

Examining the implementation of quality control procedures in a selected power station

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DEDICATION

This work is dedicated to my parents (oSithole, oMatshana, oJobe, oMondise no Mbatha, oShandu kaNdaba), my wife Thandeka, and my two beautiful daughters Siphesihle and Mpilwenhle for their support and understanding during my absence to make this ambition a reality.

DECLARATION

I, Thabani Sithole declare that this mini-dissertation titled 'Examining the implementation of quality control procedures in a selected power station', Mpumalanga Province, South Africa hereby submitted to the North-West University for the degree Master in Business Administration is my own work and has not been previously been submitted to any institution. I also declare that all the sources contained have been duly acknowledged.

.....
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.....
Date

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I would like to first thank GOD for giving me the strength and the opportunity to make this a reality.

I would also like to thank the following people for their enormous contribution to my dissertation:

- The Eskom Management at Matla Power Station for their contribution and granting me the permission to collect data from their employees.
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ABSTRACT

There is a problem of quality control processes in Eskom South Africa. There have been some continuous unsatisfactory remarks by Eskom directed to contractors due to various reasons such as plant failures and continuous repairing, job not well-done that prompt rework and defects among other quality compromising issues on both completed and ongoing projects. However, most of the investigation outcomes have indicated that most of the problems are caused by lack of supervision, poor workmanship, inadequate Quality Control Plans (QCPs) of Suppliers or Contractors, low morale of employees and commencement of work without signed Quality Control Plans (QCPs). Therefore, there is an obligatory necessity for Eskom to dedicate on adding value to customers' products. This research reviewed the existing quality control procedures in Eskom, how these quality control procedures are implemented, the limitations and the responsive measures in place. The intention was to suggest a quality control framework potential to sustain Eskom business in this dynamic business environment, using Matla Power Station as a case study. Findings were presented and recommendations were provided.

Keywords: Quality, Quality Management, Quality Management System, Quality Control, Quality Assurance

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ABBREVIATIONS

Acronym	Definition
BC	Before Christ
FAT	Factory Acceptance Test
ITPs	Inspection and Test Plans
NCR	Non-Conformance Request
NED	Network Engineering and Design
QM58	Quality Management Specification
QA	Quality Assurance
QC	Quality Control
QCD	Quality Control Design
QCM	Quality Control Management
QCPs	Quality Control Plans
QMS	Quality Management System
SEM	Structural Equation Modeling
SHEQ	Safety, Health, Environmental and Quality
SPC	Statistical Process Control
TQM	Total Quality Management

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1 BACKGROUND

Quality control management is a global phenomenon. It is a basic component of sustainable business practices. For businesses and industries around the globe to excellently sustain their business for now and for the future, there is a need for great quality control management improvement in process (Evans & Lindsay, 2002). A management commitment to quality improvement is increasingly becoming imperative. However, there is a problem of quality control processes in Eskom South Africa. There have been some continuous unsatisfactory remarks from the company client due to plant failures and repairing incompetent, reworking and defects among other quality compromising issues on both completed and ongoing projects. Most of the investigation outcomes have indicated that most of the problems are caused by lack of supervision, poor workmanship, inadequate Quality Control Plans (QCPs) of suppliers or contractors, low morale of employees and commencement of work without signed Quality Control Plans (QCPs) (Eskom, 2015).

This research will review the existing Quality Control Management (QCM) procedures in Eskom, using Matla Power Station in Mpumalanga as a case study. The study will also investigate how these quality control procedures are being implemented, what are the limitations and the responsive measures in place, to suggest a quality control framework potential to sustain Eskom business in this dynamic business environment and for future sustainability. Quality control procedures tend to be complex and vary from entity to entity. However, in general terms, it has been observed to involve a process by which entities review the quality of all factors involved in the production of its products (Moody & Shanks, 2003; Panuwatwanich & Nguyen, 2017). It is a part of quality management focusing on fulfilling quality requirements (Tricker, 2014). Eskom has policy frameworks that guide all the functional structures within the organization, for instance, the Safety, Health, Environmental, and Quality (SHEQ) Policy which aim to attain zero defects. Zero Harm defects means ensuring that Eskom operational activities do not inflict harm on Eskom employees, assets, contractors and members of the public affected by its operation together with the environment in terms of environmental obligation

compliance. This policy commitment is achieved through implementation of management systems in accordance with, but not limited to ISO 9001, ISO 14001, and OHSAS 18001 requirements. However, this commitment proposal is not met at Eskom since there are still challenging issues regarding Quality Control Management (QCM) (Eskom, 2015). This research will investigate the Quality Control Management procedures at Eskom suggesting strategies that can be effective, using Matla Power Station as a case study.

1.2 PROBLEM STATEMENT

There is a problem of quality control processes in Eskom South Africa. There have been some continuous unsatisfactory remarks from the company on the work done by contractors due to various reasons such as plant failures and continuous repairing, jobs not well-done that prompt rework and defects among other quality compromising issues on both completed and ongoing projects. However, most of the investigation outcomes have indicated that most of the problems are caused by lack of supervision, poor workmanship, inadequate Quality Control Plans (QCPs) of Suppliers or Contractors, low morale of employees and commencement of work without signed Quality Control Plans (QCPs) (Eskom, 2015). This research explores ways in which Eskom might add value on adding to customers' products through intensive auditing and inspection, testing and quality assurance to enhance their support and success in the global market. This research reviewed the existing quality control procedures in Eskom, how these quality control procedures are implemented, the limitations and the responsive measures in place, to suggest a quality control framework potential to sustain Eskom business in this dynamic business environment, using Matla Power Station as a case study.

1.3 OBJECTIVES OF THE STUDY

1.3.1 *Primary objective*

The study seeks to address the issues of quality control in Eskom South Africa, and suggests ways on the best quality control practices, using Matla Power Station as a case study.

1.3.2 *Secondary objectives*

- Determine the existing quality control procedures at Eskom, using Matla Power Station as a case study.

- Describe the patterns of quality control implementation measures.
- Establish the extents in which the quality control measures are responsive to changing dynamics.
- To identify the limitations facing the implementation of quality control measures.
- To propose an effective approach to quality control strategies for Matla Power Station.

1.4 RESEARCH QUESTIONS

- What are the existing quality control procedures at Eskom, using Matla Power Station as a case study?
- How are these quality control measures implemented?
- To what extent in which the quality control measures are responsive to changing dynamics?
- What are the limitations facing the implementation of quality control measures?
- What can be done to attain an excellent and sustainable quality control management at Eskom, using Matla Power Station as a case study?

1.5 SCOPE OF THE STUDY

The focus of this study was to design an effective approach to Quality Control Management systems of Matla Power Station at Eskom South Africa. This becomes an attempt to curb the continuous unsatisfactory remarks from clients, both within and outside Eskom, due to, repairs and maintenance failures, defects and job not well-done which always prompt a rework amongst other things. The proposed study findings will be limited only to Matla Power Station; however, the results can be relevant to Eskom's Quality Control Management procedures and implementation structures. The results selection, interpretations and assumptions will be made as a consideration of a proper and realistic Quality Control Design (QCD) proof. This supported the findings and interpretation of the research and confirms how well the findings flow from the data that was collected (Collis and Hussey, 2013).

1.6 LIMITATIONS OF THE STUDY

Limitations refer to the weaknesses and constraints that redefine the process of this research. In this instance, what might be the limits to this study involve the sample population of the standardised structured interview which was limited to Matla Power Station, yet the anticipated results are expected to inform of the quality control strategies of Eskom entity in South Africa. Hence, it might not be appropriate to generalise the findings of this study from Matla Power Station quality control strategy and propose concretely on the quality control strategy seem to be appropriate for the entire organisation in South Africa. There was also a limited time and resource constraint to the collection of data and these officials for confidentiality reasons might withhold some information, and this has the potential to affect the scope of this research since the findings were reliably contextualised to this sampled population.

1.7 JUSTIFICATION OF THE STUDY

This study adds knowledge to Quality Control Management (QCM) strategies for the Eskom business entity in South Africa and in extension, to all business corporates globally. Implementation strategies towards excellent sustainable quality products were suggested and proposed based on the findings of the study. Theoretically, the study added to the literature on Corporate Quality Control which is compromising quality business management and products. The scope of this inquiry also examined the processes underpinning and ameliorating quality control constraints and anticipate the consequences of this dynamic environment. The continuous unsatisfactory remarks from clients, both within and outside the company, regarding issues of repairs, rework, imperfections and other quality issues on completed and ongoing projects at Matla Power Station in Mpumalanga, South Africa, raises critical questions on the Quality Control Management (QCM) strategies at Eskom. This research suggested and proposed a framework for supervision approaches, workmanship and Quality Control Plans (QCPs) to all managers, supervisors and contractors that are effective for quality sustainability. Consequently, the study informed on the existing patterns of quality control measures, how they are implemented and with what effect to the overall management functional structures at Eskom, using Matla Power Station in Mpumalanga as a case study. The challenges facing the implementation of these quality control measures were identified and suggestions on how best the problem can be overcome were given. The findings

informed on the best Quality Management strategies that seem to be effective and recommendations to meet customer requirements and expectations were given.

1.8 CONCLUSION

This chapter provided the background to the study. The research problem was also formulated. The chapter also provided a brief introduction to the following chapters. The next chapter provided the literature review that is directly linked to the research topic and the research objectives.

1.9 SUMMARY OF THE STUDY

In chapter one of this research, the background, the aim and focus of the study was introduced. As already mentioned the study was set to explore the limitations and challenges regarding the implementation of quality control measures and propose an effective approach on the implementation of quality control procedures at Matla Power Station.

Chapter two of the study engaged the literature on the issues around the implementation of quality control procedures and its imperatives to businesses and organisations. It was discovered that the literature in this field indicates although different organisations follow different policies and strategies to ensure quality, there is a general tendency of aligning quality procedures to ISO 9001 Quality Management standards, relegating strategies that are contextual, flexible and relevant to the organisation. Therefore, the persistence of the foregoing, notwithstanding the perceived effort to improved quality control attainment, this research indicates that the desired change needs to be reinforced. This research presented a holistic approach towards Total Quality Management relevant to organisational context.

Chapter three is an in-depth discussion of the methodological procedures used in the study, including the research paradigm, research design, sampling, and data collection method and data analysis. Qualitative research approach used to collect data was explained in chapter three. All the methodological procedures used in this research were decidedly used to suit a descriptive and thematic analysis for the collected data.

Chapter four focused on the presentation, interpretation and discussion of the findings. The findings discussed were solely based on the data that was collected. Relationships to previous studies were indicated. There were no significant relationships that were found along gender, age, race, qualification and marital status linked to the quality control implementation procedures at Matla Power Station.

Chapter five is about the presentation of data, recommendations and conclusions. Challenges mitigating against the quality control implementation procedures were given, to which conclusions were made and recommendations suggested.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

Chapter one discussed and explained the research background, aim and objectives. This chapter reviews the relevant literature which supports the current study and describes how this research relates to existing research on quality control, total quality management, quality assurance, approaches to adoption of quality, models of quality practices, relationship between quality management and knowledge management and performance and the challenges of implementing Total Quality Management (TQM). These factors are prominent to the discussion of Quality Control (QC) hence; the combination of their characteristics will provide a theoretical framework to the research design of this study.

2.2 BACKGROUND ON QUALITY CONTROL MANAGEMENT

Quality has become one of the most sought-after in today's corporate world (Drucker, 2017). Driven by the competitive factors and rapid change of the dynamic business sector, industries have no alternatives but to seek ways to add value to their products and services in the ever-changing markets (Appiah-Adu & Amoako, 2016), through enhancing quality and meeting the requirements of the customer. Premium strategic management, sustainability and quality procedures are key to TQM (Benavides-Velasco, Quintana-García & Marchante-Lara, 2014). Recently, the upgrading of employee skills and training, to meet the demands of the now technologically-savvy customers and the international market standards have been debated for its positive imperative in support of TQM (Cornelissen & Cornelissen, 2017). Quality Control Management (QCM) is a global phenomenon. Quality is a basic component of sustainable business practices. It is a historical phenomenon traced back in the ancient Europe, in the late 13th century, with craftsmen organizing themselves in societies (World Meteorological Organisation, 2013). In the mid-1920s, the focus of quality was a move away from the quality of the final product to include the processes needed to achieve that product. The mid 1970s witnessed the idea that confidence in the products could be gained through an approved quality management systems and quality manuals to easy international trade, hence an International Organisation for Standardization (ISO) (World Meteorological

Organisation, 2013). Total Quality Management (TQM) has been a way of thinking about the organisational goals, processes and people to ensure that things are done correctly at the first time of attempt (Pheng & Teo, 2004). Research has shown that Total Quality Management (TQM) can be successfully implemented in both business corporations and construction industry in this increasingly complex environment where clients are also ever more demanding higher standards for their delivery. Total Quality Management has been recognized as a successful management philosophy in the manufacturing and service industries (Osabutey, Williams & Debrah, 2014; Deresky, 2017; Nicholas & Steyn, 2017). Quality Control Management is increasingly embraced in sectors of business to help sustain and raise the quality of products to gain a competitive advantage in the global markets. However, quality control procedures are complex and vary from company to company. In a nutshell, quality control can be understood as a process by which companies review the quality of all factors involved in production of their products. It is a part of quality management focusing on fulfilling quality requirements (Tricker, 2014).

This chapter gave an overview of Eskom Quality Control Management, its quality control policies and measures and challenges on implementing these quality control measures. The literature review in this context will consult scholarly journal articles published whose focus was on Quality Control (QC) and Total Quality Management (TQM), books both online and printed document analysis of Eskom Quality Control (QC) procedures and all functional structures will be employed to broaden the scope and richness of the study. The literature gave perspectives on the understanding of the concepts of Total Quality Management, benefits of introducing Total Quality Management and leadership commitment.

2.3 DEFINITION OF CONCEPTS

Quality: There is a plethora of 'Quality' definitions and interpretations under Quality Control Management (QCM). However, central to these definitions is the emphasis on the perceptions to which the services or product meet the customer expectations (World Meteorological Organisation, 2013). The International Organisation of Standardization (ISO) defines quality as the extent to which a set of essential characteristics of the product fulfils requirements of the client. For Evans and Lindsay (2013), quality is imperative to determine the success or failure of an

organisation and it gives an organisation a competitive advantage through a word of mouth marketing strategy by satisfied customers. Deming and Edwards (1982) alluded that there is no explicit definition of quality, unless it is attached to a specific set of requirements.

Quality Management (QM): Quality Management under production connote to a process that focuses on the quality of the product and the means of achieving it. It tends to emphasise on quality planning, quality assurance, quality control and quality improvement.

Quality Management System (QMS): For ISO 9001 (2015), Quality Management Systems (QMS) evolves the need by the organisation to demonstrate its ability to consistently provide products and services that meet customer and pertinent legal and governing requirements, and it facilitates customer satisfaction through the effective application of the system, including processes for improvement of the system, the assurance of conformity to customer and pertinent legal and governing necessities. It also refers to the organisational structure, procedures and resources needed to ensure the delivery of quality products by the organisation (ISO 9001, 2015).

Quality Control (QC): Quality Control is a process where organisations review the quality of all aspects of production. ISO 9000 defines quality control as a part of quality management focusing on fulfilling quality requirements. The Merriam Webster dictionary defines quality control as: “an aggregate of activities such as design analysis and inspection for defects, designed to ensure adequate quality especially in manufacturing processes. An aggregate of activities (such as design analysis and inspection for defects) designed to ensure adequate quality especially in manufactured products.” Quality control (QC) intends to ensure that quality requirements are fulfilled prior to the distribution of a product or services.

Quality Assurance (QA): The ISO 9001 (2015), quality assurance aims to instil confidence that quality requirements have been met. It entails a systematic monitoring and evaluation of the processes associated with the generation of a product or the services rendered by the organisation.

Stakeholder: A stakeholder is any individual or organisation that can affect or is affected positively or negatively by the activities of the organisation or business activities.

2.4 BACKGROUND ON ESKOM'S QUALITY CONTROL MANAGEMENT

For businesses and industries around the globe to excellently sustain their business for now and for the future, there is a need for great quality control management improvement in process (Evans & Lindsay, 2002). A management commitment to quality improvement is increasingly becoming imperative. However, there is a problem of quality control processes in Eskom South Africa. There have been some continuous unsatisfactory remarks from the company clients due to plant failures and repairing incompetent, reworking and defects among other quality compromising issues on both completed and ongoing projects. Most of the investigation outcomes have indicated that most of the problems are caused by lack of supervision, poor workmanship, inadequate Quality Control Plans (QCPs) of suppliers or contractors, low morale of employees and commencement of work without signed for Quality Control Plans (QCPs) (Eskom, 2015).

Quality control procedures are complex and vary from entity to entity. However, in general terms, it has been observed to involve a process by which entities review the quality of all factors involved in the production of its products (Moody & Shanks, 2003; Panuwatwanich & Nguyen, 2017). It is part of quality management focusing on fulfilling quality requirements (Tricker, 2014). This means that each organisation is certain to have quality policy frameworks to ensure quality is achieved in the production of goods and services. Eskom has policy framework that guides all the functional structures within the organisation. For instance, the Safety, Health, Environmental, and Quality (SHEQ) Policy (2017) aim to attain zero defects. Zero Harm defects means ensuring that Eskom operational activities do not inflict harm on Eskom employees, assets, contractors and members of the public affected by its operation together with the environment in terms of environmental obligation compliance. This policy commitment is achieved through implementation of management systems in accordance with, but not limited to ISO 9001, ISO 14001, and OHSAS 18001 requirements. However, this commitment proposal is not met at Eskom since there are still challenging issues regarding Quality Control

Management (QCM). Hence, this research investigated the Quality Control Management (QCM) procedures at Eskom and suggest on strategies that can be effective, using Matla Power Station as a case study. In the Definitions of Eskom Documentation Standard of 2015, to be reviewed in August 2018, a strategy is described as a planned route proposed to achieve a specific objective(s). It involves supporting decision making to formulate strategic objectives that will determine where the organisation wants to go and why. It also involves determining the route on how to realise the objectives and why this route over others is preferred. For Eskom, the strategy is the bridge between policy and tactics or actions undertaken to realise these goals (Eskom, 2015). However, an imperative step towards developing a total quality culture in construction entails developing a construction team of a main contractor and subcontractors who would commit to the quality control process to develop a mutual quality attitude prior the commencement of work to avoid risk the integrity of the companies involved (Naoum & Egbu, 2016). Nothing new here, as this fact was already forewarned over a century ago that: selection of the subcontractors by the main contractor should be based on the demonstration of quality work and attitude and work performance of the previous jobs by the subcontractor” (Shahinur Ferdoush, 2014).

The Safety, Health, Environmental and Quality (SHEQ) policy approach in Eskom, guarantee to integrate quality requirements through the plan-do-check-act (PDCA) quality cycle of activities and decisions to ensure economic development, environmental care, social equity, improve performance and meet stakeholder requirements (SHEQ policy, 2017: 4). There are central steps to be considered in the implementation of TQM in the construction projects that have remained relevant for a long time. These involve obtaining the commitment of the client to quality, generate awareness, educate, and change the attitudes of the staff, develop a process approach towards TQM, prepare project quality plans for all levels of the work, institutes continuous improvement, promote staff participation and contribution using quality control circles and motivation programs, and review quality plans and measure performance. Thus, this research becomes imperative to review the Quality Control procedures at Eskom South Africa, using Matla Power Station as a case study. Eskom quality management strategy was developed with the objective of a sustainable and continuous business performance improvement (Eskom Annual

Report, 2009). However, there has been a dissatisfaction display resonating from the client – customer. Therefore, there is an obligatory necessity for Eskom to dedicate on adding value to customers' products through intensive auditing and inspection, testing and quality assurance to enhance their support and success in the global market. The study also investigated how these quality control procedures are being implemented, what are the limitations and the responsive measures in place, to suggest a quality control framework potential to sustain Eskom business in this dynamic business environment and for future sustainability.

2.5 TOTAL QUALITY MANAGEMENT (TQM)

Quality refers to the organisation's conformity to the standards and/ or requirements of the service or product by the client (Sallis, 2014). The ISO 9000, ISO 9001, ISO 9002 and all reviews of standards, and the ISO 9001, are imperative for their international appeal and support of the national standards bodies from more than 150 countries (World Meteorological Organisation, 2013; Akgün, Keskin & Ayar, 2014). Therefore, there is a logical choice for an organisation such as Eskom, together with all its employees, to commit and operate within the framework of the international standards to meet the requirements of the customers who demand international standards of excellence. Over a few decades, Total Quality Management approach has been applied to many organisations as a tool to improve the overall corporate business operation and quality of products and services (Panuwatwanich & Nguyen, 2017). However, the observation by Talib, Rahman & Qureshi (2013) study indicate that not all TQM applications have boosted the results to the organisations that implement them. Consequently, research has shown that the application of TQM has been effective as a management philosophy in manufacturing and service industries, while its effectiveness to construction industries is still unclear (Elghamrawy & Shibayama, 2008). Studies testing the implementation and effectiveness of Total Quality Management on corporate business, services and products are ample. For instance, the study by Hiyassat (2000) observed feedback from the employees of a Jordanian construction company to explore how correctly the ISO-9000 Standards were implemented by the company. The study also examines whether the employees of the company understood what the ISO-9000 Standards is about and what it entails. Using a short questionnaire survey, the data was collected from the employees and top

management. The analysis indicates that there was a major problem in the way the ISO-9000 Standards were implemented, and many employees lacked understanding on how and what the ISO-9000 Standards mean, hence they resisted the introduction of the standards. Also, the study by Pheng and Teo (2004) observe how Total Quality Management (TQM) is being recognised as a successful management philosophy in the manufacturing and service industries, using two case studies of construction companies. The study indicates that the benefits experienced include reduction in quality costs, better employee job satisfaction because they do not need to attend to defects and client complaints, recognition by clients, work carried out correctly right from the start, subcontractors with proper quality management systems, and closer relationships with sub-contractors and suppliers. Total Quality Management (TQM) performance was reflected through top management commitment, customer connection and fulfillment, employee involvement and empowerment, customer-supplier relationships, and process improvement. Finally, a framework for implementing TQM is recommended in all aspects of product process.

The study by Hiyassat (2000) observed feedback from the employees of a Jordanian construction company to explore how correctly the ISO-9000 Standards were implemented by the company. The study also examined whether the employees of the company understood what the ISO-9000 Standards is about and what it entails. Using a short questionnaire survey, the data was collected from the employees and top management. The analysis indicates that there was a major problem in the way the ISO-9000 Standards were implemented, and many employees lacked understanding on how and what the ISO-9000 Standards mean, hence they resisted the introduction of the standards. Moreover, the study by Serpella, Ferrada, Howard and Rubio (2014), examine that in Chile, both owners and contractors do not systematically apply risk management practices, which in return will result in negative consequences for projects' performance. The study addresses the challenges of risk management in construction projects using a knowledge-based approach, and proposes a methodology based on a three-fold arrangement that includes the modeling of the risk management function, its evaluation, and the availability of a best practices model. The findings of the study indicate that risk management in construction projects is still very ineffective and that the main cause of this situation is the lack of knowledge. It was suggested that the application of the

proposed approach should allow clients and contractors to develop a project's risk management function based on best practices, and to improve the performance of this function. The adoption of a Total Quality Management (TQM) strategy requires a significant change management strategy for many corporations to the delivery of services and products. ISO 9001 has been effective to provide an appropriate framework to implement the required change management processes through identifying most suitable policies, procedures, records, technologies, resources and structures needed to achieve the quality of the products and services. ISO 9001 standard insist that the development and successful implementation of Total Quality Management systems will foster quality attitude among employees at all levels of the business, which will assist in ensuring the delivery of products and services of an international standard. This study examined the loopholes to the TQM implementation strategies of Eskom at Matla Power Station and proposes a frame of strategies to overcome the potential challenges within the International Organisation for Standardization (ISO) 9001 Quality Management principles such as customer-focused organisation, leadership, process approach and mutually beneficiary supplier relationship.

Another striking study by Osabutey, Williams and Debrah (2014) observe the transfer of technology and knowledge by the host countries to those that will be receiving foreign investments. The study explores technology and knowledge transfer potential to the Sub-Saharan African countries, using Ghanaian construction industry as a case study. The results indicate compound weaknesses in technology and knowledge transfer across industry sectors and between local and foreign firms. The findings reveal that the weaknesses are due to absence of coherent management of technology and knowledge development policies. For Eapen (2012) indicates that there is a need by local firms: the developing countries, to overcome existing constraints to improve their absorptive capacity (Eapen, 2012): the ability of a firm to recognize the value of new, external information, assimilate it and apply it to commercial ends. This research explored the extent to which Matla Power Station Quality Control Management systems is facilitating technology and knowledge transfer. Apart from that, Statistical process control (SPC) is used by companies and industries for Quality Control (QC) through statistical methods. SPC is employed to monitor and control process of production to minimize waste and rework. For

example, using the quality control charts, the study by Álvarez, Moya-Férrandez, Blanco-Encomienda & Muñoz (2015) describe the most common estimators of the process standard deviation, and define the corresponding estimators of the process capability index which measures the ability of a process of producing acceptable products per established specifications. Monte Carlo simulation studies were carried out to analyze the empirical performance of the various estimators of the process capability index and a bound for the bias ratio of the various estimators was obtained. The results indicate that biases can be obtained, simply in the presence of small samples, and that the estimators of the process capability index based on the sample ranges are less accurate than the alternative estimators. It becomes imperative for this study to explore Eskom's quality control process, using Matla Power Station as a case study. The impact of Total Quality Management (TQM) on organisational performance has been ample. For instance, the study by Jiménez-Jiménez, Martínez-Costa, Martínez-Lorente & Rabeh (2015) analyse the interaction between TQM procedures and organisational learning, particularly on exploitation and exploration capabilities, to comprehend the way quality management programs help to develop learning environments within companies. Using the structural equation modelling to test the proposed model, of 111 medium-sized Spanish companies, with four different responses each, the findings indicate that TQM is positively related to both exploitation and exploration and that the relationship between exploitation and TQM is higher. It was also discovered that only exploitation capability positively affects organisational performance.

In addition, the study by Sadikoglu and Olcay (2014) investigates the impact of TQM practices on various performance procedures, the reasons and the barriers of the TQM practices of firms in Turkey. Using a cross-sectional survey methodology, the sample population of 242 questionnaires was selected from the number of firms from Turkish Quality Association and in the Kocaeli-Gebze Organized Industrial Zone. Through an exploratory factor analysis and multiple regression analysis, the findings of the study indicated that different TQM practices significantly affect different performance outcomes. Lack of employee involvement, awareness and commitment of the employees, inappropriate firm structure, and lack of the resources were observed to be the obstacles that affect the performance outcome. The study suggested that firms should endure to implement TQM to enhance performance,

improve employee involvement in the implementation of TQM practices. This study examined Quality Control (QC) procedures at Eskom, using Matla Power Station as a case study in South Africa. Again, Companies need to recognise the value of quality management in their business to meet the challenges of the dynamic global environment. The study by Kahreh, Shirmohammadi and Kahreh (2014) observe the relationship between Total Quality Management and Knowledge Management towards the performance of the organisation. Using the validated questionnaire to collect data from the banking industry, the findings reveal that successful Total Quality Management (TQM) implementation in all aspects of the organisation's divisions entails major changes in the main four aspects of knowledge management: *Creating, Storage, Sharing and Application*.

Moreover, Mardani et al. (2013) examine the relationship between organisational culture variations and Total Quality Management (TQM) practices in Iranian Small and Medium-Sized Businesses (ISMBs). The evaluation of structural model and investigation of hypothesized relationships between independent variables and dependent variables was performed using Structural Equation Modeling (SEM). The sample has been selected in the 250 Iranian SMBs in four provinces of the country, Markazi, Isfahan, Yazd and Tehran. The results of the study indicate that there was no relationship between group culture and leadership, instead group culture had positive impact on information and analysis and customer focus. Also, a positive relationship between rational culture and leadership was observed. The positive relationship between hierarchical culture and strategic planning and process management was significant. In addition, Oschman, (2017) examined the importance of strategic planning towards successful implementation of TQM. Using the questionnaire to gather data from eight South African Air Force bases that uses TQM, the results indicate that strategic planning is essential to the implementation of TQM. Where strategic planning and TQM were fully integrated into organisational activities, the quality of services and products was enhanced. However, this research will explore the importance of TQM implementation towards attaining quality of services and products.

2.6 QUALITY ASSURANCE PROCESS

Quality Assurance (QA) can be defined as the set of planned systematic of activities focused on providing confidence that quality requirements are meet (Dunn et al., 2017) is a method that covers a wide range of matters that influence the quality of services and products (Ren, He & Luning, 2016). Quality Assurance (QA) is an activity to provide quality in the work to meet the project's requirements (Lewis, 2016). QA entails establishing policies to guide the development of the projects' standards to attain quality products and services. Originating in China, twelfth century BC with the Zhou Dynasty where governmental departments were established and assigned responsibilities, operations, distribution, development and implementation of quality standards, supervision and the independent body for quality on the final product and services (Evans & Lindsay, 2013). For Siegl, Miller, Khan and Harris (2014) the common experienced problem with Quality Assurance (QA) practise is the perception by the contractor that their QA program is not based on 100% assurance. The contractor should have a working QA program to guide in the occurrence of any problem and examine fully to determine the cause of the problem for complete elimination in the future (Taggart, Koskela & Rooke, 2014). This alludes that the element of quality should be fulfilled by both parties to ensure a 100% defect-free QA program.

For Jacob et al. (2013) the argument for a successful Quality Assurance program is to ensure the quality control is maintained by all parties involved – the contractor and the employer – and assure that all materials, guides and designs are submitted and in place for acceptance and conformity to the contract requirements. For Nallusamy (2016) a functional plan and strategy is required to have a functional plan to maintain the progress in control, determine when the process goes out of control, and respond effectively to bring the process back into control. Quality Control (QC) and Quality Assurance (QA) are practices that aim to enhance quality requirements by stakeholders. The ISO 9000 defines quality control as “a part of quality management focused on fulfilling quality requirements, and quality assurance as a part of quality management focused on providing confidence that quality requirements will be fulfilled.” This is in line with what Nyadzayo and Khajehzadeh (2016:262) assert that “QA evolves all planned and systematic activities implemented within the quality system that can be demonstrated to provide confidence that a product or service will

fulfil requirements for quality, while QC is understood as an operational technique and activities used to fulfil requirements for quality.” However, despite intensive literature on QC and QA procedures necessary to ensure quality is sustained, most corporations are reluctant to implement these measures effectively (Fick & Stoker, 2014; Jeffrey, Falcon & Kinghorn, 2014; Odhiambo, 2014; Mitra, 2016). To extend on the factors considered by most contractors, the study by Sadeghpour et al. (2015) identify factors that stakeholders, namely, clients and consultants, understanding should be considered on the criterion of selecting subcontractors. Through a comparative study of different construction companies regarding the perspectives on the factors that should be considered when selecting subcontractors, the findings of the study indicates that there are similarities and dissimilarities between perceptions of respondents on the importance of tracking the history of the subcontractors and their involvement in similar projects and the availability of resources. The results indicate that organisations also value safety records and compliance with the project schedule. This research will also review the subcontractor’s selecting criterion by Eskom, using Matla Power Station as a case study.

2.7 DIFFICULTIES OF IMPLEMENTING TOTAL QUALITY MANAGEMENT (TQM)

The concept of TQM has been framed to help organisations thrive for long-term success in this dynamic business environment while at the same time not compromising the quality of the service or product and in extension, the integrity of the company. Its currency as topic of immense interest is fuelled by continuous failure of the organisation to meet the standards of requirements in their delivery of services by the customer. Some scholars, for instance, Bon and Mustafa (2013) have attributed this challenge to the failure by organisations to understand clearly the concept of TQM. These authors add that failure by organisations to comprehend the concept is due to the lack of both a universally accepted definition and a clear-cut understanding of the concept to what it entails. This is clear through different approach and implementation of TQM from different industries, and researchers attributing different definitions to the concept (Bon & Mustafa, 2013; Sallis, 2014; O’Neill, Sohal & Teng, 2016).

Managers responsible for maintenance and operation have a direct influence to the outcome of the organisation's product or services meeting the acceptable standards. A study by Abdul Azeez, Abbas & Mansur (2014) observes that the most challenge affecting the coordination and acceptability of TQM is the standard and magnitude of maintenance personnel. Through an intense analysis of the level of professionalism of the personnel in the application of TQM approach in maintenance to enhance quality from the maintenance department of three Nigerian Universities, the study indicated that most of the Nigerian Universities is dominated by unqualified and unprofessional candidates to maintain quality output. The study suggested that it is imperative that Universities employ competent personnel in management posts that are pertinent to TQM for greater service delivery and global appealing quality products. Also, research has indicated that it is not all the elements of Total Quality Management (TQM) that are relevant to ensure its successful implementation. For instance, the study by Ngambi and Nkemkiafu (2015) investigate the impact of TQM on organisational performance. Through the data that was collected from manufacturing firms in the republic of Cameroon, and running the multiple regressions of organisational performance variables that defines TQM, the results indicate that only employment training and empowerment has a significant impact on corporate responsibility and financial performance, leadership commitment, quality control and inspection have a significant impact on cost reduction. However, none of the TQM practices appear to have an influence on customer satisfaction. This research explored the implementation criterion of Eskom company's TQM systems and identifies what TQM variables are credited and seem imperative for the company, the challenges and limitations.

The study by Nzo (2015) examines Eskom North West Operational Unit's (NWOU) Network Engineering and Design (NED) department on the number of projects that required rework and explore the factors that are affecting quality, resulting to this rework. Through interviews conducted in the whole region, the study indicates that the cost of rework in the identified projects was more than 14 million Rands and the delays were ranging from one week to eight months. The problem for rework was found to be generic across all regions. The research indicates that the challenge stems from an inadequate quality management system and the quality assurance procedures were found to be incompetent to prevent rework. The data collected

through questionnaire indicate that there was a relatively high level of adherence to the inadequate quality management which failed all attempts to achieve quality of services and products. The study suggested that the management should provide information on the implementation strategies on Quality Control (QC) and Quality Assurance (QA).

2.8 CONCLUSION

This chapter indicates the justification and imperative of ensuring quality to services and products by corporations. Clearly, quality is increasingly becoming a fundamental aspect in the formulation of strategies aimed at enhancing organisational integrity, quality of service and products, and meeting the international standard requirements. Therefore, quality should inform policy approach, selection of personnel, definition of priorities, appointment of contractors, allocation of resources, and service delivery to satisfy customer needs. In this instant, the concept 'quality' is no longer an elective superfluous (Mitra, 2016); however, it is now an essential strategy for businesses and industries to gain a competitive edge in the global market. Therefore, examining the implementation, strategies and procedures of quality control becomes imperative. This research explored the implementation of quality control procedures in Eskom, using Matla Power Station as a case study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter presented the methodology used in the study. The chapter describes the sampling technique that was used, data collection tools, the procedure that was followed in gathering the data and the way the data was interpreted and analysed. This research examined the implementation of quality control procedures in Eskom using Matla Power Station as a case study. The study employed the use of qualitative research method of data collection. The data was collected through semi-structured interviews that were conducted with the officials at Matla Power Station. The study is a descriptive research type. Descriptive research aims to describe a situation, problem or phenomenon scientifically, and provide information about these phenomena (Kumar, 2011: 10). The research methodology is a systematic and purposeful plan to collect data to inform on the objectives of the study.

3.2 RESEARCH PARADIGM

Research has been classified into three research paradigms: quantitative, qualitative and mixed method research (Mathew & Carole, 2011). This research employed a mixed research approach and it falls under survey research. In the research context, surveys refer to a data collection tools that consist of a series of questions designed to gather the information about a relatively large group of people (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014: 148). The quantitative data collection methods are used to give a descriptive of trends regarding a phenomenon of a population by asking questions of sample respondents and then generalisation of the results to the population from which the sample respondents were selected (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:148). This research is empirical. Empirical research is research using primary data as evidence (Newbert, 2007). It is a way of gaining knowledge by means of direct and indirect observation or experience (Newbert, 2007; Bettis, Gambardella, Helfat & Mitchell, 2015). This research employed a qualitative research method. Qualitatively, the study used the semi-structured interviews where a certain setting was selected to interview the officials at Matla Power Station. The interviews were conducted individually with the officials at Matla Power Station. The interview questions were carefully designed to gather data on

perspectives of officials from Eskom at Matla Power Station regarding the implementation of Quality Control Procedures. These opinions from these officials on how Quality Control Management is being implemented and managed are gathered to inform on the objectives of the study. Interesting to note is that, various scholars in this field of inquiry have consistently employed this type of inquiry to inform on the findings of how Quality Control Management (QCM) are being implemented by different organisations (Grobler, 2005; do Nascimento Gambi, Boer, Cecílio Gerolamo, Cesar Ribeiro Carpinetti, & Jørgensen, 2013; Pham & Panuwatwanich, 2016; Panuwatwanich & Nguyen, 2017).

The semi-structured interviews helped the researcher to explore the procedures, challenges and limits regarding the implementation of quality control measures, from the lived experiences and individual perspective of the officials at Matla Power Station. This has given an in-depth understanding and rich insight on quality control measures and strategies at Eskom using Matla Power Station through interviews were a sample population that constitutes a representative of the population experiencing the perceived challenges on quality control measures at Eskom is given the chance to report on the observed and experienced phenomenon in their own words. Du Plooy-Cilliers, Davis and Bezuidenhout (2014) observe that interviews invite and elicit underlying ideas and experiences which the researcher might not have considered. This has been important for qualitative research to arrive at an in-depth understanding (Sandelowski, 2000), and in this case, of the procedures of implementing QCM from the lived experiences of the officials at Matla Power Station. Also, document analysis on Eskom Quality Control Measurements (QCM) and strategies was employed. This was done to extend the scope of the findings in gathering the relevant data to inform on the questions and objectives set for this study. Text data from Eskom documents was reviewed through coding to identify common themes and describe the patterns as results. Interpretation of this data was strictly based on the combination of the researcher's perspective and the data collected to inform on the objectives set for the study.

3.3 RESEARCH DESIGN

This research is a descriptive study where qualitative data collection method was used to examine the challenges in the implementation of Quality Control Procedures

in Eskom using Matla Power Station as a case study. A research design is a strategy that starts from the underlying philosophical assumption to specifying the selection of participants in the proposed data gathering techniques and subsequently the data analysis (Mathew & Carole, 2011; Morgan, 2014). Matla Power Station was selected as a case study for this study, to examine the challenges regarding the implementation of Quality Control Procedures in Eskom. The research design describes how the research was conducted (Mathew & Carole, 2011). Qualitative research approach used was standardised-structured interviews where a set of open-ended interviews was conducted with officials from Matla Power Station, Eskom, South Africa. It consists of open-ended questions that will focus on asking the same set of questions to all the participants. The questions were designed purposefully to generate perspectives on the implementation of Quality Control Measures (QCM) used at Matla Power Station. The questions asked were strictly to inform on questions set for this research. The data that was gathered was analysed more easily since this format allow data to be compared easily on views and opinions of the participants in an organised manner (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:188). Again, document analysis on Eskom quality control processes' print media in South Africa was employed. This was to extend the scope of relevant data to questions and objectives set for this study. The print media approach on quality control strategies by Eskom was important to review current trends on quality control programs and intervention strategies that are used at Eskom. The data was reviewed through coding to identify common themes and describe the patterns as results for analysis. The interpretation of the document data was strictly to inform of the objectives set for the study.

3.4 STUDY AREA

The study area for this research was Matla Power Station in Mpumalanga Province.

3.5 POPULATION OF THE STUDY

In Research, a population is defined as a group of individuals from which a sample is drawn (Maree, 2011). The population here refers to a defined group of elements that conform to a specific criterion and to which the research is intended to generalise the results of the findings. Officials at Matla Power Station constitutes the population

group of this study to which the sample population was drawn to form part of this study.

3.6 SAMPLING

A sample is a subset of the accessible population (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014: 136). A sample is extracted from the sampling frame which is a list of the elements included in the population. The sample population of this study was drawn from the officials at Eskom, using Matla Power Station as a case study. However, sampling consists of probability and non-probability sampling methods (Maree, 2011). Non-probability sampling is used when it is perceived impossible to determine who the entire population is or when it is difficult to gain access to the entire population (Maree, 2011). This research used the non-probability sampling method. This was achieved through a careful selection of the sample population from an accessible population, in this case among officials at Matla Power Station. The inclusion of participants in the study was based on the accessibility of the participants and the researcher's ability to contact the participants and not through a random selection since the study will employ a qualitative data collection approach.

Purposive sampling for standardised-structured interviews

The purposive sampling method refers to the purposefully election of the elements that the researcher wishes to include in the sample population, based on the knowledge and experience that can inform on the research objectives set for the study. One major advantage of the purposive sampling method is that each element of our sample assists with the research objectives set, since element fits with the population parameters of the study (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014: 143). Only those officials that their area of work or job specifications is relevant to quality control measures at Matla Power Station were interviewed. Also, the purposive sampling method was employed in this research to pre-test/pilot-test interview guide questions prior to collecting data and finally in recruiting respondents. Officials from Matla Power Station were selected to form part of the interviews for this study. The same set of open-ended interview questions were asked to all the participants in a certain setting that was perceived convenient for the interview, and the researcher recorded the responses as data. For Du Plooy-Cilliers, Davis and Bezuidenhout (2014:188) the advantage associated with designing the same set of questions to be asked to all participants help make the information obtained to be

analysed more easily, compare notes and opinions of the participants in an organised manner.

3.7 DATA COLLECTION INSTRUMENTS

Standardised, open-ended Interviews for officials at Matla Power Station

This research employed a qualitative method. In-depth interviews that were conducted with selected officials at Matla Power Station were a set of standardised, open-ended questionnaires asked to the interviewees and responses were recorded, however not as a group but separately. The same set of open-ended questions was asked to all the participants. The approach using the standardised, open-ended interviews focusing on asking the same set of open-ended questions of all the participants allowed the information, in this study to be obtained easily and the data from the participants to be compared easily. The data that was collected through these interviews was used to create an overall picture of the implementation procedures of the QCM in Eskom using Matla Power Station as a case study. The interview questions were clearly designed and made simple to understand and comprehend while confidentiality and anonymity was maintained. To achieve self-explanatory questions, guard against double-barrelled questions while avoiding leading questions, the researcher conducted a pilot test prior collecting data. The data collection process was self-administered by the researcher. The interviews were conducted by the researcher and the researcher was the one recording all the responses as data.

3.8 DATA ANALYSIS

Data analysis is a process which entails applying procedures and techniques that intends to extract and describe information, detecting and describing patterns. It is a process of making meaning from collected data. This research was qualitative; hence, the data analysis to be followed will be qualitative data analysis. Quantitative data analysis includes finding the basic characteristics of the data set, exposing patterns within the data and identifying the relationships between the gathered data and the external parameters (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014). With qualitative data analysis, the data is transformed into findings through analysis and interpretation. The researcher being immersed in the data and identifying and achieved this and describing the evident and emerging patterns of meaning from the data (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014: 228). The data that was

collected from officials at Matla Power Station using standardised-structured interviews was transcribed, and using thematic analysis, the data was scrutinised to identify emerging themes that are relevant and informs of the objectives of the study. In studying emerging themes, codes, which are words, phrases and sentences were categorised based on their relevance to the research objectives and questions. Attention was paid to emerging unique themes that illustrate the meanings and underlying patterns to the implementation of quality control measures at Matla Power Station. Descriptive analysis will be applied to show variations and conclusions.

3.9 QUALITY CRITERIA

3.9.1 *Credibility*

Credibility refers to the extent to which the study's findings are trustworthy and believable to others. This study employed a qualitative method. The structured standardised interviews were conducted with the officials from Matla Power Station in Mpumalanga, South Africa. The data provided by the participants was accurately interpreted to minimise errors. This was achieved by the researcher taking notes of the interview into detail through writing. Feedback from participants on the data or interpretation of the data – member checking – was employed. This was done to enhance credibility since the sample population comprised the participants that the researcher knows.

3.9.2 *Transferability*

Transferability denotes the extent the findings can be transferred and applied in different settings. (Mounton & Babbie, 2001; Du-Plooy et al., 2014). The findings of this research were described implicitly to others by describing them and their context in detail. Quality Control is not an isolated phenomenon distinctive of Eskom company but across many business entities globally. The findings' resonance was discussed within the framework of existing literature from other contexts to identify similarity and differences. This was done to strengthen the authenticity of the results of this research.

3.9.3 *Dependability*

Dependability refers to the extent to which the findings are consistent in relation to the contexts in which they were gathered. Hence, research participants of this study

are exclusively officials from Eskom at Matla Power Station in Mpumalanga, South Africa. Flexibility and openness were considered to continuously allow re-examination of data using insights that emerge during data analysis – iterative analysis. A critical analysis of the data was employed until no new themes emerge. The process from data collection method, data analysis and coding to identify new themes was carefully conducted to accurately describe the patterns of the findings accurately.

3.9.4 Conformability

Conformability refers to the extent to which the findings are based on the study's participants and settings instead of researchers' biases. For that, only the data that was collected was analysed. The researcher discussed the research process with the peers to verify conformability. All the steps in this research were documented as proof. This was done to support the findings and interpretation of the research and confirm how well the findings flow from the data that was collected (Collis & Hussey, 2013).

3.10 BIAS

This research ensures that the study is bias and prejudice free. Information provided during data collection was not being distorted. Only what was observed and identified through the interview conducted was analysed. This was done to enhance the research credibility and transferability. Deception was minimised by telling and asking the research participants on the specific enquiry of the research. The sample population that was used suits well to inform on the objectives set for this study. Therefore, I anticipate that if the same research is conducted using the same population, method and design used in this research the results should reflect similarity. This research valued objectivity and pursue an honest presentation of data. The data gathered was presented without being scrutinised or tainted with personal prejudices. Anonymity was highly valued in this research to avoid data coding bias and identity exposure since the sample population constitute respondents the researcher knows. Also, when the study was complete, the participants were provided with the results, provided they have requested for them. This was done to maintain that the research is bias free and the results were not distorted.

3.11 LIMITATIONS OF THE STUDY

The limitations in research refer to the weaknesses and constraints that redefine the process of this research. In this instance, what might be the limits to this study involve the sample population of the standardised structured interview which will be limited to Matla Power Station alone yet the anticipated results is expected to inform of the quality control strategies of Eskom entity in South Africa Hence, although the sample population used informed well of the objectives of the study set, it might not be perfect to generalise the findings of this study from Matla Power Station quality control strategy and propose concretely on the quality control strategy seem to be appropriate for the entire Eskom organisation in South Africa. There is also limited time and resource constraints to the collection of data and some information might be withheld by these officials for privacy reasons, and this will affect the scope of this research since the findings are reliably be contextualised to this sample population.

3.12 JUSTIFICATION OF THE STUDY

This study adds knowledge to Quality Control Management (QCM) strategies for Eskom business entity in South Africa and in extension, to all business corporates globally. Implementation strategies towards excellent sustainable quality products will be suggested and proposed bases on the findings of the study. Theoretically, the study will add to the literature on Corporate Quality Control which is compromising quality business management and products. The scope of this inquiry will also examine the processes underpinning and ameliorating quality control constraints and anticipate the consequences of this dynamic environment. The continuous unsatisfactory remarks from the clients, both within and outside the company, regarding issues of repairs, rework, imperfections and other quality issues on completed and ongoing projects at Matla Power Station in Mpumalanga, South Africa, raises critical questions on the Quality Control Management (QCM) strategies at Eskom. This research suggested and proposed a framework for supervision approaches, workmanship and Quality Control Plans (QCPs) to managers, supervisors and contractors that are effective for quality sustainability. Consequently, the study informed on the existing patterns of quality control measures, how are they being implemented with what effect to the overall management functional structures at Eskom, using Matla Power Station in Mpumalanga as a case study. The challenges facing the implementation of these quality control measures were

identified and suggestions on how best the problem can be overcome were given. The findings informed on the best Quality Management strategy that seems to be effective and recommendations to meet customer requirements and expectations were given.

3.13 CONCLUSION

This chapter discussed the methodology that was used in this study. The study area, the population frame and the sample population were outlined. The sampling method, data collection and data analysis which were selected were discussed based on the questions and objectives set for the study. The research design for the study was also discussed. Clearly, the research is quantitative and descriptive data analysis was employed.

CHAPTER FOUR: DATA PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1 INTRODUCTION

Chapter three (3) discussed the research methodology which gave an overview of the data collection method used to collect data in this research. This chapter four (4) will present, discuss and analyse empirical data that was collected using the semi-structured interviews. The data that was collected in examining the implementation of quality control procedures in Eskom using Matla Power Station as a case study will be presented in this chapter under six (6) thematic descriptions, namely: ISO Standards and Quality Control Management (QCM) systems at Matla Power Station, QCM implementation at Matla Power Station, patterns on the perceptions of factors that influence QCM, challenges that impede effective implementation of QCM at Matla Power Station, contractors and QCM at Matla Power Station and QCM and training at Matla Power Station. In the next chapter, the research will discuss and interpret the findings, the strengths, implications and limitations of the study and makes recommendations.

4.2 ATTITUDES OF OFFICIALS AT MATLA POWER STATION REGARDING QUALITY CONTROL IMPLEMENTATION

This research has revealed that at Matla Power Station there are some Quality Control procedures that are in place. For instance, the research has observed that the Pressure test for the substation board, that is done using Test B, QM58 which is relevant to ISO 9001 – QM58 document is the guidelines on how to apply quality, Quality Control Plan Inspection request by the contractor (NECO2) – Inspection request to the working party (NECO3) including the clients, employer, safety clearance, Factory Acceptance Procedures (FAP) and Inspections, Site Acceptance Procedures and Inspection, Handover documents, Installing and Testing Plans (ITP), Design reviews, Pre-commissioning reviews, Walk-downs – check plant against specification as per contract documentation, ISO, Non-Conformance Request, Method statements, Quality file and SHEQ Policy. All these quality control measures that have been reported by the officials at Matla Power Station give an overall picture of the quality control systems at Eskom. It is also important to note that at Matla

Power Station there are quality control measures that are unique to the operational unit that are followed. For instance, this study has shown that respondents from project controls unit tends to have their quality control guidelines given in the form of User Requirements Specifications (URS), those from the contract management are following Quality Management Specification document (QM58), which is directly linked to the departmental quality control process, the programme management unit follow the SHEQ Policy guidelines, and the technical project supervision unit uses the Quality Control Plan and Checklist to inspect the works and the client requirements especially before handover of the project (NEC03). However, the quality control procedures at Eskom that are currently in place are not well coordinated throughout all operating systems. The information needed for these control procedures is not properly communicated to all affected parties to attain and enhance quality at all levels. The results from this research have shown that in other operational units, some officials are not aware of the quality control procedures that are supposed to be followed. Examples to this are there for the taking. The following direct quotations bear reference to this:

- Respondent number 5 said, *“I am not aware of the quality control guidelines that the operational unit is following.”*
- Respondent number 13 said, *“There are no guidelines of quality control that are specified or developed for supervisors at Matla Power Station”.*

However, interesting to note is that while these respondents clearly indicated that they are unaware of the quality control measures that are followed or relevant to their operational units, some respondents from the same units reported that they are aware of the quality control measures being followed in their operational units. Lack of knowledge is a common challenging issue on strategies to implement quality control measures (Sallis, 2014; Stark, 2015). Perhaps this explains why quality control implementation in some operational units is not effective resulting to reworks. Also, Quality Control Measures are also followed differently from one operational unit to another at Matla Power Station. For example, the results of this research have shown that from the project control unit, the URS quality control procedures are being implemented on and off site. The Contract Management unit implement quality control measures in many ways including the Factory Assessment Test (FAT),

Quality Control Plans (QCP) and Installing and Testing Plans (ITP). For the Project Supervisory unit, the contractor will issue the NEC02 document requesting for inspection from the employer. The employer will then issue the NEC02 and NEC03 to the client to be completed and after completion and successful, the safety clearance is issued. The Electrical advisory unit, the ITP is used as a guide to quality control measures. However, some of the respondents from these units are not aware of these quality control procedures to be followed and perhaps this explains the challenges regarding the implementation of quality control management at Matla Power Station. Effective implementation of quality control measures is imperative to ensure quality is maintained. The results of this study indicate that even if there is a consensus among participants in this study regarding the effectiveness of the quality control procedures, still, there is a lack of knowledge and understanding by most members pertaining to quality control requirements. The following are excerpts of direct quotations of officials who expressed their lack of understanding concerning the implementation of quality control measures:

- Respondent number 1 said, *“While the quality control procedures are followed, lack of understanding of both the product and its expected functionality and capability by the quality inspectors remains a problem.”*
- Respondent number 3 said, *“Quality control guidelines are not followed effectively because with the quality control procedures at Matla Power Station, we have intervention points that indicate what needs to be done when and by whom. However, sometimes contractors do not follow what is reflected on the Quality Control Plan (QCP).”*
- Respondent number 10 said, *“I do not know of the content of the quality control policy document.”*
- Respondent number 11 said, *“Although the quality control procedures are followed effectively, there is no room for improvement.”*
- Respondent number 12 said, *“Quality Control policy is not being followed, because if it was followed we would not have defects that we are experiencing such as corrosion on steel pipes and reworks.”*
- Respondent number 14 said, *“Quality Control Procedures are not followed effectively since there is a problem of insufficient personnel in to ensure quality is maintained.”*

- Respondent number 15 said, “Yes the quality control measures are effective, but mostly the measures concentrate on safety.”

The above-mentioned responses are indicative of the problem regarding the way quality control measures are being implemented at Matla Power Station. The results indicate that even if some quality control procedures are in place at Matla Power Station there are numerous challenges as indicated that pose a threat to the quality control measures.

4.3 PERCEPTIONS ON THE POTENTIAL CHALLENGES THAT IMPEDES EFFECTIVE IMPLEMENTATION OF QCM AT MATLA POWER STATION

The implementation procedures of Quality Control Measures have been discussed differently by many. For many, the top management is expected to play an active and significant role to better improve quality practices (Hill, Jones & Schilling, 2014; Sallis, 2014; Bolman & Deal, 2017). In the context of quality control procedures, active management refers to “monitoring progress, conducting timely analysis of warning indicators, identifying problems, implementing and communicating corrective actions and evaluating successes timely” (Sallis, 2014; Kontogiannis, Leva & Balfe, 2017). The results of this research study have shown that most of the employees at Matla Power Station perceived that the organisational quality objectives have being met. The findings indicate that 62.5% reported that the organisation has met the objectives on quality control compared to 37.5% who reported that the organisation has not met the quality requirements as shown in Table 4.1 below.

Table 4.1 Officials' opinions on the attainment of quality objectives at Matla Power Station

Do you think that the organisation has met the objectives of its core mandate?	Yes (%)	No (%)
	62.5	37.5

However, even the response to the achievement of the organisational objectives are positive, there are challenges experienced in the process as indicated in their responses. For instance, in the similar argument with officials being asked if the

organisation has met the objectives of its core mandate, the following are the direct quotations that show the extent on opinions regarding the attainment of quality products at Matla Power Station:

- Respondent number 2 said, *“Yes, we have refurbished the units and are generating power as requested even though we are not meeting the cost elements of the project due to cost overruns.”*
- Respondent number 3 said, *“Yes, the objectives are met but we do have challenges for example, defects that surfaces after some time they do affect the organisational core mandates.”*
- Respondent number 4 said, *“Yes, we are meeting the objectives however, implementation remains slow due to resources and grid constraints.”*
- Respondent number 5 said, *“Yes, because we have delivered a defect free work by following approved TTPs and QCPs.”*
- Respondent number 6 said, *“Yes, the upgrading of the old control inspection systems is complete with better production ratio.”*
- Respondent number 10 said, *“Yes, because all the refurbished units are running on full load.”*
- Respondent number 11 said, *“Yes, we have managed to refurbish the units as per scope and the performance of the refurbished units improved as expected.”*
- Respondent number 14 said, *“The objectives have been met but not on time.”*
- Respondent number 16 said, *“Compliance to the quality control process has improved and rework rate has decreased.”*

However, there seems to be a problem with the way the organisation’s quality control procedures are followed to achieve objectives set and the core mandate. From the above-mentioned responses, it can be identified that there are challenges that need to be overcome. For example, respondent number 3 reported that even if the objectives are being met the challenges of defects that surfaces after some time after the work is completed, affects the organisational core mandates. Clearly, the findings of the study indicate that other officials at Matla Power Station observe that

the objectives and the organisation's mandate in relation to quality control measures. The following are direct quotations that bear reference to this:

- Respondent number 1 said, *“The organisation has not met the objectives of its core mandate since the quality control measures, specifically the Test B and Pressure test, did not pass when tested for quality after the product has been attained.”*
- Respondent number 8 said, *“The organisational objectives of its core mandate are not met because outages are not completed within the planned and scheduled duration and some financial targets have not been met.”*
- Respondent number 9 said, *“The organisational objectives of its core mandate in ensuring quality has not been met since a lot of components failed when put to operation and mostly the findings dictate that objectives are not met.”*
- Respondent number 12 said, *“I do not believe we have met quality objectives since there are a number of defects that we are experiencing after the project is completed, a number of open non-conformance request and the performance of the plant is very low compared to the design requirements.”*

4.4 CONTRACTORS AND QUALITY CONTROL PROCEDURES AT MATLA POWER STATION

The issues of providing quality control guidelines to contractors, the contractors' ability to implement and ensure them and the practicality of the organisation's tracking the effectiveness of these measures to ensure they are being followed invites critical reactions. The trends in the opinions is the assumption that contractors at Matla Power Station are not following the quality control procedures as expected from them since there are high levels of reworks after the completion of the work by contractors at Matla Power Station:

- Respondent number 1 said, *“I am not at the liberty to know the extent the contractors do when following the quality control measures. However, from the defects often identified at Matla Power Station shows that the*

extent to which the contractors are following the quality control measures is not sufficient.”

- Respondent number 4 said, *“Contractors follow quality control measures however, they constantly require guidance from Eskom.”*
- Respondent number 7 said, *“Most of the contractors do comply but in some cases, they get away with defects. There are differences in the interpretation of quality requirements and that leads to defects problems.”*

Largely, numerous controversies exist regarding the way contractors comply with the quality control requirements during tender execution. Widely acknowledged by the officials at Matla Power Station is the problem with contractors not complying with the quality control guidelines:

- Respondent number 8 said, *“Some of the contractors are not complying fully with quality control procedures, and for that numerous penalties are issued to contractors.”*
- Respondent number 12 said, *“Contractors do not follow quality control measures adequately. Sometimes, the contractor will go-ahead with the work without calling for pre-inspection. In some instances, data sheets from the quality files will be missing.”*

There are also speculations regarding the understanding of quality requirements of Eskom by contractors. When asked if contractors follow the quality control measures during work at Matla Power Station, respondent number 15 responds:

- *“They do follow quality control measures, but only to the extent they understand these measures. Because the contractors normally do not tell when they don’t understand, this will be revealed when they are being audited.”*

On the other hand, the finding of this research also indicates that there is a general acknowledgement that proper means of identifying if contractors follow the quality guidelines is predominantly through audits and day-to-day supervision of the work. When respondents were asked if there are means of finding out whether contractors

follow the quality guidelines, the following are direct quotations that bear reference to this:

- Respondent number 1 said, *“Yes, I am involved in the quality assurance process but I would assume that quality audits would give a good indication of how the guidelines are being followed.”*
- Respondent number 2 said, *“Monthly audits are conducted to ensure quality is prioritised.”*
- Respondent number 4 said, *“Contractors are being audited, as well as constant reviews from the project and engineering teams.”*
- Respondent number 6 said, *“Yes, contractors submit signed reports by both the contractor supervisor and execution supervisor on daily basis.”*
- Respondent number 8 said that, *“Through conducting quality audits and document reviews.”*
- Respondent number 9 said, *“Yes, quality manuals, forms or templates are being followed in line with the ISO 9001 guide.”*
- Respondent number 10 said, *“Contractors are given instruments that they use whenever they are working on site, such as having Quality Control Plan (QCP) in hand to guide all the activities they execute.”*
- Respondent number 12 said, *“Monthly audits are conducted, day to day inspections on completed and progress work is applied. Audits are to verify process followed and Non-Conformance Request (NCR) process is applied where serious deviations are identified or anything surfaced that does not comply with the specifications and it will state how the contractor should correct and prevent recurrences.”*

4.5 PERCEPTIONS ON QCM TRAINING AT MATLA POWER STATION

The successful implementation of TQM requires the creation, storing, sharing and application of knowledge in organisational environments (Kahreh, Shirmohammadi & Kahreh, 2014). The recognition by Matla Power Station of the importance to the implementation of quality control management is imperative towards attaining quality work. The trend on perceptions and general knowledge on quality control training by officials at Matla Power Station implicates that training is highly recommended and promoted by the organisation, although there is a slight gender differences, with

more men acknowledging the organisation’s initiatives to ensure training on the implementation of quality control management. For instance, the findings show that 92% of men reported that the organisation does initiate platforms for quality control training compared to 75% of female. The Table 4.1 below illustrates this. However, initiatives to ensure training on quality control are a holistic management philosophy, which, among other things, strive for organisational quality improvement.

Table 4.2: Officials opinions on quality control training

	Yes		No		Total	
	Count	Percent	Count	Percent	Count	Percent
Male	11	92%	1	8%	12	100%
Female	3	75%	1	25%	4	100%

The findings of the study indicated that there is a general acknowledgement that the organisation is promoting training initiatives such as workshops, on quality control measures to the employees. The study revealed that 87.5% of the officials at Matla Power Station reported that the management supports quality training programmes compared to only 12.5% who disagrees. When asked if the management promote the attendance of quality control workshops or training by employees, the official at the project controls operation area he reports:

- “No, because funding of projects is achieved through public funds and management they are too reluctant to let the employees acquire knowledge on the benefits of quality control procedures.”

In a similar argument with the other officials from different operating units, they acknowledged that the management is positive on attending workshops or training. The following are direct quotations that support this:

- Respondent number 2 said, “Yes, there are courses available and one can attend if they are willing.”
- Respondent number 3 said, “Yes, quality training and workshops are organised.”
- Respondent number 4 said, “Yes, attendance is encouraged, however, these workshops are not conducted regularly.”

- Respondent number 10 said, *“Yes, if there are courses or training available, the management pushes and encourages employees to attend such as ISO 9001 and SHEQ awareness and internal auditing.”*

4.6 OPINIONS ON THE POTENTIAL CHALLENGES IN THE IMPLEMENTATION OF QCM AT MATLA POWER STATION

The trend in the opinions is the assumption that there are prominent challenges towards the implementation of Quality Control Management at Matla Power Station. The study indicated that quality control procedures are not being followed effectively due to the lack of knowledge management (Kahreh, Shirmohammadi & Kahreh, 2014). When asked if quality control policy is being followed effectively, Respondent number 1 responded:

- *“Of course, the quality control procedures are being followed, however, lack of understanding of both the product and its capacity to deliver by the resources tasked to ensure quality control leaves the effectiveness questionable.”*

The respondent number 4 who was drawn from the Project Supervision unit at Matla Power Station views the challenge to be linked to the lack of sufficient quality control personnel. When asked if she thinks the quality control policy is being followed effectively at Matla Power Station, she responds:

- *“It is not followed effectively. Quality personnel are insufficient.”*

Also, the data has shown that perceptions regarding reworks at Matla Power Station are at high levels. However, they are numerous assumptions to the causes of this. When asked what they perceive are the causes of rework from the work assigned to contractors at Matla Power Station, the official from the Contract Management responds:

- *“I think the reworks we are experiencing here are caused by poor workmanship from contractors’ side and the lack of quality control procedures from Eskom’s side.”*

In a similar argument with the official from the Project Supervision at Matla Power Station regarding the causes of reworks, he expressed on the challenge of the notion of having experience by officials that leads officials to neglect checking documents on quality protocol. He notes that:

- *“There is a general lack of compliance that surfaces because of doing one job repeatedly for a long period of time. It becomes a practise not to use Check Sheets documents, for instance, resulting in leaving out important points on the check sheet that will in turn affect the quality.”*

Also, the data has shown that there is a challenge with the way the contractors are executing their work. In an interview with the official from the Programme Management, he expressed concern on the way contractors compromise quality for profit ends, as he puts it,

- *“Contractors might be looking at ways of maximising their profit, thereby cutting corners. Sometimes contractors are not doing what they are expected to be doing to ensure the products are worth their prices and costs.”*

However, the respondent number 5 from Project Supervision sees the challenge with reworks drastically different, and stresses on the exchanging of contractors as a problem towards attaining quality products. When asked what might be the causes of rework from the work assigned to contractors at Matla Power Station, her response:

- *“Continuous exchange of workforce is problematic. Not using the same workforce of the previous unit poses a challenge since some of the workforces are not familiar with the plant, the area and the Power Station itself. This also is a challenge to employees for they will not be fully knowledgeable and competent of the task in hand.”*

Apart from that, the Respondent number 12 from the Senior Quality Advisory office observed the challenge of quality as a problem of too reluctant of Eskom to introduce tense screening processes when hiring contractors, resulting in contractors being ignorant and adhere to quality work. When asked what could be the cause of rework at Matla Power Station from the work assigned to contractors, she responds:

- *“Power workmanship and contractors are not building quality to the product. Ignorance from contractors on quality processes and procedures are noticeable but Eskom is reluctant to follow up on them.”*

Also, responses from the participants show that there are different perceptions to the challenges that prevent effective implementation of quality control measures at Matla Power Station. The following are direct quotation that supports this:

- Respondent number 1 said, *“Inadequate quality control evaluation criteria is the cause of ineffective implementation of quality control measures at Matla Power Station.”*
- Respondent number 2 said, *“We do not have effective quality controllers. Most of our quality controllers are inexperienced.”*
- Respondent number 3 said, *“Plant design and drawing design kept on changing and this is detrimental to quality attainment.”*
- Respondent number 4 said, *“Unrealistic and optimistic timelines are set to complete the project. This poses a challenge of compromising quality to complete the work within the time set. Also, awareness regarding compliance of quality control measures is lacking among contractors and quality personnel from Eskom.”*
- Respondent number 5 said, *“Sometimes employees do not recognise that requirements have changed, in terms of the design and functionality, and they still focus on their experience on the project.”*
- Respondent number 7 said, *“There are differences that exist on the interpretation of quality requirements.”*
- Respondent number 8 said, *“There are time constraints on limited funding of the projects.”*
- Respondent number 11 said, *“There are challenges regarding the structures that does not support the project structures. Some structures are not in line and does not support Eskom as a generating plant.”*
- Respondent number 12 said, *“Officials are lazy to go to the plant, instead they sign documents in their offices. Contractors do not like paper work. Indeed, there is the general tendency of prioritising of the production over quality.”*

4.7 OPINIONS BY OFFICIALS ON HOW QCM CAN BE IMPROVED AT MATLA POWER STATION

Findings from the interviews reveal that various perceptions and opinions exist regarding factors that can contribute to the improvement of Quality Control implementation by officials at Matla Power Station. Some officials believe contractors that fail to comply with the quality control measures should be charged. When asked what he thinks should be done to improve the quality of the work by contractors, respondent number 1 responds:

- *“They should be appropriately charged for the effects of poor quality control and the resources trusted to oversee activities should also be educated on the quality control processes.”*

However, others are of the view that contractors themselves should be equipped with the knowledge on quality procedures. In a similar argument with the official from the Senior Electrical Advisor’s office, he sees the problem as caused by the lack of knowledge on quality measures, and he emphatically acknowledges that quality control knowledge is imperative towards attaining quality. He declares:

- *“Contractors’ employees or workforce has to understand the quality control requirements of the client. This workforce is supposed to be skilled and committed to carry out the work as required.”*

However, the official from project engineering unit sees the issue drastically different. He acknowledged that the focus to ensure quality should be more internal and depend on Eskom management:

- *“Eskom must appoint more quality personnel to help supervise the work done by contractors. These supervisors should be more visible at the working site. Understanding of the quality measures and requirements should be shared between Eskom and contractors so that they both aim to attain same goals.”*

Also, the trend in the opinions to better the implementation of quality measures is the assumption that training on quality measures is imperative to that quality is attained. The official from contracts management argues that:

- *“There must be compulsory training to be attended by contractors where personnel responsible for quality from Eskom is present. This should be done to clarify terms and conditions of the contract, quality procedures to be followed and quality requirements from Eskom. All required documents must be submitted for review prior to outages commencement.”*

Apart from that, the official from programme management sees the problem of ineffective implementation of quality control procedures because of lack of coordination between Eskom and the contractors. Instead, he proposes a holistic approach on initiatives to attain quality at Matla Power Station, He responds:

- *“Although we need to go back to the basis of managing the contractors by holding the responsible, however, there is a need to collaborate with the contractors to get the possible effective quality results. For processes to be followed, effective planning is required were sufficient time should be allocated to projects to satisfy the quality control processes.” He further notes that, “Quality is achievable; we have all the perfect system in place to help attain best results on quality. Consultation should be encouraged to those otherwise not understanding the quality procedures to be taken and make quality attainment our responsibility.”*

4.8 SUMMARY OF THE FINDINGS

- There are quality control procedures in place with guidelines on how to apply quality. QM58 is the main quality management specification document.
- Project Supervisors uses the Quality Control Plan and Checklist to inspect the works and the client requirements especially before handover of the project.
- The quality control procedures are not well coordinated throughout all operating systems. The information needed for these control procedures is not properly communicated to all affected parties to attain and enhance quality at all levels.
- The Contract Management unit implement quality control measures in many ways including the Factory Acceptance Test (FAT), Quality Control Plans (QCP) and Installing and Testing Plans (ITP).

- The study revealed that 62.5% respondents reported that the organisation has met the objectives on quality control compared to 37.5% who reported that the organisation has not met the quality requirements.
- The findings of the study indicated that there is a general acknowledgement that the organisation is promoting training initiatives such as workshops, on quality control measures to the employees.
- The perception regarding reworks is high with numerous assumptions to the root cause.
- Most of the respondents are of the view that contractors themselves should be equipped with the knowledge on quality procedures.

4.9 CONCLUSION

This chapter has presented, discussed and analysed the data that was collected from officials at Matla Power Station. The trends in the patterns of the data, based on the findings, are the assumption that Quality Control Management remains essential to provide quality. However, the organisational structure, information and knowledge distribution has been shown in this research to be realms that influence the implementation of quality control procedures. The interpretations of the data were solely based on the findings of the research.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

Key findings of this study were presented, discussed and analysed in the previous chapter four. Factors that influence the implementation of quality control procedures in Eskom using Matla Power Station as a case study were provided in the previous chapter four (4). This chapter five, concludes with the summary of the study, the implications of the findings to Eskom will be discussed, and show the relevance of these findings to previous studies. The implications of this study are described and discussed using Matla Power Station as a case study. The limitations of the study are identified and recommendations, based on the findings of this study, for future studies will be provided.

5.2 DISCUSSIONS AND CONCLUSIONS

This Matla Power Station case represents a general pattern of opinions regarding the implementation of quality control procedures at Eskom. Although the employees recognise the imperative of maintaining quality in all operational levels, making it a success raises concerns about the role of Eskom management, employees, Eskom as a client to contractors and contractors themselves. Various perceptions exist on the issues that impede the effective implementation of quality control procedures at Matla Power Station. This study has shown that at Matla Power Station there are some Quality Control procedures that are in place such as the Pressure test for substation board, that is done during Test B, QM58 which is relevant to ISO 9001 – QM58 document is the guideline on how to conduct quality, Quality Control Plan Inspection request by the contractor (NECO2) – Inspection request to the working party (NECO3) including the clients, employer, Safety clearance, Factory Acceptance Procedures (FAP) and Inspections, Site Acceptance Procedures and Inspection, Handover documents, Installing and Testing Plans (ITP), Design reviews, Pre-commissioning reviews, Walk-downs – check plant against specification as per contract documentation, ISO, Non-Conformance Request, Method statements, Quantity file and SHEQ Policy. The effect of stipulated guidelines is that when a challenge arises, there are no specified procedures to be followed to rectify the problem. However, contemporary arguments on quality control mechanisms is the

idea that an organisation should implement an adaptive quality control mechanism that is flexible and can adapt itself to changing conditions (Åström & Wittenmark, 2013). In communication science, an adaptive quality control strategy is referred to as a learning organisational strategy (Armstrong & Taylor, 2014). A rigid approach to quality control procedures has been criticised on its negative implication to prohibit the ability of the employees to come up with innovative ways of solving problems (Sallis, 2014). The study has also shown that at Matla Power Station each operating unit has a specific way of attaining quality. However, lack of knowledge on the quality measures and procedures affect the smooth progress towards attaining quality both on operational units and the organisation. From the findings of this study it appears that officials are not aware of the quality guidelines. This portends larger implications for Eskom. If any official assuming the organisational position directly linked to quality observations at Eskom, using Matla as a case study, and they are reluctant to implement quality measures, it raises concerns about what a study on a far larger representative sample of Eskom's population on the implementation of quality control measures will reveal.

The implementation procedures of Quality Control Measures are a complex endeavour. The results of this study have shown that the top management of Matla Power Station is not effectively coordinating the implementation of quality control measures on all operational levels. The implication of this is that objectives set will not be met as expected. Other officials are not aware of the quality procedures relevant to their operational unit despite them being employed for years. The study reveals that the experience of reworks at Matla Power Station is pervasive and problematic. The consensus among employees is that reworks are a result of the ineffective quality control implementation and procedures within the organisation. Recurring from the findings of this research is the opinion that poor workmanship of contractors and ineffective coordination of quality control follow-up measures from Eskom is detrimental towards the attainment of quality. This is in support of the previous studies that indicate that poor execution of the work by the contractor and client coordination may lead to heightened rework and delays in construction projects (Sweis, Sweis, Hammad & Shboul, 2008). Also, the study indicates that the lack of compliance to quality measures by the contractors, misplacement of quality guidelines or documents and profit centred of contractors is also a challenge that

hinders the attainment of quality. This is similar to the study by Oyewobi et al. (2016) that observed the causes of reworks to be poor coordination between the client and the contractor, poor contractor documentation, construction errors due to misunderstanding the design by the contractor, poor sub-contractor management, and poor quality management by the design team and the contractor, poor site supervision and inspection. However, apart from that, this study also indicates that proper orientation and information sharing on quality is imperative towards attaining quality. The study reveals that in one operational unit some officials are not aware of the quality guidelines that they are expected to follow while the others are aware. Since some of these officials that are not aware of the quality procedures are directly linked to the attainment of quality control management at Matla Power Station, it is not surprising that there is poor coordination of quality from Eskom to the contractors. The implication of this is reworks. Numerous studies have indicated that rework is a pervasive problem in construction and engineering projects (Love, Edwards & Smith, 2016; Yap, Low & Wang, 2017). The common consequences of reworks can make a detrimental contribution the cost overrun of the project and significantly to the organisation (Love, Edwards & Smith, 2016). The study reveals that the experience of reworks at Matla Power Station is problematic. The consensus among employees is that reworks are a result of the ineffective quality control measures in place. It was established that rework can make a significant contribution to a project's cost overrun.

5.3 RECOMMENDATIONS

Recommendations made were based on the research questions set for this study.

5.3.1 *Challenges of the implementation of qcm at matla power station quality control measures at matla power station*

The study has revealed that there are several quality control procedures in place. However, it appears the plan exists in theory and not in practice. The management could draft a quality compliance policy which will cover issues of negligence on some employees. The quality compliance policy could also cover issues of management responsibility on quality on encouraging all the staff to prioritise quality. The trend in following the ISO 9001 quality guidelines is a theoretical and complex attempt that needs to be simplified. The management can organise workshops on strategic

interventions aimed to attain quality through practical guidelines relevant to Matla Power Station.

5.3.2 Training and workshops on Quality Control Procedures

The study findings have revealed that without the upper-management involvement and commitment to quality control procedures, quality cannot be attained. Hence, the management could effectively schedule for compulsory quality control training to all employees that are directly linked to attaining quality in the organisation. Training is essential and it informs the employees on how they could relocate their time and energy to studying their processes in terms of the quality procedures, identifying problems, raising issues affecting quality and coming up with the solutions. Quality improvement teams should be set up to avoid misunderstanding of responsibilities and ensure an improvement. This has been suggested by many previous studies (Sallis, 2014; Siewert & Hochman, 2015; Graban, 2016; Hartley, 2017).

5.3.3 Implementation of quality control measures

Scholars have argued that the top management is the pillar of maintaining quality, and therefore is expected to play an active and significant role to better quality practices (Hill, Jones & Schilling, 2014; Sallis, 2014; Bolman & Deal, 2017). In the context of quality control procedures, active management refers to monitoring progress, conducting timely analysis of warning indicators, identifying problems, implementing and communicating corrective actions and evaluating successes timely (Sallis, 2014; Kontogiannis, Leva & Balfe, 2017). Since the findings of this research study indicate that there is no proper implementation of quality control procedures, and early identification of quality compromises is lacking, perhaps the organisation needs to refine the quality control strategies to become effective through proper and informative induction that will engage employees on their responsibilities to maintain quality to the overall success of the organisation. Also, the findings have indicated that the operational units at Matla Power Station follow different quality policies and procedures towards attaining quality. However, a holistic approach towards attaining quality is imperative to achieve same goals. Training and workshops in this case could be to instil a sense of unit and promote team work towards attaining quality.

5.3.4 Reworks of project assigned to contractors

The management at Matla Power Station could re-evaluate the selection criteria of contractors. Intense supervision can also be enhanced to ensure quality is maintained since officials have acknowledged that there is a general lack of supervision from Eskom on the work that is done by contractors. Also, Eskom could provide quality guidelines should be in alignment with the ISO 9001 quality management standards to contractors. Even if the contractors have a good track of abiding by the quality standards in their previous works, still Eskom should stipulate their expectations from the contractors prior to commencement of work. Again, it is also important to note that quality assurance to be attained the quality officials need to be field officers not signing papers acknowledging the progress by the contractors without checking the work. This will enhance early detection of simple errors and quality compromises in relation to the reported documents. Monitoring evaluations on paper is detrimental to quality attainment.

5.3.5 Contractors quality management systems

The management at Matla Power Station could find suitable and effective ways of ensuring quality control procedures. Instead of only focusing on audits taking and day-to-day supervision, Eskom could develop protocols to monitor data collection activities, with flexible and practical strategies to correct identified problems.

5.3.6 Project accomplishment time frame

To minimise the challenge of contractors and general work by employees compromising on quality due to limited time constraints, the management could resolve to flexible time frames. Initially, the management could engage the contractor on the convenient and reasonable project completion time.

5.3.7 Shortage of quality personnel

Matla Power Station top management could consider the hiring of more quality personnel to intensify quality supervision especially from the work being done by the contractors. This will also enhance responsibility awareness since job prescriptions will be clearly assigned to individuals not randomly being the responsibility of the overall organisation.

5.4 ACHIEVEMENTS OF THE OBJECTIVES OF THE STUDY

The study was set to identify the existing quality control procedures at Matla Power Station, explore the limitations and challenges facing the implementation of quality control measures to propose an effective approach to these quality control procedures at Matla Power Station. To achieve this, the study employed the use of standardised structured interviews with the officials at Matla Power Station. The patterns of quality control measures at Matla Power Station were identified. The challenges to the implementation of quality control procedures were identified and potential effective approaches or strategies to improve quality control measures were provided. This way the research objectives set for the study were highly achieved though there is a possibility of the officials withholding important information to inform on the objectives of the study, such as not wanting to expose the organisation's weaknesses.

5.5 RECOMMENDATIONS FOR FUTURE STUDIES

For future research, one might consider increasing the size of participants. Although the number of the respondents in this research is small which is 16 interview respondents, the researcher believes such a size might be sufficient and appropriate for a qualitative study in providing the data as intended, since qualitative research allows for an in-depth data collection. However, large-scale research on different Power Stations and projects at Eskom might be a great idea in achieving a broad generalisation of the study in future. Quality Control Measures is one complex aspect of the organisational spectrum that needs to be approached and addressed in contemporary society where the need for quality is increasingly becoming a priority. I believe a proper understanding of an effective implementation of quality control measures is specific to context. Hence, various factors that can affect either negatively or positively its effective implementation should be consulted in several ways from one organisation to the other to give a comprehensive and holistic approach towards effective quality control implementation. Although this study explored some of the limiting factors towards effective implementation of quality control procedures at Matla Power Station, future studies need to research on the challenges and limitations that might be prohibiting various Eskom Power Stations from having effective quality control frameworks. I believe this will broaden

perspectives in this field of inquiry and hopefully provide an informed integration of the findings towards effective quality control implementation.

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APPENDIX A: RESEARCH QUESTIONNAIRE

RESEARCH QUESTIONNAIRE.

Project Title: Examining the implementation of quality control procedures in a selected power station

North West University

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Dear respondent,

My name is Thabani Sithole and I am a graduate student at North West University School of Business and Government Leadership. I'm conducting a study in examining the implementation of quality control procedures in Eskom with the intention of obtaining feedback from Eskom Projects employees, including yourself. I am therefore inviting you to participate in this research study by completing the attached questionnaire.

The questionnaire will require approximately 20 minutes to complete. Your responses are voluntary and will be confidential. To maintain this confidentiality, all responses will be compiled together and analyzed as a group. You are under no obligation to participate in this project, and you may withdraw your participation at any time without prejudice. The data from this interview will be recorded with a recording device and will be later transcribed to identify emerging themes that answer the objectives for this research. Copies of the study will be provided to North West University School of Business and Government Leadership.

Would you like to continue?

Yes

No (Thank respondent and close interview)

Would you like me to record the interview?

Yes

No (Continue interview but note taking)

Date:

Venue:

Time:

1. Gender

Male

Female

2. Age Group:

Below 25

25 - 30

31 – 35

36 - 40

41 – 45

46 - 50

Above 50

3. Highest Educational Qualification:

Primary

Degree

Completed
Primary

Honours

Secondary

Masters

Completed
Secondary

PhD

Certificate/Diploma

4. Marital status

Married	
Single	
Divorced	
Widowed	
Separated	
Other	

5. Population group (Race)

Black African	
Indian/Asian	
Coloured	
White	

6. Name of the organization

7. Years worked for the organization

8. Position in the organization

**9. Do you know of any quality control measures at Matla Power Station?
Please mention them.**

**10. Do you think the organization has met the objectives of its core mandate?
Please explain.**

**11. Does your operational unit have the quality control guidelines that it
follows? Please explain.**

**12. If your operational unit has the quality control guidelines that it follows,
how are these measures being implemented? Please explain.**

**13. Would you say that the quality control policy is being followed effectively?
Please explain.**

14. In what way does the Station provide the contractors with the quality procedures to be followed? Please explain.

15. To what extent do the contractors follow quality control measures during work at Matla Power Station? Please explain.

16. Are there any means of finding out whether these contractors follow the guidelines? Please explain.

17. Do you know of any rework that has been done after the contractor finishes the job? Please explain.

18. What do you think are the causes of rework from the work assigned to contractors at Matla Power Station? Please explain.

19. Do you know of any challenges that prevent effective implementation of quality control measures at Matla Power Station? Please explain.

20. Does the management promote the attendance of quality control workshops/ training by employees? Please explain.

21. What more do you think should be done to improve the quality of the work by contractors? Please explain.

22. Do you have any additional comments?

**THANK YOU SO MUCH FOR SPENDING YOUR VALUABLE TIME IN
COMPLETING THIS QUESTIONNAIRE.**