendricks, D. 2011. *Analysing quantitative data: an introduction for social researchers*. 6th ed. Chicago: Wiley.

Wiele, T., Iwaarden, J. and William, R. 2005. Perceptions about the ISO 9000 (2000) quality system standard revision and its value: the Dutch experience. *International journal of quality & reliability management*. 22(2):101-119.

ANNEXURE A

A LETTER TO RESPONDENTS

I, Limpho Mokhesi, am a postgraduate student at the Central University of Technology, Free State (CUT). I have designed this questionnaire to gather data which will demonstrate the level of compliance with ISO 9001:2008 Quality Management System (QMS) in your department. With the information you provide, I will better assess the level of compliance with the six mandatory procedures of QMS, which is my research topic in pursuance of a Master of Technology Degree in Business Administration.

I request you respond to the questions openly and fairly. If you are unsure about any of the questions, please do not hesitate to contact me on (083 694 9233) or (051) 404 2504. Your responses will be kept strictly confidential as my supervisor, Prof Dzansi, and I will be the only people who have access to the information you provide. A summary of the results will be shared with you on request after all data have been analysed. Thank you very much for your time and cooperation - I greatly appreciate your help in furthering this research endeavour. The survey will take between 10 to 15 minutes.

ANNEXURE B

QUESTIONNAIRE

Section A

Please complete the following questionnaire. Write your answer in the box provided.

1. Your Gender:					
Male 1	Female 2	Intergender 3	Transgender 4	Prefer not to mention 5	
2. Job Status:					
Project services 1	Clerk of works 2	Project coordinator 3	Contract management & Admin. 4	Senior supervisor 5	
3. Number of years working in Eskom					
Less than a year 1	Two years 2	Three years 3	Five years 4	Ten years & above 5	

4. Your highest completed level of education					
Matric/Gr 12 1	College qualification 2	Diploma 3	B-Tech: Eng. /PM 4	BSC & above 5	
5. Your age:					
18–25 1	26–35 2	36-45 3	46-55 4	56 and older 5	

Section B

Employees' Level of awareness of ISO 9001:2008 QMS

Choose your answer by placing an (X) in appropriate box:

6. Awareness of quality policy and statement	**Not at all**	**Low**	**Moderate**	**high**	**Excellent**
a. The actual level of Eskom's quality policy understanding					
b. The actual level of understanding of Eskom's quality statement					
7. Awareness of QMS procedures					
a. Level of actual understanding of the procedures to be					

followed in Eskom's QMS					
8. Requirements of QMS awareness					
a. Awareness of who customers are					
b. Familiarity with customers' needs					
c. Awareness of what will happen when customers' needs are not met					
d. Awareness of importance of meeting customers' needs					
9. **Promotion of awareness**					
a. The needs of Eskom customers are communicated					
b. Level of actual understanding of the benefits Eskom is gaining by implementing QMS					
c. Level of understanding of QMS					
10. **Communication process**					

a. Level of employees' understanding of QMS in respective departments					
b. Level of QMS establishment in Eskom Distribution					
11. **Relevance and importance**					
a. Job output contribution to the quality of service in Eskom					
b. Significant effect of your job on customer satisfaction					
c. Customers can rate your job contribution to QMS					

Section C

Employee adherence to ISO 9001:2008 QMS procedures

Choose your answer by placing an (X) in the appropriate box:

12. **Documents and records requirements**	**No answer**	**Not at all**	**When asked to**	**Most times**	**All times**
a. Do you use and keep documents according					

to the requirements of QMS?					
b. Do you use and keep records for projects according to the requirements of QMS?					
c. Do you have evidence of implementation of this process mentioned above?					
13. **Management review**					
a. Has quality policy been communicated within your section?					
b. Has management defined quality objectives?					
c. Have you received any report from management concerning the performance of QMS?					
d. Has top management established a process for communicating information on the effectiveness of the QMS?					

e. Are you able to demonstrate that you have taken part in a full cycle of management review?					
14. **Procedure for non-conformity**					
a. Do you maintain records of non-conformity on projects?					
b. Do you validate any repair or rework to rectify non-conformity?					
c. Is there any person in your section who deals with non-conformity issues?					
d. Do you identify and control any activities that do not conform with requirements before completion of the project?					
e. Do you have evidence of implementation of this process?					
15. **Control of corrective actions**					
a. Do you adhere to documented					

procedures for control of corrective actions in your section?					
b. Do you review non-conformities with your stakeholders?					
c. Do you determine the causes of non-conformity?					
d. Do you take actions to prevent non-conformity occurring?					
e. Do you record the results of action taken?					
16. **Control of preventive actions**					
a. Do you adhere to documented procedures for control of preventive actions in your section?					
b. Do you identify potential non-conformities in your environment?					
c. Do you implement measures to prevent non-conformance?					

d. Do you review the measures?					

Section D

ISO 9001:2008 QMS procedures posing a challenge to employees and why they are challenging:

Indicate your answer with an (X).

17. **Documents and records requirements**	**Not a challenge at all** **5**	**Only a minor challenge** **4**	**Challenging** **3**	**Very challenging** **2**	**Extremely challenging** **1**
a. Compliance with control of documents for projects according to requirements of QMS					
b. Adherence to the use and keeping of records for projects according to the requirement of QMS					
c. Keeping evidence of implementation of this process					
18. **Management review**					
a. Understanding quality policy					

b. Understanding quality objectives					
c. Understanding the report from management concerning the performance of QMS					
d. Understanding the effectiveness of the QMS					
e. Understanding the full cycle of management review					
19. **Procedure for non-conformity**					
a. Maintenance of records for non-conformity on projects					
b. Validating any repair or rework to rectify non-conformity					
c. The role of a person in your section who deals with non-conformity activities					
d. Identifying and controlling activities that do not conform to requirements before completion of the project					

e. Keeping evidence of implementation of this process					
20. **Control of corrective actions**					
a. How do you find adherence to the documented procedure for control of corrective actions in your section?					
b. How do you find compliance with a review of non-conformities with your stakeholders?					
c. How do you find determining causes of non-conformity?					
d. How do you find actions taken to prevent non - conformity occurring?					
e. How do you find recording the results of action taken?					
21. **Control of preventive actions**					
a. How do you find documenting of procedures for control of preventive					

actions in your section?					
b. How do you find identifying potential non-conformities in your section?					
c. How do you find determining the causes of non-conformity in your section?					
d. How do you find implementing actions to prevent non-conformances?					
e. How do you find reviewing the actions?					

Section E

Managers' involvement in ISO 9001:2008 QMS implementation.

Please indicate your level of agreement or disagreement with each of these statements below. Place an "X" in the appropriate box.

General comments concerning QMS	**Strongly disagree**	**Disagree**	**Not applicable**	**Agree**	**Strongly Agree**

22. Management did not explain all six mandatory procedures					
23. Management has indicated the procedures which are directly involved with my job outputs					
24. According to management, I should comply with all six mandatory procedures					
25. Eskom disciplines employees who do not comply					
26. Eskom disciplines managers for any non-compliance with QMS by employees					
27. Eskom constantly raises awareness about QMS					
28. QMS is part of my job contract					

29. **The questions in the survey may not have allowed you to report concerns, challenges or any helpful information regarding ISO**

9001:2008 (QMS) compliance. Please make any additional comments needed in the space provided below, should there be any need to do so.

I sincerely appreciate your time and cooperation; please check to make sure that you have not skipped any question.