



**ASSESSMENT OF QUALITY MANAGEMENT PRACTICES AT  
TRANSNET ENGINEERING LOCOMOTIVE MAINTENANCE DEPOT,  
BLOEMFONTEIN**

**BY**

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## DECLARATION OF INDEPENDENT WORK

### DECLARATION WITH REGARD TO INDEPENDENT WORK

I, TSHIFHIWA GODFREE MAPANDE, identity number \_\_\_\_\_ and student number \_\_\_\_\_, do hereby declare that this research project submitted to the Central University of Technology, Free State for the Degree MAGISTER TECHNOLOGIAE: BUSINESS ADMINISTRATION, is my own independent work. It complies with the Code of Academic Integrity, as well as other relevant policies, procedures, rules and regulations of the Central University of Technology, Free State. This study has not been submitted before to any institution by myself or any other person in fulfilment (or partial fulfilment) of the requirements for the attainment of any qualification.



\_\_\_\_\_  
**SIGNATURE OF STUDENT**

**5<sup>th</sup> December 2019**

**DATE**

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# ABSTRACT

The aim of this study was to assess the Quality Management Practices employed at Transnet Engineering Locomotive (TE) Maintenance in Bloemfontein, Free State regarding the quality of services rendered to clients. TE is where locomotives for Transnet Freight Rail, an internal customer, are repaired and serviced. The study aimed at contributing to efficient and effective quality transport service operations at Transnet through improved internal quality services. To achieve this, the study had to assess the efficiency and effectiveness of the current Quality Management Practices at TE and propose remedial measures for improvement.

A qualitative approach with structured interview questionnaire consisting of open-ended questions was used to collect data. The target population for data collection consisted of 50 employees at TE. A sample of 9 was selected from the population by applying non-probability sampling known as judgemental sampling also known as purposive sampling. The collected data was analysed using a qualitative method called framework analysis. Appropriate steps for data analysis in respect of framework analysis were used to arrive at the research findings.

It is important for any organisation to use a Quality Management System (QMS) effectively and ensure compliance with quality standards. Although TE has adopted and implemented ISO 9001:2008 to aid quality management, the study found that TE encountered challenges in the process. These challenges include negative attitude, lack of appropriate skills, poor workmanship and unsustainable practices. Based on these findings, it was recommended that ISO 9001:2008 Quality Management Systems should not just be used as a marketing tool for policy at TE but applied as practical and sustainable quality management system for quality service outcomes. It was also recommended that the identified challenges that inhibited the effective use of ISO 9001:2008 which raised concerns, be investigated further.

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## LIST OF ABBREVIATIONS

TFR	Transnet Freight Rail
TE	Transnet Engineering
ISO	International Organisation for Standardisation
QMS	Quality Management Systems
QA	Quality Assurance
QC	Quality Assurance
QI	Quality Inspection

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# CHAPTER 1: INTRODUCTION

## 1.1 INTRODUCTION

This section encompasses the background to the study, problem statement, rationale or significance of the study, research questions, research objectives, and methodology applied, limitations and ethical considerations.

The focus of this study was on the assessment of Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance. Quality Management Practices (QMPs) refer to all kinds of quality management programmes and plans that generate improved products, enhanced services, reduced costs and improved customer satisfaction (Su, Li, Zhang & Liu, 2008). Thus, the main objective of this study was to investigate the challenges inhibiting quality performance and make recommendations for improving the sustainability of effective quality management practices at the TE.

### 1.1.1 BACKGROUND TO THE STUDY

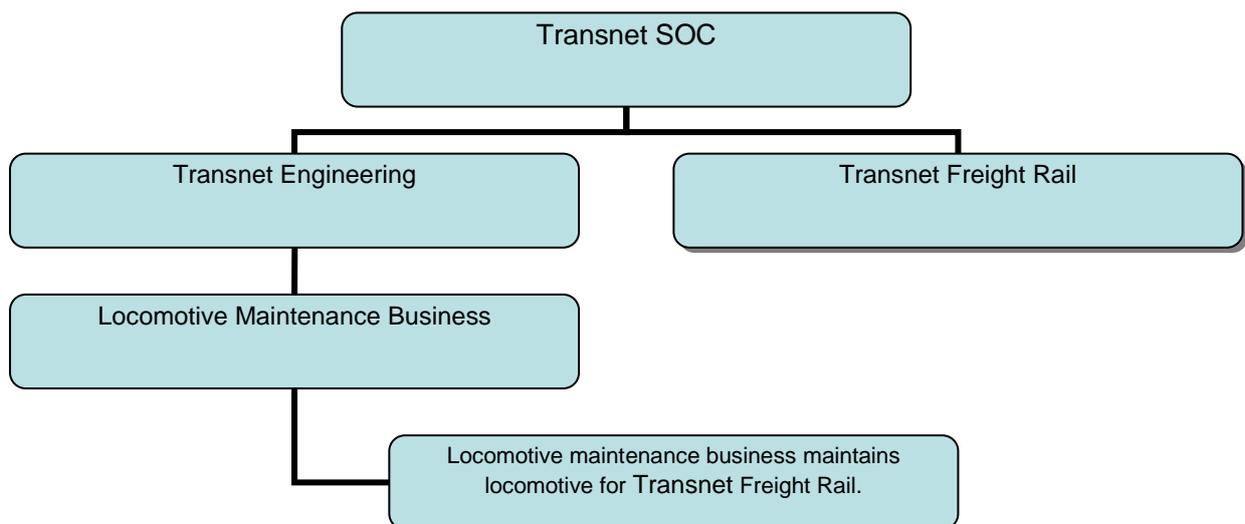
The economic environment in South Africa is gradually becoming more competitive, leading to the need to evaluate and implement effective Quality Management Practices to improve firms' performances especially since some organisations still encounter challenges in sustaining an improved Quality Management System, Smith et.al (2014:76). Since the Transnet Engineering Locomotive Maintenance Depot in Bloemfontein is faced with great challenges in their most dominant business performance assessments, contributing to dire consequences for their internal customers, the Railway Industry was the focus of this study. The most prominent challenge is establishing an improved maintenance system that adheres to globally accepted standards in a maintenance environment and addresses the effectiveness of the service by meeting the internal customer expectations at Transnet Freight Rail.

Furthermore, Transnet Engineering should adopt the principles of ISO 9001:2008 in order to achieve effective product/service quality and customer satisfaction as continual improvement and customer focus with measures rooted in the principles of ISO 9001:2008 to address challenges they continuously encounter. In addition, ISO

9001: 2008 equips businesses with principles for quality compliance through quality standards. However, Ilkay and Aslan (2012:754) add that the aim of this standard (ISO 9001:2008) is to ensure the quality of a system in which goods are produced and services delivered. This means that any organisation that adopts it is expected to deliver goods and services that meet customer expectations. Hence, the main objective of this study was to evaluate the effectiveness of QMPs from an ISO 9001:2008 perspective. In the next section, an overview of Transnet Freight Rail and Transnet Engineering, and its subsidiary Locomotive unit investigated in this study are provided.

### 1.1.2 OVERVIEW OF TRANSNET ENGINEERING AND TRANSNET FREIGHT RAIL

Transnet is one of the largest state-owned companies and deals mainly with the transportation of goods, Transnet (2017:14). Transnet Engineering (TE) and Transnet Freight Rail (TFR) are among the divisions of Transnet, Transnet (2017:2). The former, (TE) consists of eight business units including locomotive maintenance responsible for maintaining or repairing locomotives for TFR, an internal customer, which uses the locomotives for transportation of goods. However, Transnet Engineering often encounters quality management challenges in operational processes. Several of these quality management problems are briefly discussed in the next section and below is the relationship between Transnet Engineering and Transnet Freight Rail.



**Figure 1.1 Relationship between TE and TFR**

### 1.1.3 OVERVIEW OF CHALLENGES ENCOUNTERED AT TRANSNET ENGINEERING

Transnet Freight Rail (TFR), as an internal customer of Transnet Engineering (TE), is dissatisfied with the locomotives used for transporting goods and serviced by Transnet Engineering. TFR's dissatisfaction results from locomotive shortages (unavailability) and frequent failures often encountered. These shortages and failures are attributed to poor Quality Management Practices at TE. These challenges of TE's frequent inability to deliver quality locomotives on time to its internal consumers' points to an apparent lack of effective Quality Management Practices at the parastatal. These challenges impose significant negative impact on the unit's performance. It is believed that a lack of or minimal adoption of quality management methodology is the cause of the quality challenges at Transnet Engineering. This informed the focus of this study and quality at Transnet Engineering as seen by its subsidiary is examined in the next section.

### 1.1.4 QUALITY MANAGEMENT: AN ISO 9001:2008 PERSPECTIVE

According to Beercroft (2011:2), quality refers to meeting customers' requirements in an error-free and cost-efficient way. Locomotive failures and unavailability, as discussed in the section above, are quality-related challenges. When there are frequent engine failures, TFR is unable to deliver the service as it is supposed to. In addition, TE's volume of work in terms of servicing locomotives increases. Correspondingly, an increase in the failure rate of locomotives and unavailability thereof reflects poor quality and the attendant customer dissatisfaction. This study examined the Quality Management Practices from an ISO 9001:2008 (Quality Management System) perspective for sustainable performance and quality in TE's locomotive maintenance. The next section examines Quality Management Systems in detail.

### 1.1.5 IMPLICATIONS OF QUALITY MANAGEMENT SYSTEM FOR ORGANISATIONS

A Quality Management System is a method used to guide or direct an organisation in providing expected products or services based on specifications (Yung & Ki Woong, 2011:5). Therefore, it is important for an organisation to apply any Quality Management System effectively to ensure compliance with quality standards and

satisfy customers. Quality Management Systems, for this study, are approached from an ISO 9001:2008 perspective. ISO 9001:2008 focusses on continuously improving organisational performance while simultaneously satisfying customers by meeting their needs (Leopoulos & Chatzistelios, 2014:215). Together with other management standards, it makes a vital contribution to quality enhancement (Militaru & Zanfir, 2016:132). The next section examines ISO 9001 principles, as they apply to this study, in detail.

#### 1.1.6 APPLICATION OF ISO 9001:2008 PRINCIPLES

Zgodavova and Colesca (2007:32) posit that there are eight principles of ISO 9001:2008 involving the following: customer focus, leadership, people involvement, process approach, system approach to management, continual improvement, and factual approach to decision-making and mutually beneficial supplier relationships. However, this study only applied and evaluated two quality management principles, namely customer focus and continual improvement. Notably, Juneja et al. (2011) and other researchers, including Gharakhani et al. (2013), also only used the principles applicable to their studies. Juneja et al. (2011:97) applied customer focus, affirming that it is considered the most important issue in any organisation since the quality of service in the service sector is directly dependent on customer focus. Gharakhani et al. (2013:47) maintain that continuous process improvements assist in meeting customer needs.

Accordingly, the two principles applied and evaluated in this study are customer focus and continual improvement. According to Potocki and Brocato (1995:411), customer focus refers a firm's ability to apply a management system in such a way that it enables an understanding of customer expectations and transform these expectations into actual work. For this to be, continual improvement is necessary. This refers to a culture of sustained improvement that focusses on eliminating the waste of resources in all systems and processes of an organisation and requires all employees to make improvements (Bhuiyan & Baghel, 2005:761). These two principles are explained as follows by Mehmood, Qadeer and Ahmad (2014: 664):

Principle 1: Customer focus. It is argued that businesses are sustained by customers. For that reason, businesses should strive to ensure that customer needs and requirements are met according to their specifications or expectations.

Principle 2: Continual improvement. An organisation should prioritise continuous improvement to ensure that its standard operations and processes are enhanced as this will enable it to grow and gain a competitive advantage.

Ismyrlis, Moschidis and Tsiotras (2013:115) state that ISO 9001 is internationally recognised and drives an organisation to deliver acceptable products and services, thereby enhancing its performance. Thus, the objectives of these two principles of ISO 9001:2008 as Quality Management Systems are highlighted because they aim to assure quality and create world-class organisations. Affirming this, Sivaram, Devadasan and Murugesh (2013:34) explain that the success of ISO 9001 certification lies in its ability to transform any organisation into a world-class one. The relationship among the relevant and important parameters of this study is reviewed in the following section to indicate their applicability.

#### 1.1.7 QUALITY MANAGEMENT SYSTEM AND ISO 9001:2008

A Quality Management System (QMS) is a management technique that uses quality specifications to direct employees regarding the quality of products and services (Sipos, Buzdugan & Ivanciu, and 2015:7). Such systems were established as tools or techniques for responding to largely global markets and were accepted completely in various industries. Ismyrlis et al. (2013:115) add that they deal with the improvement and development of organisational performance and continuous efforts toward improved quality. Organisations therefore often adopt quality concepts such as TQM and quality standards (ISO 9001:2008).

Hernandez (2010:454) indicates that ISO 9001:2008 is a baseline for Quality Management Systems and has become an obligatory requirement in the Automotive and Truck Industries worldwide. Furthermore, Ismyrlis et al. (2013:115) add that ISO 9001:2008 is internationally recognised as demonstrating organisational capability and ability to deliver quality products and services. This means that for an organisation to be internationally recognised, it must adopt ISO 9001:2008 as a quality baseline. Thus, the effective adoption and implementation of ISO 9001:2008

enhances organisational performance. Performance and measurements are definition and discussed in the next section.

#### 1.1.8 DEFINING AND MEASURING PERFORMANCE

Performance is defined as all business-related activities or inputs that generate outputs expected for satisfying customers as per specific requirements (Munizu, 2013:188). Suchánek, Richter and Králová (2011:267) see performance as the efficient realisation of business outputs. For this study, performance refers to customer satisfaction and product/service effectiveness that can be measured by various combinations of factors. Typically, businesses use various outcomes such as quality, cost efficiency and customer satisfaction to measure their performance (Munizu, 2013:189).

For instance, Raja, Bodla and Malik (2011:112) view performance as product quality effectiveness, customer satisfaction and financial performance. They argue that product quality effectiveness or the quality of a product or service depends on the customer since improved customer satisfaction is brought about by quality product effectiveness. These authors also posit that other firms use product quality effectiveness as a performance measurement of defects, rework, scrap and level of reliability (Raja et al., 2011:112). When customer focus makes customers satisfied, it leads to customer retention and customer loyalty as the value of the product is defined by the customer.

Customer loyalty can be achieved by providing products that are reliable, durable and of desired quality for the customer. When sub-standard products or services are provided, customers justifiably express their dissatisfaction. This negates customer retention and loyalty.

#### 1.1.9 RELATIONSHIP BETWEEN ISO 9001:2008 AND PERFORMANCE

From an ISO 9001:2008 perspective, Quality Management Systems were established to continuously enhance an organisation's performance improve products and services towards achieving desired results. For products and services rendered to be able to have credibility and earn customer confidence, they should adhere to appropriate recommended norms and standards (Salgado et al. (2014:357). Ferreira et al. (2015:625) emphasise that the ISO system aids all kinds

of organisations that want to develop the ability to steadily deliver high-quality products and achieve greater customer satisfaction, continual improvement and intense staff motivation. It therefore comes as no surprise that researchers who are trying to understand the effects of quality management and performance on businesses, Vendralli et al. (2009); Ismyrlis (2013); Salgado et al. (2014) and Ferreira (2015), are quite familiar with ISO 9001:2008. The next section contains the problem statement of the study.

## 1.2 PROBLEM STATEMENT

Since Transnet Freight Rail (TFR) largely contributes to the performance of Transnet as a whole, the service rendered to it by TE (Transnet Engineering Locomotive Maintenance) should meet required customer satisfaction. However, informal observations by the researcher showed that TFR was dissatisfied with the service rendered by TE because of seemingly poor-quality service demonstrated by the frequent failures and shortages of locomotives. This situation negatively affects TFR's ability to deliver and transport goods for external customers, i.e. deliver good quality services. The failure of TE to provide quality services to TFR and the impact thereof on Transnet's performance constitute the problem investigated in this study. The next section discusses the rationale and significance of the study.

## 1.3 RATIONALE AND SIGNIFICANCE OF THE STUDY

In response to an increased pressure, customers all over the world demand superior quality of products and services. This situation has engendered intense competition among companies on a global scale, as they strive to provide quality services and products to customers in order to win new customers while retaining existing ones.

The significance of this study lies in the fact that though ISO 9001:2008 quality management system has been adopted and implemented at Transnet which includes TE, no significant attention has been paid to the effect of this quality management system on the quality of services rendered by TE to its main customer, TFR. This study therefore attempts to fill this void and as well contribute to the quality management literature.

## 1.4 AIM AND OBJECTIVES OF THE STUDY

### 1.4.1 AIM OF THE STUDY

The aim of the study was to assess the quality management practices at Transnet Engineering locomotive maintenance depot, Bloemfontein and make recommendations for sustained improved service delivery at the parastatal.

### 1.4.2 OBJECTIVES OF THE STUDY

#### 1.4.2.1 MAIN OBJECTIVE

To assess the efficiency and effectiveness of the current Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance Depot from ISO 9001:2008 perspective

#### 1.4.2.2 SUBSIDIARY RESEARCH OBJECTIVES

- (i) To investigate the Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance.
- (ii) To identify factors that inhibit Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance.
- (iii) To explore the extent to which Transnet Engineering Bloemfontein Locomotive Maintenance is aware of and practises quality management from an ISO 9001:2008 perspective.
- (iv) To interrogate the quality management outcomes at Transnet Engineering Bloemfontein Locomotive Maintenance from an ISO 9001:2008 perspective.
- (v) To examine the extent to which Transnet Engineering Bloemfontein Locomotive Maintenance can adopt ISO 9001:2008 effectively.

## 1.5 RESEARCH QUESTIONS

### 1.5.1 MAIN RESEARCH QUESTION

To what extent does Transnet Engineering Bloemfontein Locomotive Maintenance practice quality management from an ISO 9001:2008 perspective?

### 1.5.2 SUBSIDIARY RESEARCH QUESTIONS

- (i) What Quality Management Practices are there at Transnet Engineering Bloemfontein Locomotive Maintenance?

- (ii) Which factors inhibit Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance?
- (iii) To what extent is Transnet Engineering Bloemfontein Locomotive Maintenance aware of and does it practise quality management from an ISO 9001:2008 perspective?
- (iv) What are the quality management outcomes at Transnet Engineering Bloemfontein Locomotive Maintenance from an ISO 9001:2008 perspective?
- (v) To what extent can Transnet Engineering Bloemfontein Locomotive Maintenance adopt ISO 9001:2008 effectively?

## 1.6 OVERVIEW OF METHODOLOGY

### 1.6.1 RESEARCH PHILOSOPHY

This study was guided by the interpretivist philosophy, which allows a researcher to only use self-validation for analysis, through the consistency and coherence of thorough description (Roth & Mehta, 2008:136). According to Goldkuhl (2012:5), interpretivist philosophy is often associated with qualitative study, but alternatives do exist. The interpretivist paradigm permits researchers to view the world through participants' perceptions and experiences by providing an understanding of the context of the data collected (Thanh & Thanh, 2015:24). This philosophy was applicable to this study as it was qualitative in nature with the main objective to evaluate an existing phenomenon and its interpretation by the employees of the organisation in question. Following this, it is important to highlight the research design adopted in this study, which is discussed in the following section.

### 1.6.2 RESEARCH DESIGN

Since this study was guided by the interpretivist philosophy, it adopted the case study research design and qualitative approach, which put more emphasis on discovering and interpreting more knowledge relating to a certain phenomenon that could benefit respondents (Tewksbury, 2009:39). Hence, the targeted respondents for this study were employees of TE and the Bloemfontein Locomotive Maintenance Depot. Managers were contacted to obtain permission to conduct the study. Nine out of fifty of the employees were selected through judgemental sampling based on the purpose of the study, and the researcher sought their consent to participate in the

study. Since the purpose of the study was to assess current practices based on experts' perceptions of the studied phenomenon, judgemental sampling was selected as an appropriate option. Participants who consented were interviewed face-to-face in the workplace at a convenient time. The population and sample are further discussed in the next section.

### 1.6.3 POPULATION

The target population for this study is all the employees of Transnet Engineering Locomotive Maintenance Depot in Bloemfontein, which consisted of fifty persons. These employees included one production manager, one logistics manager, one warehouse supervisor, three technical supervisors, one quality assurer, two engineering technicians, two production planners, one finance officer, one safety officer, one admin clerk, one stock controller, one pick and packer, seven master diesel electrical fitters, nine diesel electrical fitters and 18 technical workers. The target population for this study was extracted from Transnet Human Resource Department database

### 1.6.4 SAMPLE AND SAMPLING PROCEDURE

Kumar (2011:339) asserts that in judgemental sampling, the researcher selects only the participants that are likely to have the required information in relation to the studied phenomenon. In line with this, nine employees at Transnet Engineering likely to be familiar with and have expertise in Quality Management Practices were selected to participate in this study. Participants consisted of one manager, one technical supervisor, one quality assurer, one engineering technician, three master diesel electrical fitters and two diesel electrical fitters. These participants who were selected for their knowledge of quality management and were willing to participate in the study provided the data that was used for the entire study. The next section below explains how data was collected.

### 1.6.5 DATA COLLECTION

Data in this study was collected using in-depth structured interviews as a primary source. Structured interviews, using open-ended questions especially, allow the researcher to discover in-depth information. Kumar (2011:138) maintains that a structured interview permits a researcher to ask a prearranged set of questions using

the same wording and sequence. Hence, in this study, open-ended questions deriving from the literature review, research questions and objectives of the study were used to interview the nine employees selected from Transnet Engineering. A data collection instrument, evaluated by relevant experts, was developed by the researcher. To further strengthen the reliability and validity of the interview schedule, a pilot interview based on the data collection instrument was conducted. The reliability and validity are further discussed elsewhere in this study. The data collected underwent the preferred method of data analysis which is discussed in the succeeding section.

#### 1.6.6 DATA ANALYSIS AND PRESENTATION

As mentioned above, this study was guided by the qualitative approach and, accordingly, the data was collected through a structured interview. O'Connor and Gibson (2014:64) postulate that a qualitative analysis uses data to generate answers. Lacey and Luff (2009:9) identify two approaches to qualitative data analysis, namely grounded theory and framework analysis. This study applied the framework analysis since it provides systematic and visible stages for processing data and can be used concurrently for data collection and analysis. Gale et.al (2013:2) assert that a framework approach provides logical steps which result in highly desired summarised data. Accordingly, the logical steps adopted the data analysis using the framework approach are presented as follows:

- Familiarisation: The researcher familiarised himself early with the structure and content of collected data and ensured consistency during the interviews.
- Identifying: The thematic framework was adopted which was developed by reading and re-reading the data, making notes and jotting down early impressions or themes.
- Indexing: Relevant identified themes were grouped in categories while relationships between elements were highlighting.
- Charting: This was adopted and resulted from the transformed data collected. Charts included participants' relative frequency, categories and sub-categories of relative frequency, and a hierarchical relationship model.

- Mapping and interpretation: The data was synthesised to dimensions and the range and diversity of each phenomenon mapped, reviewing the proposal on which the research was based and the stated objectives of the research.

Throughout the data collection and data analysis, ethical considerations were observed as they are discussed in the next section.

## 1.7 ETHICAL CONSIDERATIONS

Ethical considerations as suggested by Akaranga and Makau (2016:6) guided this study. All participants in the study were clearly briefed about the aims and objectives of the study. Their rights in reference to the study were emphasised. The following were highlighted:

- a. An official permission (ethical clearance) to conduct the study at Transnet was obtained.
- b. The consent of Transnet (TE) employees to participate in the study was obtained through Transnet.
- c. Voluntary participation of participants void of coercion was strictly followed.
- d. All the information generated from the participants was treated with confidentiality to ensure that they would be comfortable enough to engage in the study.
- e. The privacy and anonymity of participants was strictly adhered to
- f. The study emphatically avoided misrepresentation of the study outcomes
- g. The researcher was strictly guided by the rules of plagiarism. Accordingly, the study was subjected to plagiarism software test.

## 1.8 LIMITATIONS AND DELIMITATION

This study was conducted in a limited geographical area, namely Bloemfontein, in the Free State Province of South Africa. It involved employees at the Transnet Engineering-Locomotive Maintenance Depot in Bloemfontein only. Other divisions of Transnet were excluded from the study. For instance, the quality of services rendered to external customers by Transnet Freight Rail was not included in the

study. Therefore, the findings of this study could only be generalized on a limited scale to other divisions within Transnet or other service enterprises elsewhere.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 INTRODUCTION

The applicable elements of Quality Management Practices adopted by Transnet are reviewed in this chapter. The review covers quality management, Quality Management System (ISO 9001:2008) and organisational performance. ISO 9001:2008 principles applied in this study resulted in developing a proposed conceptual framework which highlighted links between the current challenges faced by the organisation, ISO principles for inputs applicable in this study, and expected outputs to measure the performance of an organisation. The problem and background of this study require the fundamental aspects of Quality Management Practices, Quality Management, Quality Management Approaches, Quality Management Systems and ISO 9001:2008 be discussed.

### 2.1.1 QUALITY MANAGEMENT PRACTICES

Quality Management Practices refer to all kinds of quality management programmes and plans that can generate improved products and services, reduced costs and enhance customer satisfaction (Su, Li, Zhang & Liu, and 2008:809). Zhang et al. (2016:292) view Quality Management Practices as organisational innovation drivers. In other words, these practices include Quality Management Approaches and Quality Management Systems that are employed by an organisation to meet quality standards as per customer requirements. The economic environment in South Africa that is gradually becoming more competitive has led to the need to evaluate and implement effective Quality Management Practices to improve firms' performances. In this regard, quality should be maintained and incorporated consistently to a product or service, not be regarded as a separate entity.

Sabella, Kashou and Omram (2015:214) maintain that between 1970s and early 1980s, organisations adopted new methods and programmes aimed at improving processes and productivity to respond to challenges faced by their respective industries and sectors. This means that as challenges have been arising for decades, organisations would have continued to perform poorly if programmes and methodologies were not improved. From this it is evident that organisations that have been sustainable for decades only became so by adhering to and meeting standards

of performance relating to customer satisfaction, shorter lead time, high reliability of delivery and consistency of good services and products.

Accordingly, various methods of improving business performance evolved over the years focussing on measures such as quality level, financial performance and organisational growth. Mokhtar, Abdullah, Kardi and Yacob (2013:123) state that globalisation and technology advancement pressured organisations to seek excellence. This led to the emergence of quality management in all industries. Quality management is one of the methods used to respond to global competitiveness in various industries. In Sangode's (2016:25) view, quality management plays an essential role in globalisation with organisations constantly working to make their products and service global. Without methods to enhance organisational standards for operational delivery, excellence would be non-existent. The next section provides the historical trend of quality management in detail.

#### 2.1.2 QUALITY MANAGEMENT

Mokhtar et al. (2013:123) posit that quality management is regarded as the foundation of competitive and strategic planning tools for organisations to deliver effectively. This means that for an organisation to be competitive in this demanding and globalised economy, quality management must be adopted and applied effectively as a strategic tool seeking improved performance, regardless of performance measures. Jamaluddin, Razali and Mustafa (2016:494) posit that quality management is regarded as one of the improvement tools that various organisations require for improved performance and strategic excellence.

According to Brun (2011:13), there are four approaches to quality management, namely: Total Quality Management, Quality Control, Quality Inspection and Quality Assurance. Weckenmann, Akkasoglu and Werner (2015:282) add that quality management evolved from product-oriented quality inspection and control for quality assurance to system-oriented and total quality management. Figure 2.1 below gives an overview of the initial development concepts of quality management by quality gurus/philosophers such as Juran, Deming, Taguchi, Feigenbaum, Ishikawa, Crosby, Shainin and Masing.

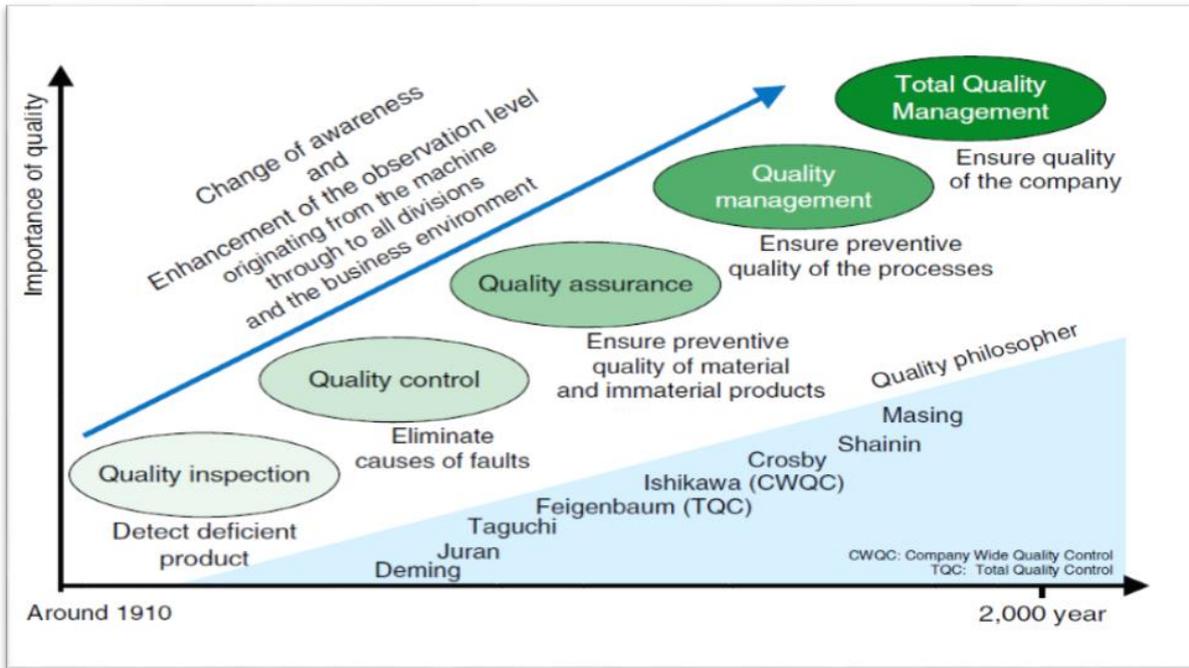


Figure 2.1 Overview of quality management concepts (Wackenmann et al., 2015:283).

Of four possible approaches, Transnet Engineering Quality Assurance adopted the Quality Management Approach. This means that Transnet Engineering guarantees customers a high deliverance of quality standards through the ISO 9001:2008 Quality Management System adopted. Popa (2011:108) emphasises that the Quality Management Approach is used to provide expected products or services according to specifications aimed at meeting customers' standards for quality. That is why Transnet Engineering has adopted ISO 9001:2008 as a Quality Management System. The next section is dedicated to Quality Management Systems.

### 2.1.3 QUALITY MANAGEMENT SYSTEMS

According to Yung and Ki Woong (2011:5), a Quality Management System (QMS) is used to guide or direct an organisation in providing expected products or services based on specifications. In other words, organisational activities used to ensure that products and services are produced to satisfy customers' quality requirements and comply with regulations applicable to specific products and services. It is thus important for an organisation to apply one kind of QMS effectively to ensure compliance with its quality standards.

Bandur and Grubišić (2012:795) contend that with globalisation and the current competition, quality has become one of the most strategically important feature of

organisations since customers want products/services at a lower price and better quality. Accordingly, quality should play a significant role in any organisation as part of any service/product geared to meeting quality standard expected by customers. Quality Management Systems from ISO 9001:2008 perspective is discussed in the next section.

#### 2.1.4 ISO 9001:2008

Organisations that adopt the quality standard (ISO 9001:2008) and apply it effectively, rather than as a marketing and promotional tool, are expected to benefit internally and externally, guided by the effectiveness of the implemented Quality Management System (Rogala & Wereda, 2015:402). The significance of a Quality Management System is the fact that it can positively influence organisations to improve business operations, process deliverance, and deliver higher quality products/services. Therefore, it is vital to gain insight into Quality Management Systems and ISO 9001:2008. A discussion of the impact and efficacy of QMS on an organisation follows.

## 2.2 THE RELATIONSHIP BETWEEN QUALITY MANAGEMENT SYSTEMS AND ISO 9001:2008

A Quality Management System (QMS) is a technique used by employers to guide employees to meet specified quality of products and services (Sipos, Buzdugan & Ivanciu, 2015:7). Sipos et al. (2015:7) explain that Quality Management Systems were established to respond to a largely global market and were accepted completely in various industries. This technique guides organisations about the requirements of product/service to meet customers' quality standards. Ismyrlis et al. (2013:115) add that Quality Management Systems are concerned with developing and improving organisational performance while continuously attempting to improve quality.

Organisations expect that by adopting a Quality Management System, they will have extensive improvement of quality of products and services, quality-related cost reductions, improvements within the organisation and corporate memory creation through documentation (Leopoulos & Chatzistelios 2014:215). However, Kaziliūnas

and Vysniauskiene (2014:140) indicate that an absence of flexibility in designing and effective implementation of Quality Management Systems in various organisations result in a low utilisation of employee skills and knowledge. Thus, the way quality management is adopted and implemented varies from organisation to organisation which may lead to variation in outcomes. Since various organisational factors such as organisational strategy, size, structure and environment, changes in and the risks associated with that environment may negatively affect the effectiveness of the ISO 9001 Quality Management System, the design and implementation of such a system should be geared toward realising benefits (Kaziliūnas & Vysniauskiene, 2014:141). Also, continuous improvement of outcomes to satisfy the needs and expectations of customers should be the main aim when organisations develop, implement and maintain a Quality Management System.

The fact that the standard can be implemented in various ways as a source of competitive advantage in different industries and sectors has made the ISO 9000 series globally popular. Global interest in ISO 9001 certification is growing tremendously (Salgado, Silva & Mello, 2015:210). Especially since the initial reasons and objectives of ISO 9001 Quality Management System adoption determine implementation and maintenance from one organisation to another. However, to remain effective and relevant for meeting the evolving expectations of the industry, authorities of regulations, society and stakeholder requirements, organisational processes and standards should be altered timeously (Kaziliūnas & Vysniauskiene, 2014:141).

Boys and Wilcock (2014:740) contend that in many cases ISO 9001 registration is a minimum requirement between some companies that want to enter into a business relationship. Although, organisations continuously obtain ISO 9001 certification for different reasons, benefiting customers may not be one. White et al. (2009:2) posit that many organisations implement the ISO 9001:2008 quality system to enhance internal processes and the quality effectiveness of products/services; increase local or foreign market shares; or because of customer needs of internal quality control and supplier quality assurance system conformance. It can be either for marketing purpose, quality baseline, clients/customers trustworthy, financial gains or product/service quality effectiveness. Nonetheless, it in the best interest of an

organisation to be precise with the main objective and reasons for adopting the ISO 9001 quality system.

Leopoulos and Chatzistelios (2014:216) state that a Quality Management System may lead to a well-organised, regulated and operational approach to the work environment if there is alignment between the business and its objectives. Hence, QMS should be integrated with other organisational management systems (e.g. Environmental Management, Occupational Health and Safety Management, Risk Management, Financial Management, etc.) to determine objectives, strategies, allocation of resources and outcomes assessment. In Kaziliūnas and Vysniauskiene's (2014:145) view, a well-developed ISO 9000 strategy can lead to competitive advantages and optimal performance. Therefore, management should design an ISO 9000 series implementation strategy consistent with the organisation's strategic directions and eliminate or reduce barriers for effective implementation. The requirements and steps for effectively implementing a Quality Management System are discussed in the next section.

#### 2.2.1 REQUIREMENTS AND STEPS FOR EFFECTIVELY IMPLEMENTING QMS

Boys and Wilcock (2014:739) postulate that ISO 9001 registered organisations become more efficient and sufficiently capacitated to respond to customer needs and requirements only when they develop and document a broad list of internal operational procedures which constitute the requirements and steps for effectively implementing QMS. According to Sipos et al. (2015:7) the requirements and steps for effective implementation of a Quality Management System are:

- a) Establish the documented statements of a quality policy and quality objectives;
- b) Internal and external process determination - strategising interaction plans required to meet quality objectives and responsibilities;
- c) Development of Quality Management System documentation which should include:
  - A quality manual which contains the scope of the Quality Management System, including prohibitions and their justification details, and describes the processes of the Quality Management System and their interaction. Basically,

it provides an organisational profile; presents the organisational relationships and responsibilities of the work allocation and workforce whose work affects quality and outlines the main procedures. It may also describe the quality policy and quality objectives of an organisation.

- Documented and standard operating procedures, work instructions, control statements - documents that provide detailed information on the execution of activities and processes consistently.
- Required guides, specifications.
- Records - documents that provide objective evidence of activities performed or results.

d) Personnel training;

- Each member of the organisation should be active in the implementation of the ISO Quality Management System for its success.

e) Finding a certification body; and

f) Set date for certification audit.

Correspondingly, Kaziliūnas and Vysniauskiene (2014:151), aver that appropriate programme formulation is required to successfully and effectively implement the Quality Management System according to ISO 9000 standards. This means that all the processes and procedures of ISO 9001:2008 must be established to make documentation, implementation and maintenance feasible. During the post certification phase, the correct maintenance of the Quality Management System is essential for activities such as management reviews, corrective and preventive actions, data collection and analysis, performance measurement and continuous improvement (Kaziliūnas & Vysniauskiene, 2014:151). Without a doubt, ISO 9000 documentation, implementation and maintenance play a pivotal role in ISO 9001 which requires commitment from the organisation. To reiterate, the ISO 9001 standard is applied for various reasons in various organisations depending on the organisational needs and objectives.

This standard is continuously adopted by organisations to which it gives international competitive advantages. Ismyrlis *et al.* (2013:115) explain that ISO 9001:2008 is internationally recognised and established to demonstrate organisational capability and ability to deliver quality products and services. This means that for an organisation to be internationally recognised, it must adopt ISO 9001:2008 as a quality baseline as effective adoption and implementation enhance organisational performance. However, performance or benefits outcomes may differ from organisation to organisation, depending on the goals and mission of the company. The succeeding section discusses the benefits of ISO 9001 as a Quality Management System.

### 2.2.2 THE BENEFITS OF ISO 9001 AS A QMS

Vikas *et al.* (2015:493) aver that the benefits to organisations that have adopted the ISO 9001 Quality Management System are likely to be: (i) Increase in company quality awareness; (ii) Increase in product quality awareness; (iii) Improvement in management commitment; (iv) Improvement of customer relations; (v) Improvements in the products and services rendered; (vi) Enhanced relationships within the organisation; (vii) Greater customer satisfaction; (viii) Increased respect from competitors; (ix) Encouraged continual improvement; and (x) Improved customer retention. From a theoretical perspective, implementation of the ISO 9000 series should also enhance the quality of the product and services of organisation. Despite the perceived benefits, many organisations find it very challenging to implement this standard.

According to Kaziliūnas and Vysniauskiene (2014:141), the ISO 900 family of standards was developed decades ago to support organisations in all industries, regardless of type, size and activities, to execute quality management effectively. This means that service providers, manufacturing companies and consumers benefit more from sustainable development when using these international standards. ISO 9001:2008 has become obligatory in the Automotive and Truck Industry worldwide, making it the baseline for QMS (Hernandez, 2010:454). With the increase in the number of organisations implementing the ISO 9000 Quality Management System, a link was seen between ISO 9000 and the organisations' performance (Vikas *et al.*, 2015:491). Kaziliūnas and Vysniauskiene (2014:151) highlights this as one of the

benefits when implementation is internally motivated and state that improved organisational performance is likely when firms adopt ISO 9001 Quality Management System willingly and positively rather than because of customer pressure.

ISO standards provide a guidelines and measures for quality systems to organisations to enhance their performance and provide better and more consistent quality products and services to their customers. There seems to be a remarkable link between ISO 9001 Quality Management System implementation and the corresponding performance outcomes (Kaziliūnas & Vysniauskiene, 2014:141). Performance measurement is reviewed in the next section, which highlights different measures of performance and provides insight into the connection between performance and ISO 9001:2008.

## 2.3 DEFINING AND MEASURING PERFORMANCE

Performance is defined as all business-related activities or inputs that generate outputs that are expected to satisfy customers as per their specific requirements (Munizu, 2013:188). According to Suchánek, Richter and Králová (2011:2670), it is the efficient realisation of business outputs/expected results of inputs in a system, process, operation etc. These expected results require that performance measurements align with the organisational goal and mission.

Holjevac and Hrgovic (2012:67) posit that performance indicators, as the most valuable management tool, are pivotal to managerial control as they are specifically used for quality performance measurements. Expected benefits ISO 9001 are difficult to obtain. This difficulty arises because they represent the quality measures of performance which are determined by the correlation between the business outcomes and the necessary resources used or the level of business efficiency. Valmohammadi and Kalantari (2015:504) maintain that the ISO 9001 standard implementation can improve quality performance, processes, and workmanship and identify all possible internal and external factors that may negatively impact workmanship quality. For this study, performance refers to the expected outcomes using the applicable resources. In other words, for effective performance and ISO 9001 Quality Management System alignment, a consistent performance measurement is needed.

Fonseca (2015:55) posits that the efficacy of ISO 9001 varies depending on whether it is implemented well as a Quality Management System or is just there for 'certification'. This means that performance tends to be affected negatively or positively by how ISO 9001 is used in practice. Moreover, Valmohammadi and Kalantari (2015:504) further state that the ISO 9001 standard is there to assist firms of different sizes and sectors to apply and operate QMS effectively, improving the ability to design, produce and deliver high quality products/services.

The success or failure of the ISO 9001 standard to enhance a firm's performance may be because of its effective or ineffective implementation and not inherent deficiencies of the standard (Kafetzopoulos, Psomas & Gotzamani, 2015:382). Valmohammadi and Kalantari (2015:504) posit that considerable research focusses on ISO 9000 implementation, motivations, performance and impact. Although there is much and different information regarding ISO 9001, there is very little about its impact on the results of performance of an organisation (Valmohammadi & Kalantari, 2015:504). There is, according to Psomas et al. (2013:150), significant literature that identifies the dimensions of service company performance relating to product/service quality, and operative and financial results. This indicates that ISO 9001:2008 certified companies have better product/service quality levels and operational outcomes than non-certified companies. In addition, the process approach of ISO 9001:2008 has made organisations more process-oriented improving quality and operational performance.

Kafetzopoulos et al. (2015:381) hold that ISO 9001 effectiveness directly contributes to the quality and operational performance. However, there is no direct impact on performance in the manufacturing sector but rather indirect through operational performance moderators. Differently put, ISO 9001 effectiveness is important as in some instances it has direct or indirect impact, depending on the performance measurements. After all, implementation and certification of quality management in accordance with ISO 9001 aim to initiate a trend of beliefs and evidence of organisational capability (Militaru & Zafir 2016:131). Organisations can render high quality services and produce high quality products in line with customer requirements and legal regulation. To reiterate, even though ISO 9001 has evolved as a vital part of quality management and organisational performance, studies about objectives

and their indicators to evaluate it (ISO 9001) in service industries are non-existent (Psomas et al., 2013:159). The history of ISO 9001 and performance measures are discussed in the next section.

### 2.3.1 PERFORMANCE MEASURES BASED ON THE STUDY AND HISTORY OF ISO 9001

This study assessed the ISO 9001:2008 Quality Management System with continual improvement and customer focus as inputs. These two principles of ISO 9001 are expected to have the respective outputs of service/product quality effectiveness and customer satisfaction. Although there is a revised version of ISO 9001, ISO 9001:2015, the study focusses on the 2008 version as it was the one used at Transnet Engineering at the commencement of this research.

The ISO 9000 series of standards have been revised several times after the first version, ISO 9001:1987 (Militaru & Zanfir, 2016:132). Its history is shown schematically in Figure 2.2, with the ISO 9001 sub-series of the Quality Management System.

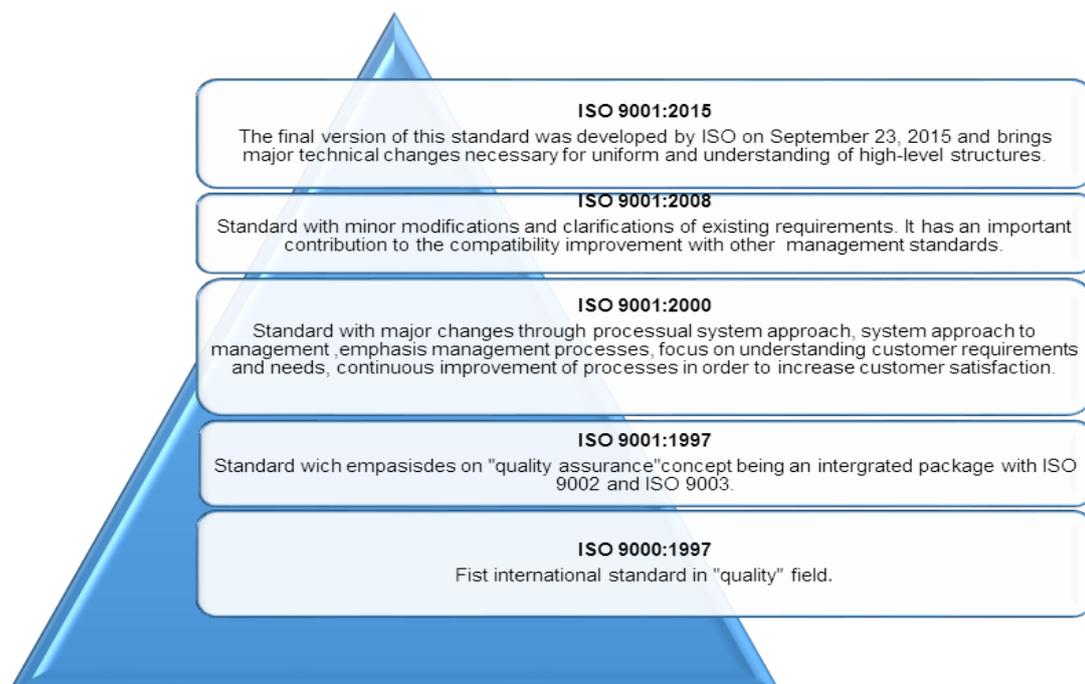


Figure 2.2 Overview of ISO revision history over the years (Militaru & Zanfir, 2016:132)

Militaru and Zanfir (2016:134) emphasise that the 2015 version (ISO 9001:2015) replaces the 2008 (ISO 9001:2008) to address the changes and modifications in the business environment owing to globalisation and competitive pressure. Ideally, all

organisations that are ISO 9001:2008 Quality Management System certified should migrate to the new 2015 version as there are minor differences between the two regarding Quality Management Principles (Militaru & Zanfir, 2016:134). ISO 9001:2008 had eight principles as opposed to the seven of ISO 9001:2015. According to Fonseca (2015:55), the difference is that the system approach to management and the process approach of the 2008 version were combined in the 2015 version as only process approach as shown in Table 2.1 below.

Table 2.1 Quality management principles of version 2008 and 2015 (Fonseca, 2015:55)

ISO 9000:2005/ISO 9001:2008	Proposed ISO 9001:2015
1. Customer Focus	1. Customer Focus
2. Leadership	2. Leadership
3. Involvement of People	3. Engagement of People
4. Process Approach	4. Process Approach
5. System Approach to Management	.....
6. Continual Improvement	5. Improvement
7. Factual Approach to Decision Making	6. Evidence-based Decision Making
8. Mutually Beneficial Supplier Relationships	7. Relationship Management

The amended principle (process approach) it is not relevant to this study as the relevant and applicable ones are customer focus and continual improvement. Nevertheless, the researcher needed to acknowledge the revision as part of the assessment of the effectiveness of ISO 9001:2008.

As previously mentioned, the first edition of 9001 was published in 1987 and has been revised several times because of shortcomings and changing times and markets. Kerekes and Csernátoni (2016:7) posit that the 2015 version unifies the structure and regulations of standards with other management standards (Environmental, Occupational Health and Safety), and adopts a High-Level Structure (HLS) to facilitate integration by users. The succeeding section discusses the

difference between the old and the new version of ISO 9001 as a Quality Management System.

### 2.3.2 THE DIFFERENCE BETWEEN THE NEW AND OLD VERSIONS OF ISO 9001 AS QMS

Even with a newest version of ISO 9000 there are important shortcomings which, Kerekes and Csernátóni (2016:8) identify as follows:

- a) Similar structure of QMS for various firms;
- b) Aligning QMS documentation and structure of the standard; and
- c) Using standard-specific terminology.

The new version still has the same QMS requirements of products and services, but these are now grouped according to processes that are more applicable and much closer to the real practice of some organisations (Kerekes & Csernátóni, 2016:10). Furthermore, it is much more user-friendly and places more emphasis on the process and risk approaches. However, as mentioned before, version 2015 was not relevant to this study and was therefore not discussed in detail.

The conceptual framework in this study was aimed at assisting Transnet uncover challenges that contributed negatively to organisational performance, thereby curtailing excellence. Internal processes and inputs were therefore evaluated against ISO 9001 quality system requirements to address these challenges. According to Psomas et al. (2013:158), quality experts worldwide acknowledge the value of ISO 9001 to organisational performance and expected outcomes when adopted and implemented effectively. ISO certified organisations benefit significantly from QMS and these benefits may pertain to product quality effectiveness, customer satisfaction, and operational and financial performance. Good and effective performance should bear outcomes such as quality, cost and service effectiveness, and customer satisfaction, which businesses typically use as performance measures (Munizu, 2013:189). The next section reviews the measurements of performance applied in this study.

### 2.3.3 MEASUREMENTS OF PERFORMANCE APPLIED IN THIS STUDY

Performance can be measured by various combinations of factors. Raja, Bodla and Malik (2011:112), for instance, measure performance as product quality

effectiveness, customer satisfaction and financial performance. On the other hand, Raja *et al.* (2011:112) see product quality effectiveness as a performance measure in terms of defects, rework, scrap, and level of reliability. Customer satisfaction is another measure of performance because to improve customers' satisfaction, quality product effectiveness must be achieved (Raja *et al.*, 2011:112). Since quality is relative to the customer, the customer determines quality. If the customer is satisfied with the quality of a product and service, customer retention occurs. In turn, customer satisfaction and retention foster customer loyalty based on reliable, durable and of desired quality for customers Raja *et al.* (2011:112). Thus, when products or services are sub-standard, customers can justifiably express their dissatisfaction. The relationship between ISO 9001:2008 and performance is examined in the following section.

## 2.4 THE RELATIONSHIP BETWEEN ISO 9001:2008 AND PERFORMANCE

Kafetzopoulos *et al.* (2015:381) posit that ISO 9001 is a precondition for organisational success and entrance into world markets as organisations that adopt ISO 9001:2008 need to meet objectives using set performance measurements. This standard is adopted voluntarily by organisations aiming to improve competitive advantage or enhance the quality of their service/product (Kafetzopoulos *et al.*, 2015:381). Such companies use the standard to develop the ability to steadily deliver high-quality products and achieve greater customer satisfaction, continual improvement and intense staff motivation. According to Salgado *et al.* (2014:357), Quality Management Systems continuously enhance organisations' performance, maintain constant improvement of products and services, and achieve their desired results. For products and services to have credibility and earn customer confidence, they should adhere to the appropriate recommended norms and standards. This means that Transnet Engineering-Locomotive Maintenance, which is ISO certified, is expected to deliver high quality locomotives to its customers.

Hence, ISO 9001:2008 is more familiar to numerous researchers who are trying to: for example, Vendralli (2009); Ismyrlis (2013); Salgado (2014); Ismyrlis (2014) and Ferreira (2015) have all tried to understand and explain ISO's effect on business.

The next section discusses the relationship between customer focus as an ISO 9001 principle and customer satisfaction as a performance measure.

#### 2.4.1 THE RELATIONSHIP BETWEEN CUSTOMER FOCUS AND CUSTOMER SATISFACTION

In this study the adopted performance measurements were customer satisfaction and service quality effectiveness. The selected ISO 9001:2008 principles for evaluation were customer focus and continual improvement to address quality challenges encountered by TE. Firstly, this study addressed customer focus and how it relates with customer satisfaction. This was followed by continual improvement and its relation to service/product effectiveness.

Customer focus refers to meeting customers' needs and requirements while engaging them throughout the customer-supplier-relationship process. Thakur and Singh (2011:118) posit that customer focus is a practical activity of predictable change and which continuously involves customers regarding their inputs and feedback in terms of quality of services and products. This means that in the supplier-to-customers relationship, the customers' feedback and inputs are valuable for improving products and the services. Furthermore, customers' inputs are prone to enhance the processes, procedures and specifications of delivering products and services to customer requirements. As a result, this automatically makes the customer part of the day-to-day activities of a business as this may also lead to customer retention. Usually, in the event of a new business culture, the business revolves around the customer as the consumer uses the product/service. If that is the case, the customer can either increase the sale's volume and profits, reject the product/service to the detriment of the business (Thakur & Singh, 2011:118).

It seems that the growth and success of a firm depends, to a certain extent, on the involvement of the customers, consumers or users of a product or service. Conversely, it does not mean that customer involvement in an organisation automatically equates to business success or tremendous growth. It is the chance or possibility of growth or success that increases. Thakur and Singh (2011:118) determine that the failure of a business might be due to:

- Resistance to seeing customers as a top priority.
- Focussing more on the competition than on satisfying customers.

- Misunderstanding customer focus and market orientation.

Firms that continuously adopt customer focussed business processes tend to gain competitive advantage over other rivals which also increases the chances of gaining more customers. This makes customers a vital element that can either determine the success or failure of their firm. Raie, Khadivi and Khdaie (2014:112) maintain that customers are the key to survival and success of businesses, making it important to identify and determine customers' requirements and measure their satisfaction. In the long run, customer focus is not driven by certain employees but requires the entire firm from top management nor direct employees to always prioritise customer requirements and needs. At TE-Locomotive Maintenance also, customer focus should be a priority satisfy the customer and permit growth and success.

Raie et al. (2014:111) posit that customer satisfaction is the expected outcome after products and services provided by suppliers. If the expectations of customers are met, they will be satisfied. The relationship between customer focus and customer satisfaction was of interest to this study and was in the proposed conceptual framework. Seiler, Rudolf and Krume (2013:236) contend that, based on the theory of customer satisfaction, the results obtained from comparing customer expectations and perceived company performance are indicators of satisfaction. In other words, customer satisfaction is the outcomes of the inputs pursued to meet customer requirements and needs, and it determines the future of the firm. Generally, customer satisfaction has a vital impact on the present and future of an organisation.

Thus, within a customer focussed organisation, products and services are based on customer requirements and needs. Li (2013:42) concurs that customer satisfaction is a significant factor in understanding the needs and wants of customers as customer satisfaction affects repeat business and positive recommendations of customers. Based on this, it is apparent that Transnet Engineering-Locomotive Maintenance must prioritise the customer focus to improve the customer satisfaction of TFR. The satisfaction of existing customers can be used as a value adding marketing tool to attract more customers. The more the organisation becomes customer focussed the more it is likely to improve customer satisfaction. This is a way of showing customers that they are organisational priorities. Thakur and Singh (2011:118) aver that customers prioritised in organisations and feel satisfied. Failure can stunt growth.

There are several studies that investigated these parameters (customer focus and customer satisfaction) with varying findings, although the focus was the service sectors and not the Railway Industry. Researchers include Mehrabi et al. (2008); Thakur and Singh (2011); Olowokudejo and Adeleke (2011); O'Sullivan and McCallig (2012); Seiler et al. (2013); Bakti and Sumaedi (2013); and Olsen et al. (2014). In the study of Mehrabi et al. (2008), "Customer focus following the implementation of the quality improvement model in Tehran social security hospitals", assessed customer focus in social security hospitals in Tehran Province.

Mehrabi et al. (2008:562) found that in all the hospitals investigated, continuous improvement was implemented for customer satisfaction. Only two hospitals' continuous improvement had an influence on customer focus. Based on these findings, it can be argued that there is a correlation between the continual improvement and customer focus, and between continual improvement and customer satisfaction. However, the relationships between these parameters are not specified.

A study by Olowokudejo and Adeleke (2011:292) investigating the relationship between customer focussed service and customer satisfaction in the Nigerian insurance industry, revealed that there was a positive relationship between customer focus and customer satisfaction. Furthermore, Olowokudejo and Adeleke (2011:292) examined the influence of organisational practices focussing on the relationship between customer focussed services and customer satisfaction. The results showed that organisational practices such as customer focussed services do affect the relationship. Moreover, Olowokudejo and Adeleke's (2011:292) illustrate the relationship between customer focussed services and customer satisfaction in the model in Figure 2.3. They also argue that customer focussed service has a positive influence on customer satisfaction. However, customer satisfaction, as a result/output, depends on organisational characteristics such as a firms' image and branch network. Furthermore, these organisational characteristics also contribute to customer focus and customer satisfaction depending on their development in an organisation.

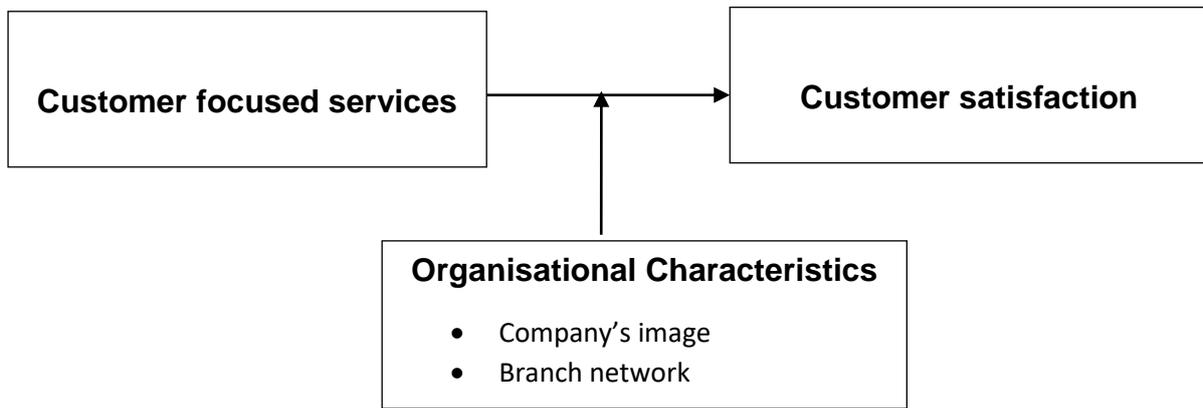


Figure 2.3 Model of the relationship between customers focussed services and customer satisfaction (Olowokudejo and Adeleke, 2011)

Thakur and Singh (2011:122) concluded that better results were higher in a customer focussed firm than in a non-customer focussed one. In their study entitled “Customer focus in new Business Culture” Thakur and Singh (2011) discovered that there was no future for organisations if there were no customers. Adeleke and Olowokudejo (2011:287) agree that the utilisation of customer focussed services result in customer satisfaction. A customer focussed service aims to understand the requirements of the customers and planning is done based on what customers want rather than on the goals of the firm.

In other words, benefits of customer focussed firms differ with those of non-customer focussed ones as improved performance is expected of the former. Sustaining customer focus is highly demanding as compromises of organisational values might be required. Additionally, with the adoption of customer focussed services in a firm, outcomes vary depending on whether the objectives of an organisation align with customer expectations and requirements to meet satisfaction. This means that Transnet Engineering-Locomotive Maintenance needs to understand that their goals and objectives should align with the customers’ goals and objectives. The next section discusses customer focus as an input and customer satisfaction as performance measure.

#### 2.4.2 OUTCOMES OF CUSTOMER FOCUS AS AN INPUT AND CUSTOMER SATISFACTION AS PERFORMANCE MEASURE

The outcomes of customer focussed services and customer satisfaction vary. Research by O’Sullivan and MacCallig (2012) “Customer satisfaction, earnings and

firm value” examined the relationship between satisfaction, earnings and firm value. They discovered that customer satisfaction had a positive impact on the value of organisations and regulated the earnings-firm value relationship. In other words, with customer satisfaction as outcome of customer focussed service, benefits go beyond satisfying the customers by increasing the value of the firm. This could be attributed to retaining customers satisfied with the service thereby improving customer loyalty.

In the study “The influence of socio-demographic variables on customer satisfaction and loyalty in the private banking industry” by Seiler et al. (2013), a strong positive impact of customer satisfaction on customer loyalty and indirect impact of service value on customer loyalty was shown. Customer satisfaction can be an outcome as well as an input to various activities. Service value contributes to customer satisfaction but there is no direct relationship or influence with customer loyalty. Mostly, customer satisfaction act as a mediator that contributes towards customer loyalty and is an outcome of service values. Hence, it was mentioned previously that the customer service can be the input and outcomes of customer needs and organisational goal alignment.

A similar study done by Bakti and Sumaedi (2013) “An analysis of library customer loyalty: The role of service quality and customer satisfaction, a case study in Indonesia” also investigated the correlation between service quality, customer satisfaction, and customer loyalty in a library at an Indonesian university. The results showed a direct link between service quality and customer satisfaction which led to customer loyalty. However, service quality did not have a direct effect on customer loyalty. (Bakti & Sumaedi (2013:397). Figure 2.4 is their model of correlation between service quality, customer satisfaction and customer loyalty.

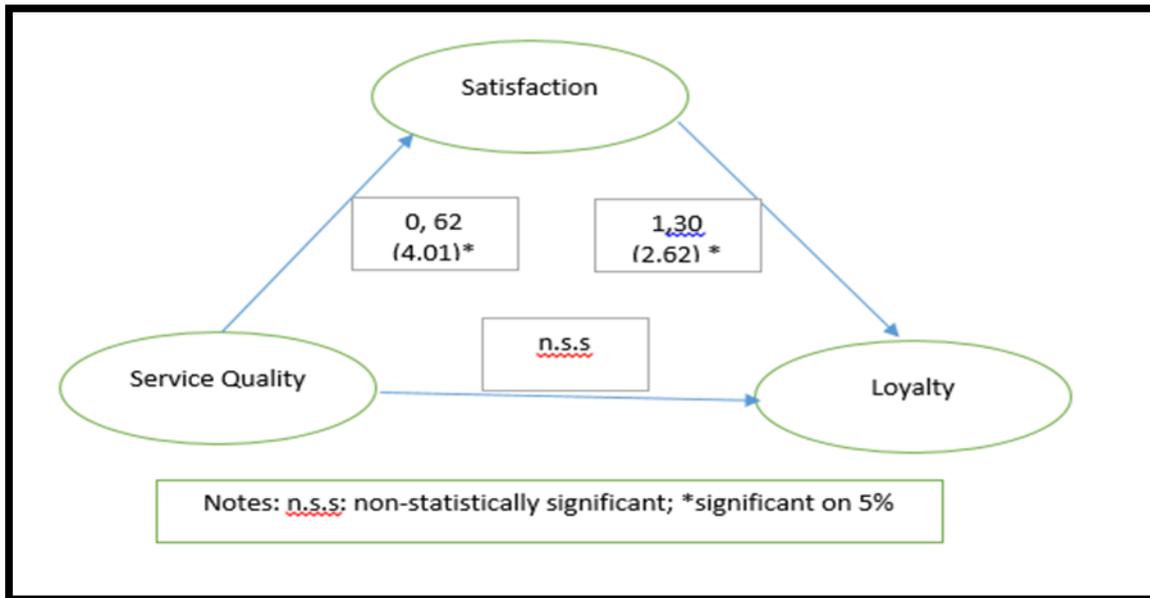


Figure 2.4 The conceptual model showing the service quality that influences customer loyalty directly, and indirectly through customer satisfaction (Bakti & Sumaedi,2013:399).

A study by Olsen et al. (2014) was titled “Turning customer satisfaction measurements into action”. It found that of the three phases of customer orientation (strategy measurements, analysis, and implementation) implementation had the strongest influence on customer satisfaction, and an indirect on financial results.

Based on the above-mentioned studies, customer focus plays a vital role in the attainment of customer satisfaction. However, an organisational characteristic should be sustained customer for continual improvement and customer satisfaction. Although customer satisfaction might be the only expected result for customer focussed firms, customer loyalty and improved value might also result. In order words, this means that in a customer focussed firm, incorporated with organisational characteristics there is an expected realisation of customer satisfaction that might bring about customer loyalty and improved firm value. This is shown in Figure 2.5.

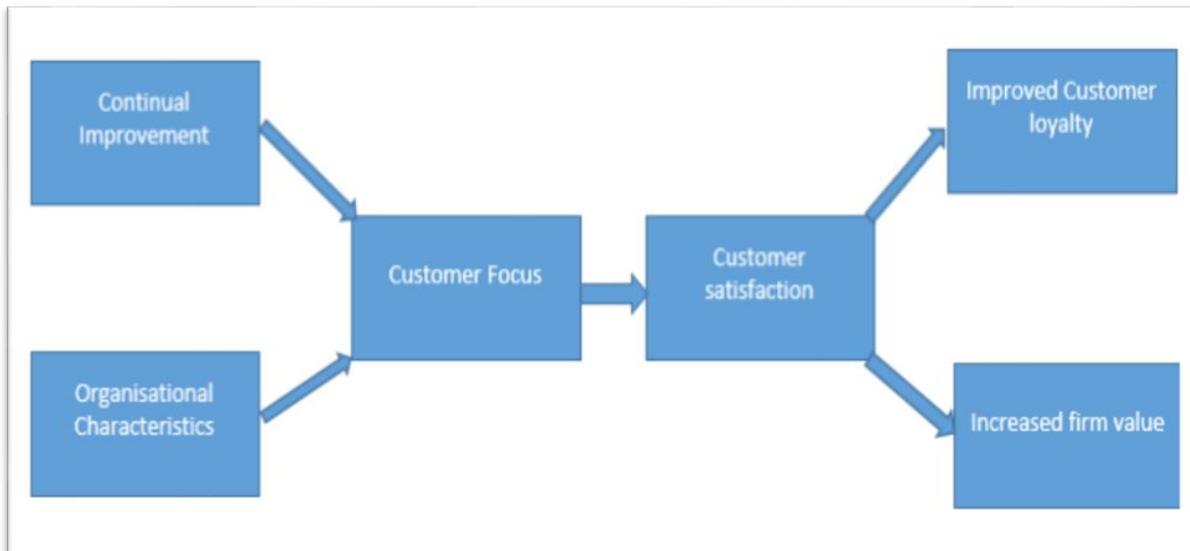


Figure 2.5 Suggested model of the relationship in between the inputs of the customer focus and the outputs of the customer satisfaction.

There is a positive relationship between customer focus and customer satisfaction. However, the efficiency of customer focus depends on organisational characteristics and continual improvement. Since, the relationship between customer focus and customer satisfaction has been explained, the relationship between continual improvement and product/service quality effectiveness is looked at next.

#### 2.4.3 THE RELATIONSHIP BETWEEN CONTINUAL IMPROVEMENT AND PRODUCT/SERVICE QUALITY EFFECTIVENESS

According to Russell (2003:2), continual improvement refers to a process in which the effectiveness of an organisation is enhanced to satisfy the quality policy and quality objectives. It involves activities to enhance quality and meet quality requirements (Plura, 2000:13). The on-going alterations required for continual improvement benefit organisations since, as the quality of products or services improve so does the organisation's effectiveness to meet quality requirements. According to Russel (2003:3), continual improvement can be applied to any sector or department and can be geared to quality, business, safety, suppliers, management activities and the environment. Govender (2013:261) asserts that continual improvement in the quality management field involves enhancing the effectiveness and efficiency of the firm. Processes of an organisation remain relevant and effective

for some time because of continual improvement (Crosby, 1979; Deming, 1986; Juran, 1988; David Garvin, 1988; and Feigenbaum, 1991).

The idea of continual improvement has been a dominant subject of various firms for many years, yet they still struggle to attain on-going enhancement (Russell, 2003:1). Adoption of continual improvement (CI) ensures that there are stable processes that could improve the survival of the organisation. According to Plura (2000:13), it is an important principle of the ISO 9000 family of quality management. He also states that suitable methods and tools can increase the success and effectiveness of continual improvement activities. Govender (2013:259) adds that CI within the management systems is vital to ensure that there is a continuation of the relevant system implemented to reduce ineffective stationary systems. It is postulated that continual improvement should not only be adopted and adapted but also be feasible methods, processes and procedures. The steps of continual improvement for effectiveness and success, according to Plura (2000:15), should contain:

- a) Reasons for improvement: problem identification in a process and an improvement in the area where there are problems while also noting the reason for working around it.
- b) Current situation: the current process should be evaluated for effectiveness and efficiency. Collection and analysis of the data must be done to identify the types of problems that often occur. A specific problem should be selected with the aim of addressing it through improvement.
- c) Analysis: identification and verification of the root causes of the problem should be done.
- d) Identification of possible solutions: exploration of the possible solutions must take place. Selection and implementation of the best solution should occur. The solution selected must be the one that will eliminate the problem and prevent the problem from recurring.
- e) Evaluation of the effectiveness and efficiency of the process with the improvement action completed: recommendation to another organisation should be done once the effectiveness and the efficiency of the solution is evaluated and considered.

- f) Implementation and standardisation of the new solution: replacement of and adaptation to the new process should be adopted to prevent the problem and root causes from recurring.
- g) Evaluation of the effectiveness and efficiency of the process with the improvement action completed: recommendation to another organisation should be done once the effectiveness and the efficiency of the solution is evaluated and considered.

Whereas continual improvement is regarded as a process of enhancing and designing the stability of the improved process, continuous improvement is seen as an element of CI that is achieved through different innovations and/or re-engineering (Govender, 2013:262). In other words, continual improvement is different to continuous improvement as the continuous improvement is an element that contributes toward the success CI. Govender (2013:262-263) shows the difference between continuous and continual improvement respectively in Figures 2.6 and 2.7.

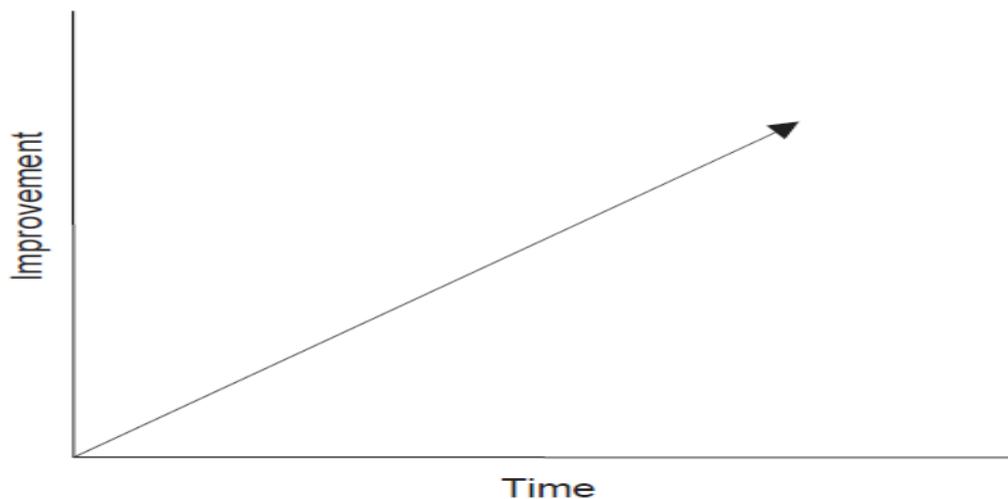


Figure 2.6 Diagrammatic representation of continuous improvement (Govender, 2013:263)

Based on Figure 2.6, continuous improvement is a developing effort to make improvements to processes concerning products or services over time. On the other hand, continual improvement (Figure 2.7) refers to new ideas generated in reducing the instability of an organisation's processes, products or service quality over a specific time. Nevertheless, both seek improvement either on quality standards, processes, products or services. Kaur, Mohamad and George (2006:255) indicate

that continual improvement may not be occurring as often as continuous improvement but that efforts are directed at attaining the desired sustainable Quality Management System requirements.

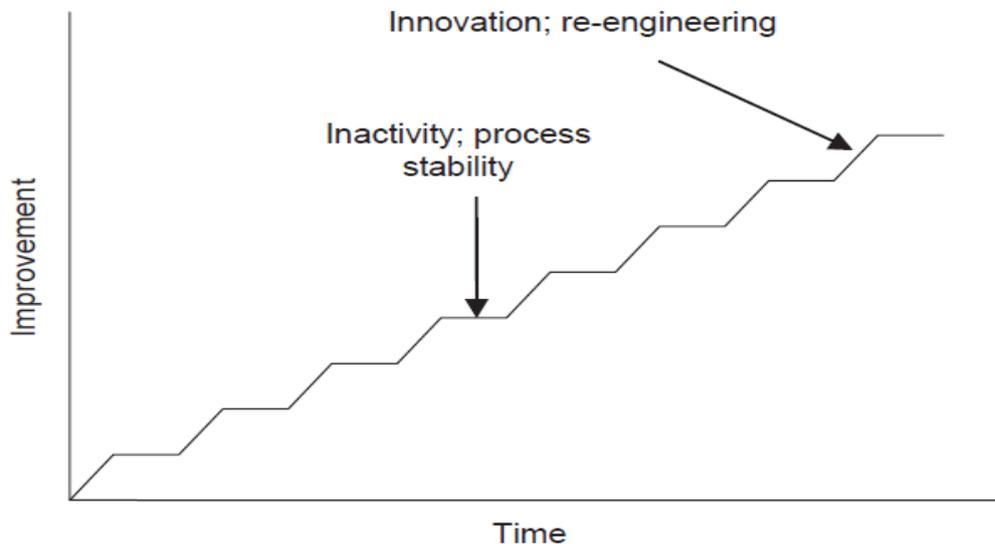


Figure 2.7 Diagrammatic representation of continual improvement (Govender, 2013:263)

According to Govender (2013:263), customer satisfaction is an expected result of sustained and stable continual improvement. This means that customer satisfaction can be used as an aspect that validates the effectiveness of a system. When production and service delivery is stable, then effectiveness is achieved. Thus, continual improvement effectiveness can relate to product/service quality effectiveness although no correlation has yet been provided (Govender,2013:263). A study “TQM practices and Quality Management Performance investigated these using data from ISO 9001:2000 certified firms in Malaysia, highlighting the relationship between continual improvement and quality performance (Arumugam, Ooi & Fong, 2008). The main purpose of their study was to discover the correlation between Total Quality Management (TQM) practices and quality performance at an ISO 9001:2000 certified manufacturing firm in Malaysia. They discovered that TQM practices were partially related to quality performance, especially where customer focus and continual improvement are perceived as dominant. One of the hypotheses in their study “Continual improvement is positively related to quality performance” revealed that continual improvement was significantly and positively linked to quality

performance, and the more continual improvement was practiced, the more certified organisations were likely to achieve a higher quality of performance (Arumugam et al., 2008:646). However, realistic goals must be set, required resources ensured, and the achievement of goals and opportunities that will lead to quality performance encouraged (Arumugam et al., 2008:646). It is evident that there are pre-requisites for effectively achieving continual improvement. Additionally, ISO certified firms are more likely to enhance the quality of performance through continual improvement. There achievable goals must be set, sufficient resources acquired, and commitment encouraged to achieve effective continual improvement. Arumugam et al. (2008:648) further encourage sustained high levels of customer focus and continual improvement practices that enhance knowledge in driving these principles effectively. Thus, the more the organisation is knowledgeable in continual improvement and customer focus, the more the organisation is likely to sustain the drive for customer focus and continual improvement.

Luburić (2015:112) recommends that continual improvement should be a permanent objective of an organisation for overall performance. This could be done through the consistent application of approaches, constant implementation of improvement principle results and permanent improvement of performance as well as providing training on methods and tools for permanent improvement. For all organisation that have adopted a certain mechanism for continual improvement, it becomes a standard or norm. Once it becomes a norm, it leads parties to identify the elements that still require improvement and in which various elements forms part of the improvement such as training and equipping and initiating improvement methods.

Hence, continual improvement is a none-ending process of sustainability and competitiveness. If there is no quality or continual improvement, employee involvement, leadership and process approach the firm will trail behind other competitors (Luburić, 2015:113). Continual improvement addresses the demands and expectation predictions of both users and relevant interested parties, meaning that it can add value in terms of planning and development since the demands and expectations of the customers will be known. It also adds worth to gathering all the resources to satisfy or fulfil the customers' requirements while adopting and applying the recommended continual improvement cycle (PDCA). Luburić (2015:113)

highlights that the Plan, Do, Check and Act (PDCA) cycle for continual improvement has standard steps that need to be followed to have a desired outcome. Furthermore, processes are established for various reasons and amongst those reasons is to have a standard form for executing a single product or service. Figure 2.8 highlights the PDCA processes.

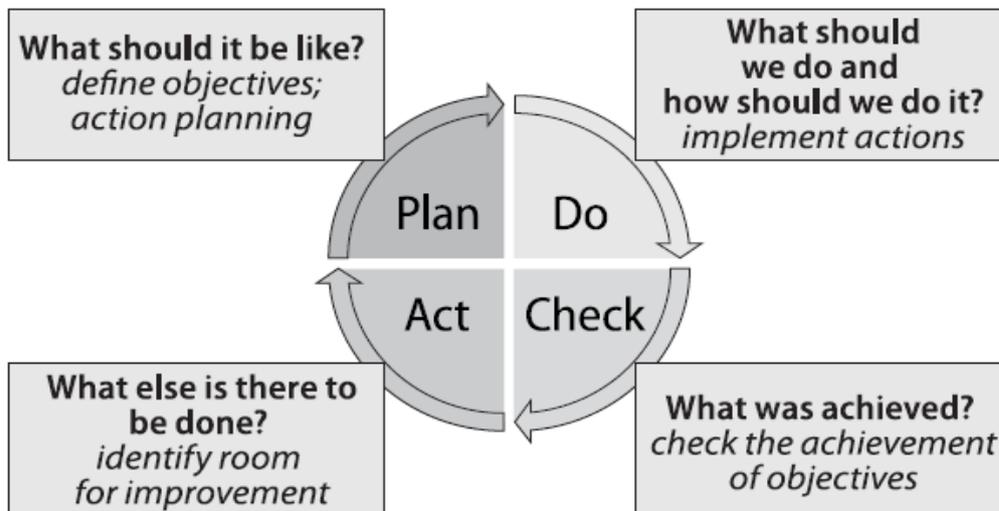


Figure 2.8 PDCA cycle of continual improvement of processes (Luburić, 2015:114)

i. PLAN (P) – What should it be like?

The defining objectives and action planning stage should be the starting point as the success of the entire cycle depends on it. The main reason is because challenges are encountered when objectives are not defined, and planning is not done properly. Any difficulties should be identified early for a complete cycle to function properly. For this, rather than only planned activities, planning should also clearly define operational rules for easy understanding and to predict unexpected activities and problems.

ii. DO (D) – What should we do and how should we do it?

In this stage, the implementation of activities is significant as the set plan is established and designed during this stage. It differs for production and service. In production, it is for production and supply, while, in service it is for recognition of services. In the most recent standard, the execution of services is defined as the implementation of products.

iii. CHECK (C) – What was achieved?

The foundation of this phase is to check the realisation of the pre-defined objectives. All the interventions and contributions (factors affecting problem understanding) are studied for alterations and investigated. Various methods are applied such as statistical methods for understanding and validating preliminary expectations and problems. This stage adds value by studying customers' responses to a new product, service or production conditions.

iv. ACT (A) – What else is there to be done?

Improvement identification is incorporated in the last but very significant stage. If this stage delivers good results, it simply means that implementation was well pre-planned, well-developed and well-studied. Quality or quality improvement results from a complete rotation cycle. Should desired expectations not be satisfactory, it is permissible to repeat the cycle from the beginning using new knowledge and information gained from previous cycles.

Thus, PDCA can be repeated until the results meet the standard requirements. To apply them correctly, appliers should therefore understand the stages of this cycle. However, if incorrectly and results do not meet expectations, it is still possible to repeat the cycle using the experience and knowledge gained in previous application. This is what TE should do for continual improvement in addressing the frequent failures of locomotives as this could give the expected result of product/service quality effectiveness. As it is, the challenges of the unavailability and frequent failures of locomotives, impacted service quality effectiveness and customer satisfaction negatively. As the customer focus and continual improvement principles were used to assess the correlation between the principles, challenges and performance they are addressed in the conceptual framework of this study.

## 2.5 ISO 9001:2008 PRINCIPLES APPLIED IN THIS STUDY

This study adopted and applied the conceptual framework of ISO 9001:2008 as a QMS. ISO (International Organisation for Standardisation) is a universal partnership of National Standards Bodies (ISO member bodies). Furthermore, the work of preparing International Standards is normally carried out through ISO technical

committees, ISO 2008. According to Martins et al. (2015:1035), the main purpose of ISO certification is to improve the quality standard of organisations while eliminating waste, intensifying productivity and efficiency, and improving sustainability. Leopoulos and Chatzistelios (2015:215) posit that with the adoption of QMS, firms expect improvement of the quality of products and services, reduced costs of quality, improved internal functioning of the organisation, and sustainable systems.

This means that the effectiveness of the QMS is determined not only by adoption but also practical activities occurring in the organisation. The development, implementation and maintenance of the Quality Management System (QMS) must satisfy the ISO 9001:2008 standard to achieve continuous improvement and customer satisfaction concurrently. The eight principles of Quality Management Principles, according to Zgodavova and Colesca (2007:32), involve the following:

- QMP 1 – Customer focus
- QMP 2 – Leadership
- QMP 3 – People involvement
- QMP 4 – Process approach
- QMP 5 – System approach to management
- QMP 6 – Continual Improvement
- QMP 7 – Factual approach to decision making
- QMP 8 – Mutually beneficial supplier relationships

Ideally, ISO (2015:3) Quality Management Principles are a set of fundamental beliefs, norms, rules and values that are accepted as true and can be used as a basis for quality management. Out of the eight principles, this study adopted only the two relevant to address the challenges. Customer focus and continual improvement were therefore assessed in relation to TE. Other researchers (Gharakhani et al., 2013; Juneja et al., 2011) have used only the principles that were applicable to their studies. Juneja et al. (2011) investigated customer satisfaction the most important issue in any organisation. One of their findings was that the quality of service in the service sector, was directly dependent on customer focus. In their research, Gharakhani et al. (2013:47) found that continuous process improvements assisted in meeting customers' needs. The next section discusses the benefits and rationale of the two applicable ISO principles.

## 2.5.1 THE BENEFITS AND RATIONALE OF THE TWO APPLICABLE ISO PRINCIPLES

The two principles applied and evaluated in this study are customer focus and continuous improvement. Mehmood, Qadeer and Ahmad (2014:664) define these two principles of QMS as follows:

### 2.5.1.1 PRINCIPLE 1

Customer focus - It is argued that businesses are sustained by customers. Thus, businesses should strive to ensure that customer needs and requirements are met according to the customers' specifications or expectations. This means that the survival an organisation depends on whether the customer is satisfied with the product or service. ISO (2015:4) gives a statement of and the rationale behind customer focus and identifies key benefits and actions to be taken.

#### i. Statement

The primary focus of quality management is achieving customer requirements and striving to surpass customer expectations.

#### ii. Rationale

When the confidence of the customer and other interested stakeholders is attracted and retained, sustained success is achieved. During interaction with customers, more value is realised for the customers. The suppliers need to understand the current and future needs of the customers and other interested stakeholders contributing to the growth and sustained success of the firm.

#### iii. Key benefits

- Intensified customer value
- Intensified customer satisfaction
- Enhanced customer loyalty
- Enhanced repeat business
- Improved reputation of the firm
- Extended customer base

- Increased revenue and market share of the firm

iv. Actions can be taken

- Recognition that direct and indirect customers are those who receive value from the organisation.
- Comprehending customers' current and future needs and expectations.
- Linking customers' needs and expectations with the organisation's objectives.
- Communicating and understanding customer needs and expectations throughout the firm.
- Planning, designing, developing, producing, delivering and supporting goods and services to meet customer needs and expectations.
- Measuring and monitoring customer satisfaction and aligning it with recommended actions.
- Engaging with interested stakeholders' needs and expectations and taking actions on aspects that may affect customer satisfaction.
- Actively managing and maintaining the relationship with customers to attain sustained success.

2.5.1.2 PRINCIPLE 2:

Continual improvement - A business must prioritise continuous improvement to ensure that it enhances its standard operations and processes. Continuous improvement enables businesses to grow and gain a competitive advantage. In other words, continual improvement is vital for the development, growth and sustainability of the firm. ISO (2015:4) provides a statement, rationale, key benefits and actions to be taken for continual improvement.

i. Statement

For organisations to be successful, a continual improvement drive must be adopted

ii. Rationale

Continual improvement is important for any firm to sustain current levels of performance, while also reacting to changes in internal and external conditions and establishing new opportunities.

iii. Key benefits

- Enhanced performance processes, organisational capabilities and customer satisfaction.
- Improved focus on root-cause examination and determination, together with prevention and corrective actions.
- Enhanced ability to mitigate expected internal and external risks and opportunities.
- Improvement to providing consideration for both incremental and breakthrough improvements.
- Enhanced learning for improvement
- Enhanced continuous drive for innovation.

iv. Actions to be taken

- Promoting establishment of improvement objectives and engaging with all employees, at all levels of the firm.
- Providing education and training for interested people at all levels on the application of basic tools and methodologies to attain improvement objectives.
- Ensuring the competence of people to successfully engage in the promotion and completion of continual improvement.
- Developing and organising processes to implement improvement projects throughout the firm.
- Tracking, reviewing and auditing the planning, implementation, completion and results of improvement projects.
- Integrating improvement considerations and adopting new developed goods, services and processes.

- Acknowledging and recognising the realised improvement.

Gharakhani et al. (2013:46) posit that quality improvement has become one of the most important organisational strategies for achieving a competitive advantage. The conceptual framework, highlighting ISO 9001:2008, is discussed next.

## 2.6 CONCEPTUAL FRAMEWORK

As mentioned earlier, the performance measures evaluated in this study are product quality effectiveness and customer satisfaction of Transnet Engineering (TE) Locomotive Maintenance. The QMS (ISO 9001:2008) used at TE to guide and direct the business in delivering a high-quality product or service is aimed at improving and sustaining performance. Performance measures should therefore be in place for the QMP adopted to ensure the improvement and control of inputs and outputs. Because of the frequent failures and unavailability of locomotives, a systematic model was used to assess the relationship between QMS and organisational performance at TE. This model looked at the relationship between challenges, inputs and expected outputs as presented below:

### i. Challenges

The problem identified at TE was the frequent failures and unavailability of locomotives. This affects the business and performance negatively and results in customer dissatisfaction.

### ii. Inputs

ISO 9001:2008 (as a QMS) contains the quality management principles (customer focus and continual improvement) against which TE was assessed. These were proposed as inputs that could improve the quality of services provided to Transnet Freight Rail (TFR). The impact of these two principles on performance were therefore evaluated.

### iii. Outputs

Outputs pertain to how the company performs in delivering its services and satisfying customers. Performance outputs were measured in terms of service quality effectiveness (reduced locomotive failures and shortages) and customer satisfaction.

The hypothesis of the model used in this study was that to improve customer satisfaction, service quality effectiveness needed to be improved. See Figure 2.9 for a diagrammatic presentation (proposed model) of the relationship between these three elements.

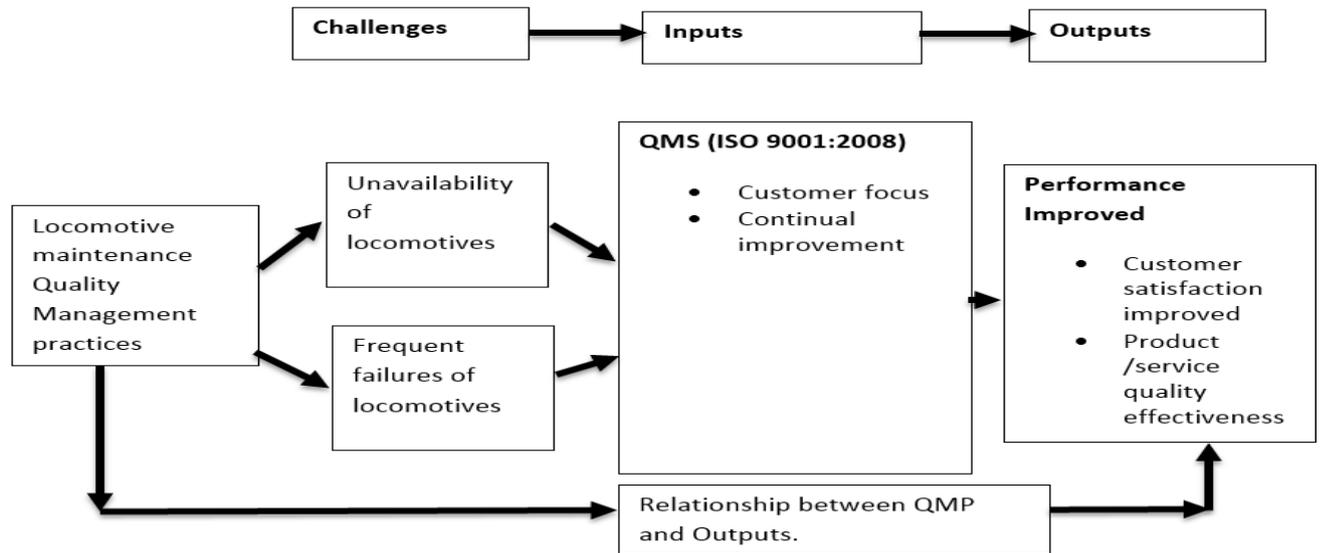


Figure 2.9 Proposed model of performance improvement through the evaluation of ISO 9001:2008

Challenges refer to difficulties that may occur in meeting the objectives, goals, or mission of a certain event or phenomenon. The unavailability and frequent failures of locomotives (unreliability) were the challenges at TE. Gandhare et al. (2014:47) posit that, as crucial modes of transportation, locomotives transporting the public and goods over long distances should have high availability and reliability rates. Powell et al. (2012:2) add that locomotives' effectiveness is determined by elements such as horsepower and tractive effort, designed railroads, maintenance schedules, and communications equipment. Moreover, since at least five locomotives are coupled together to be a train, reliability, availability and maintainability (RAM) analysis has become a root framework for organisations (Kaushin & Singhal, 2016:29). This analysis is applied to problem solving, machinery maintenance and system management and provides high probability market survival led by reductions of machinery repairs related costs, procurement of new machinery or component repeats (Kaushin & Singhal 2016:29).

Organisations can then focus on the processes, materials, tools, and new and emerging ways for productivity increase for the entire system and the entire

organisation. For this reason, analysis is therefore recommended in the pre-production and post-production activities/stages of any industry. Szkoda (2014:423) posits that reliability is a comprehensive characteristic of systems that encompasses availability and maintainability. Reliability is a system's capability to maintain a required task/activity over a given period. Availability is a system's ability to function/operate based on the required specifications under the preferred conditions in a specified time. Maintainability refers to the restorations done on a specific component or item to the original or required standard of operation with the utilisation of recommended methods and resources. Once maintainability is performed on a component of item, high reliability and availability are expected. High availability and reliability are expected after the maintenance as maintainability is all about restoration of the original functionality of a component.

Kaushik and Singhal (2016:29) affirms that reliability, availability and maintainability impact organisations in various ways. Furthermore, since components' life cycles can affect costing in any system, RAM analysis can be used to forecast the performance of the system. This can also be used to identify the maintenance type required, equipment functionality cycle period, overall maintenance design and predictions of system availability. According to Kaushik and Singhal (2016:29), the objectives of RAM analysis are:

- i. Forecasting production efficiency and availability.
- ii. Root cause analysis for production and availability losses.
- iii. Cost analysis for revenue loss recovery due to unavailability.
- iv. Identification of recommended actions for performance improvement and prediction of availability and production expectations.

Significantly, maintenance is the most important tool used to effectively acquire the required availability of equipment that encounters several breakdowns during production (Gandhare et al., 2014:48). In these cases, preventive and corrective maintenance are performed. Preventative maintenance is performed to reduce the probability of failure, while corrective maintenance is performed when failure occurs rectification of the system is necessary (Gandhare et al., 2014:48). Hence, in the proposed model, challenges, inputs and outputs are highlighted, whereby the challenges are the unavailability and failures of locomotives. Inputs the corrective

measures aimed at addressing these challenges. The relationship between challenges and inputs is explained in the succeeding section.

#### 2.6.1 THE RELATIONSHIP BETWEEN CHALLENGES AND INPUTS

According to Holjevac and Hrgović (2012:68) inputs consist of aspects such as labour costs, materials, energy, outsource-related costs, assets, and the knowledge and skills of stakeholders. Furthermore, they represent investment efficiency, i.e. less input to generate more output based on the quality of business decisions, and the quality of managing employees and human resources. Any entity must have inputs to generate desired outputs. However, the quality of outputs depends on the management of the inputs. The effective management of inputs to ensure that outputs meet the expectations and requirements of customers is vital. In addition, staff and assets are the resources of any process and their sustained performance depends on the correct combination (staff and assets) (Holjevac & Hrgović, 2012:67). Thus, there must be suitable resources for effective services and products, the pillars of organisational performance.

In this study, inputs refer to the ISO principles of customer focus and continual improvement. Customer focus refers to understanding customer needs and ensuring that products and services satisfy those needs (Adeleke & Olowokudejo, 2011:289). High quality products and services lead to long term customer satisfaction and customer retention. In other words, organisational success and growth are determined by customers' perception of customer orientation and satisfaction. Lado et al. (2011:204) further assert that, although, customer focus is acknowledged as strategic action to improve customer retention and satisfaction, there is not enough evidence to substantiate this. However, there are some studies that have attempted to determine the relationship between customer focus and organisational performance, among them a study by Cai (2009) titled "The importance of customer focus for organisational performance: a study of Chinese companies". The purpose of the study was to investigate the relationship between organisational customer orientation, customer relationship practices and organisational outcomes. Customer relationship practices are affected by organisational customer orientation, which partially influence production performance and customer satisfaction. Amidst

different performances there is also financial performance which is the result of production performance and customer satisfaction, Cai (2009:376).

Organisations that are customer-oriented or focussed, may reap benefits of growth and development. Thus, satisfying customers' needs is vital to ensuring customer retention. Cai (2009:371) adds that the goal of satisfying customers is important to TQM and can only be achieved when customer needs are addressed by the design and deliverance of products and services that meet their requirements and specifications. Delivering high quality products and services has become increasingly significant due to dynamic global completion over the past two decades.

Continual improvement, according to Govender (2013:262), is a process to enhance and sustain the stability of processes. It is a principle within the field of quality management that ensures the improvement of organisational effectiveness and efficiency. Furthermore, due to market changes occurring rapidly and competition increasing, continual improvement is significant for service innovation (Song et al., 2013:1). It provides opportunities for enhancing the loyalty of existing customers and attracting new customers at lower costs than when establishing a new service. Marani and Mousa (2014:2085) posit that continual improvement should be an objective of the overall performance in an organisation to establish improved flexibility to react quickly on opportunities, strategic planning for all activities, and improved organisational capabilities for performance advantage. Through the application of continual improvement, results may include: consistent approaches to sustain continual improvement; training provided for all employees; establishing manuals for products, processes and systems; goals aligning with measuring and tracking; and lastly, recognising and acknowledging persistent improvements. The relationship between inputs and outputs is explained in the next section.

#### 2.6.2 THE RELATIONSHIP BETWEEN INPUTS AND OUTPUTS

According to Holjevac and Hrgović (2012:68), outputs refer to the realisation of produced product, services rendered, consumer satisfaction, generation of sales revenues and profit, employee satisfaction, the image of the organisation, market share price, employee working conditions and other related benefits that results from the inputs generated. They are the outcomes realised after utilising and applying

inputs, employees and other related resources. Therefore, the output relevant to this study was improved performance measured against customer satisfaction and product/service quality effectiveness.

Raie, Khadivi and Khdaie (2014:119) postulate that customer commitment and customer retention are impacted positively by customer satisfaction, while customer retention is influenced positively by customer commitment. However, Jana (2014:47) argues that many studies are limited to customer satisfaction and service quality, with the following basic dimension in the service industry: service quality, product quality, price and location.

As stated previously, there is a relationship between customer satisfaction and the quality of the service or product where quality refers to fewer failures of the component or systems, error free, doing it right for the first time. Jana (2014:48) adds that quality is vital, and that customers want that first and foremost from their suppliers. Therefore, the study by Evanschitzky et al. (2012), "The role of the sales employee in securing customer satisfaction" examined customer satisfaction and principles and was relevant to this study as it aimed to determine the relationship between salespeople's attitudes, skills, characteristics, and customer satisfaction that remains an interesting area (Evanschitzky et al. 2012:489). After all, when customers are satisfied with the quality of a product or service, this mean growth for the organisation. And, successful organisational performance derives from customer satisfaction and continuous improvement for customer satisfaction.

In keeping with output-product/service quality effectiveness, Kafetzopoulos et al. (2015:393) explain that it is directly influenced by standards' effectiveness and it contributes to the firm's performance indirectly through the moderator of operational performance. The purpose of research by Glaveli et al. (2006) "Bank service quality: evidence from five Balkan countries" was to investigate variations in-service quality perceptions and quality dimension rankings between bank customers of five Balkan countries, namely Greece, Bulgaria, Albania, FYROM and Serbia. The study revealed that customers from Greece perceived and experienced the highest level of service quality. Various factors, such as improving the effectiveness of quality services and regulating all the activities of the system played a pivotal (Glaveli et al., 2006:384). In addition, services were made more accessible to consumers, speed of

delivery improved, regulations based on international standards adopted and supervision intensified. All these aspects became the focus to improve service (Glaveli et al., 2006:385).

The researcher believes that for an establishment to improve the effectiveness and quality of service, the focus must be based on what customers perceive as needed to satisfy their needs, requirements and specifications. In concurrence, Adeleke and Olowokudejo (2011:288) state that it is important for organisations that want to succeed to adapt to the rapid changing business environment and customer needs. Kafetzopoulos et al. (2015:393) highlight that a well-developed system or standard on product/service quality and operational performance is what differentiates one firm from another or the competition.

## 2.7 CHAPTER SUMMARY

To summarise, Quality Management Practices consist of Quality Management Approaches and Quality Management Systems that are employed by an organisation to meet quality standards as per its customers' requirements. Organisations need to be competitive in this demanding and globalised economy, therefore quality management should be adopted and applied effectively. They can benefit significantly, internally and externally, by adopting quality standard (ISO 9001:2008). If adopted and applied effectively, it is not only a marketing and promotional tool.

The developed conceptual framework showed the challenges, inputs and outputs at TE. Challenges were the unavailability and unreliability of locomotives. Inputs were to focus more on the customer focus and improve continually. Outputs pertained to customer satisfaction and product/service quality effectiveness.

Continual improvement requires sustainable and consistent approaches, training employees, establishing manuals for products, processes and systems, that goals align with measuring and tracking, and lastly to recognise and acknowledge persistent improvements (Marani and Mousa, 2014:2085). When customers are satisfied with the quality of a product or service, this means growth for the organisation. Furthermore, it is distinct that for an establishment to improve the

effectiveness of service quality, the emphasis should be on what customers perceive as what will satisfy their needs, requirements and specifications.

In the succeeding chapter, the research methodology of this study, including research design, research philosophy, sampling and population, data collection and analysis, reliability and validity, and ethical considerations are discussed.

# CHAPTER 3: RESEARCH METHODOLOGY

## 3.1 INTRODUCTION

The previous chapter reviewed the literature on Quality Management Practices and ISO 9001:2008 as a Quality Management System with a specific reference to the Railway Industry. In addition, the conceptual framework was discussed, highlighting the relationship between the challenges, inputs and outputs at Transnet Engineering.

This chapter presents the research methodology followed in this study. It outlines the research design, target population, sampling procedure, data collection and data analysis. Before proceeding to the methodology applied, the problem statement and research questions are revisited.

### 3.1.1 PROBLEM STATEMENT

Transnet Freight Rail (TFR) largely contributes to the performance of Transnet as a whole by transporting goods. It is rendered a service by TE (Transnet Engineering Locomotive Maintenance Depot) which provides and services the locomotives used by TFR. As a service provider, TE should meet TFR's satisfaction. However, informal observations by the researcher showed that TFR was dissatisfied with the service delivered by TE. This apparent poor-quality service is demonstrated by the frequent failures and shortages of locomotives which rolls over to TFR not being able to deliver and transport goods for external customers. The challenges of TE's failures which in turn negatively impacts on the performance of TFR constitute the problem investigated in this study.

### 3.1.2 RESEARCH QUESTIONS

#### 3.1.2.1 MAIN RESEARCH QUESTION

To what extent does Transnet Engineering Bloemfontein Locomotive Maintenance practice quality management from an ISO 9001:2008 perspective?

#### 3.1.2.2 SUBSIDIARY RESEARCH QUESTIONS

- (i) What Quality Management Practices are there Transnet Engineering Bloemfontein Locomotive Maintenance?

- (ii) Which factors inhibit Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance?
- (iii) To what extent is Transnet Engineering Bloemfontein Locomotive Maintenance aware of and does it practice quality management from an ISO 9001:2008 perspective?
- (iv) What are the quality management outcomes at Transnet Engineering Bloemfontein Locomotive Maintenance from an ISO 9001:2008 perspective?
- (v) To what extent can Transnet Engineering Bloemfontein Locomotive Maintenance adopt ISO 9001:2008 effectively?

## 3.2 METHODOLOGY

According to Whitehead (2008:107), methodology is a collection of methods used to show an understanding of the principles that organise the “how” of an inquiry. Research methodology is also a way of systematically solving various problems about how study will be carried out (Rajasekar et al., 2013:5). It involves processes that the research undergoes to describe, explain and predict the studied phenomenon so that new knowledge can be gained and discovered. The researcher sees it as the preferred way of planning the study, carrying it out and attaining results that contribute to new knowledge.

In this study, methodology refers to the philosophy and design applied in data collection, data analysis and ethical considerations regarding the research participants. Rajasekar et al. (2013:5) highlights that a researcher should understand different methods to decide on and employ the most feasible one for his/her study. Well-structured research includes questions and procedures, collected data from relevant participants as well as an analysis and interpretation of the collected data (Creswell, 2014:32). The following section outlines the methodology and preferred research philosophy, research design, population, sampling, data collection, data analysis, reliability and validity, and ethical considerations of this study.

### 3.2.1 RESEARCH PHILOSOPHY/PARADIGM

According to Roth and Mehta (2008:133), research philosophy can either adhere to interpretivism, positivism or rationalism. Positivism involves discovering knowledge through observations and experiments whereas interpretivism wants to understand

how people interpret phenomena or events. Zachariadis, Scott and Barret (2010:4) claim that critical rationalism highlights the relationships between local practices and changes that occur at other levels of analysis. This study was informed by the interpretivist philosophy which allowed the researcher to only do self-validation analysis by looking at consistency and coherence through description (Roth and Mehta 2008:136). Interpretivist approach adopted for the study was to enable the researcher to gain greater insight into quality management practices as perceived by the actors, in this case the employees at TE. The respondents are afforded the opportunity to express their own views on issues raised rather than simply “selecting an option” imposed by the positivist methodology.

Goldkuhl (2012:5) adds that the main objective of interpretivist philosophy is to work with subjective means that already exist in the social world. Moreover, interpretivist philosophy is often associated with qualitative study, but alternatives do exist. The main objective is to evaluate an existing phenomenon and how employees of the chosen organisation interpret it. Thus, the qualitative approach is applicable in this study since it studies the perceptions and interpretations of employees about an existing phenomenon. The following section discusses the research design adopted by this study.

### 3.2.2 RESEARCH DESIGN

Kothari (2011:2) highlights that research design is defined as a procedure that researchers follow to collect and analyse data relevant to a study. Goldkuhl (2012:1) adds that qualitative research is often associated with interpretivism, although there are alternatives such as pragmatism. Similarly, Creswell (2014:32) defines qualitative research as a method for examining and understanding the characteristics of individuals or groups assigned to social problems. Since this study was guided by the interpretivist philosophy, the approach was qualitative with a case study to emphasise the discovery and interpretation of more knowledge relating to a certain phenomenon that could benefit respondents (Tewksbury, 2009:39).

Qualitative research is employed to further explore the newly discovered information about the related studied phenomenon. Ritchie et al. (2013:3) highlight that the key features of a qualitative study can be identified by ‘what’, ‘why’ and ‘how’ questions

rather than 'how many'. In Marshall's (1996:522) opinion, qualitative research aims to simplify complicated psychosocial issues by answering 'why' and 'how' questions. A qualitative approach thus has various data-generating methods such as observational methods, in-depth interviews, focus groups and semi-structured interviews. These may vary depending on the researcher and the aim of the study.

This study was primarily undertaken and designed to determine from employees at TE Bloemfontein Locomotive Maintenance Depot if QMPs were properly implemented. This was done through interviews. At the start of this research, managers were contacted to obtain permission to conduct the study with the selected candidates. Ten of the fifty employees at TE were selected through judgemental sampling based on the purpose of the study, and the researcher also obtained their consent to participate in the study and they were subsequently interviewed face-to-face at a convenient time in the workplace. According to Kumar (2011:339), judgemental sampling primarily considers who can provide information that is most relevant for achieving the objectives of a study. The next section discusses the population of the study.

### 3.2.3 POPULATION

Population is defined as all the individuals or entities of interest (Hanlon & Larget, 2011:7). The target population for this study was 50 employees of Transnet Engineering Locomotive Maintenance Depot in Bloemfontein. These employees included one Production Manager, one Logistics Manager, one Warehouse Supervisor, three Technical Supervisors, one Quality Assurer, two Engineering Technicians, two Production Planners, one Finance Officer, one Safety Officer, one Admin Clerk, one Stock Controller, one Pick and Packer, seven Master Diesel Electrical Fitters, nine Diesel Electrical Fitters and 18 Technical Workers. The target population for this study was provided by the Human Resource Department of the business. The sample and sampling procedure for the study are discussed below.

### 3.2.4 SAMPLE AND SAMPLING PROCEDURE

Since the study only involved some employees of Transnet Engineering Locomotive Maintenance Depot, this study adopted judgemental sampling. Judgemental sampling is non-probability sampling also known as purposive sampling. Oppong

(2013:203) asserts that there are three different types of sampling methods that are employed when conducting a qualitative study. According to Oppong, these are convenience, judgemental and theoretical sampling. With convenience sampling the researcher focusses on the most reachable subjects. However, there is a risk of collecting unreliable data of poor quality which may lead to outcomes of lesser quality. Judgemental sampling, on the other hand, is an approach in which certain, specific subjects are selected by the researcher to participate on the study (Jokovich, 2013:892). This sampling, also known as purposeful sample, is the most familiar sampling where the researcher aims to select the most efficient sample for the research questions to participate (Oppong, 2013:203). Kumar (2011:339) affirms that in judgemental sampling, the researcher must select only the participants that are likely to have the required information in relation to the studied phenomenon. In line with this at least nine employees were selected from the larger population to participate in this study. The employees that were selected include diesel electric fitters, engineering technicians, production manager, technical supervisors and master diesel electric fitters and these employees are likely to be familiar with and have expertise in Quality Management Practices. In the succeeding section, how data was collected, and the tool used to collect the data are discussed.

### 3.2.5 DATA COLLECTION

Wakeman and Henderson (2012:16) highlight that data collection should be objective and systematic. Data in this study was collected using in-depth structured interviews as primary source. In qualitative interviews, the researcher focusses on face-to-face interviews, telephone interviews and focus groups (Creswell, 2014:239). The questions in these interviews are often unstructured and open-ended. This study adopted and applied structured interviewing with open-ended questions to allow the researcher to discover in-depth information.

According to Kumar (2011: 138), structured interviews permit a researcher to ask a pre-arranged set of questions using the same wording and sequence for all participants. With open-ended questions, respondents express themselves freely, and in-depth information is provided. Hence, in this study, open-ended questions, derived from the objectives of the study, were used to interview the selected employees from Transnet Engineering. In other words, the open-ended questions

derived from the objectives of the study and aligned with the theoretical perspective of the studied phenomenon. The process of collecting data was pre-arranged with the supervisors and managers of the participants, and data was collected by the researcher within a period of a week. Feasible interview times and venue was provided to the participants before the interview process could start.

The reliability, validity and generalizability of the instrument used to collect data were observed to ensure the credibility of the study. According to Campion, Palmer and Campion (1998:77), reliability is concerned with the consistency and standardisation of the information extracted from the participants, whereas validity is concerned with the correctness of the measurements. Furthermore, some components of a study influence the reliability and the validity of the data-collection instrument (a structured interview in this study), such as asking the same questions to all participants, applying better types of questions, rating all the answers, and basing questions on job analysis. The researcher developed a data collection instrument which was evaluated by experts before being administered to participants. Moreover, according to Leung (2015:326) a pragmatic approach to assessing generalizability for qualitative studies is to adopt the same criteria for validity. However, some researchers adopt the approach of, generalization, where one judges the extent to which the findings in one study can be generalized to another under similar theoretical, and the proximal similarity model, where generalizability of one study to another is judged by similarities between the time, place, people and other social contexts. In this study, generalizability was applied using theoretical models. The data collection instrument that was used in this study to collect data from the most relevant and selected employees at TE is highlighted in Annexure A. The method for data analysis adopted and applied in this study is discussed in the succeeding section.

### 3.2.6 DATA ANALYSIS

As stated earlier, this study was guided by the qualitative approach. According to O'Connor and Gibson (2014:64) qualitative data analysis uses data to generate answers. Similarly, Lacey and Luff (2009:6) state that the summary and description of data collected comprises words generated by interviews and observations. There

are generally two approaches to qualitative data analysis, namely grounded theory and framework analysis. This study applied framework analysis, which, according to Lacey and Luff (2009:13), provides systematic and visible stages to process analyses and can be used concurrently when collecting and analysing data.

Srivastava and Thomson (2009:75) assert that framework analysis is more flexible during the analysis process as it permits the researcher to either first collect all the required data and then analyse it; or doing both simultaneously. Framework analysis enables the researcher to familiarise himself with data, and to index, chart and interpret said data. Srivastava and Thomson (2009:75) explain framework analysis as follows:

- i. Firstly: in the familiarisation process, the researcher is absorbed in the data collected and key ideas, and frequent themes are identified.
- ii. Secondly: in the thematic framework stage, the researcher utilises key notes gathered during the familiarisation stage to dictate the themes and issues.
- iii. Thirdly: in the indexing stage there are normally parts or sections of data that correspond to a specific theme. Charting as a fourth stage, is when the portions of data indexed from the previous stage are pre-arranged in charts or themes.
- iv. Lastly, the mapping and interpreting stage is when focus is on the charts and analysis focusses on the important characteristics. In addition, a schematic diagram of the event should be revealed which will direct the researcher during the interpretation of data. During the data collection through to data analysis, it is vital as well to be guided by the ethical considerations as highlighted and discussed in the following section.

### 3.3 ETHICAL CONSIDERATIONS

Fouka and Mantzorou (2011:4) posit that ethics is the branch of philosophy that deals with the dynamics of decision-making concerning what is right and wrong. Additionally, Rich (2011:20) asserts that researchers must be knowledgeable in their research. Moreover, researchers should be able to reason when making decisions, and consider the consequences of sharing their research outcomes. For this study,

firstly, the ethical clearance form was completed to seek clearance from the CUT. Secondly, ethical considerations are prioritised as follows:

- i. Coercion: all participants willingly volunteered to participate in this study.
- ii. Privacy and anonymity: all information provided by the participants was kept private to ensure that they could not be identified by readers.
- iii. Informed consent: from the beginning of the research, all the participants were well informed about the aim and objectives of the study.
- iv. Confidentiality: all the information generated from the participants was treated with confidentiality so that participants were comfortable enough to engage in the study.

## CHAPTER 4: RESULTS AND FINDINGS

### 4.1 INTRODUCTION

In this chapter the results of the data analysis are presented. The data was collected using structured interviews with open-ended questions. The interview was divided in two sections. The first section elicited demographic information regarding gender, age, education level, occupation and marital status. The second section contained a few specific open-ended questions to get the desired information from the participants. The questions were broad terms and participants could give detailed answers.

The chapter also looked at the structure of the research questions and objectives, and the alignment of the conceptual framework with the data collected. Revisiting the problem, the objectives, the research questions and conceptual framework helped determine whether the data collected corresponds with the literature review and the aim of the study. The succeeding section presents the data analysis and findings from data collected using the instrument participants were asked to complete (Please see appendix B).

### 4.2 PRESENTATION OF RESEARCH FINDINGS

The presentation of the research findings starts with an outline of the design followed. Thereafter, findings are presented based on the data collected and then analysed for results and findings. As stated in the previous chapters, has been in-depth face-to-face interviews were conducted with the relevant participants and data organised for data analysis. The data analysis consisted of the stages for framework analysis which are familiarisation with data, identification of thematic framework, indexing, charting and interpretation of data. In the succeeding section, the research questions are restated.

### 4.3 RESEARCH QUESTIONS

#### 4.3.1 MAIN RESEARCH QUESTION

To what extent does Transnet Engineering Bloemfontein Locomotive Maintenance practice quality management from an ISO 9001:2008 perspective?

#### 4.3.2 SUBSIDIARY RESEARCH QUESTIONS

- What Quality Management Practices are there Transnet Engineering Bloemfontein Locomotive Maintenance?
- Which factors inhibit Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance?
- To what extent is Transnet Engineering Bloemfontein Locomotive Maintenance aware of and does it practise quality management from an ISO 9001:2008 perspective?
- What are the quality management outcomes at Transnet Engineering Bloemfontein Locomotive Maintenance from an ISO 9001:2008 perspective?
- To what extent can Transnet Engineering Bloemfontein Locomotive Maintenance adopt ISO 9001:2008 effectively?

Importantly, the afore-mentioned research questions required the relevant participants to have the feasible answers in relation to the research questions and purpose. Therefore, the demographic analysis, as part of the qualitative analysis, is discussed in the following section to have an overview of all the relevant candidates who participated in the data collection process.

### 4.4 QUALITATIVE ANALYSIS

To achieve the observed objectives of the study, the results were analysed and presented as they appeared in the different sections of the qualitative interviewing. Results were not presented statistically since qualitative data analysis is non-statistical but methodological and guided by primary data. In general, qualitative research generates substantial, detailed and valid process data that contributes to in-depth understanding of the context.

#### 4.4.1 DEMOGRAPHIC INFORMATION OF PARTICIPANTS

This section provides a demographic overview of participants. The demographic information gathered was about gender, age, marital status, ethnic group, position, years of experience and qualification level. Although this information was not part of the purpose of the study, it was described the demographic variables of the sample. In terms of gender, all nine (9) participants in the study were male and none female.

Five were married and four single (unmarried). Four were aged 42-50 years while five were between 30-35 years old. Thus, participants were all mature. Regarding education, they were all highly qualified professionals.

As shown in the Table 7, the participants held Trade Test qualifications, given when promoted from semi-skilled and skilled grade levels I, II, III (artisans), and two held BTech degrees. The results show that most of the employees have work experience of more than 5 years. A conclusion drawn was the more experienced the employee, the greater the commitment to apply Quality Management Practices. This is in line with a study by Konya et al., 2016 which showed that age, education, occupation and years of work experience influence commitment. Similarly, the demographic data showed participants having between 2-21 years of work experience in their respective positions. Only two participants had less than five years' experience. In addition, these results support the study by Salgado et al. (2016) in which employees with more years of service, higher education and the older ones demonstrated higher levels of commitment to the values of the organisation.

Table 4.1 Demographical profile of participants

Participant	Position	Gender	Age	Marital status	Ethnicity	Experience	Qualification Level
1	Profit centre manager	Male	47	Married	Black	16 years	Trade Test
2	Technical supervisor	Male	50	Married	Black	21 years	Trade Test
3	Quality Assurer	Male	34	Married	Black	8 years	BTech: Electrical Engineering
4	Engineering Technician	Male	35	Single	Black	8 years	BTech: Mechanical Engineering
5	Master Diesel Electrical fitter	Male	42	Married	Black	9 years	Trade Test
6	Master Diesel Electrical fitter	Male	35	Married	Black	7 years	Trade Test
7	Diesel Electrical fitter	Male	30	Single	Black	4 years	Trade Test
8	Diesel Electrical fitter	Male	31	Single	Black	2 years	Trade Test
9	Master Diesel Electrical fitter	Male	42	Single	Black	17 years	Trade Test

It is believed that experience comes with years of service whereas age and education enable employees to better understand and adopt the values of the organisation and complement those with their own values and goals. All nine (9) participants were black since black African employees were dominant.

#### 4.4.2 FRAMEWORK ANALYSIS

This section shows how the data was analysed using the framework analysis for a qualitative study. Smith and Firth (2011:3) posit that a common feature of qualitative method is the use of the analytical method to generate themes from the collected data. It is therefore important that the researcher explain the design process of framework analysis depicted in Figure 4.1 which presents all the stages of analysis.



Figure 4.1 Data analysis design process

In the next section, familiarisation, which is the first step of the process is discussed. This is followed by identifying thematic framework, indexing of data, charting of data and interpretation.

#### 4.4.3 FAMILIARISATION

According to Srivastava and Thomson (2009:75), familiarisation is a process in which the researcher completely immerses him/herself in the data collected, listening to audiotapes, and thoroughly studying or reading transcripts. This process enables the researcher to identify the key ideas, recurring themes, noting them down (Srivastava & Thomson, 2009:75). Recurring ideas and themes are extracted from the data and the researcher attempts to analyse and understand them to draw conclusions and make recommendations.

In this, familiarisation started with the consideration of the structure, content of data collection and ensuring consistency during the interviews. Data was sorted and reduced to make it more manageable to label and synthesise. The synthesised data

was then placed in dimensions and the range and diversity of each phenomenon mapped by reviewing with attention to the stated objectives of the research. The data collected is presented in Table 4.2 contains the response from each participant per question. The columns represent the participants involved during data collection and the rows highlight the questions and responses from each participant

**Table 4.2 Familiarisation and data collected**

<b>Interview questions</b>	<b>Participant 1</b>	<b>Participant 2</b>	<b>Participant 3</b>	<b>Participant 4</b>	<b>Participant 5</b>
<b>1. To what extent are employees of Transnet Engineering aware of and understand ISO 9001?</b>	Management ensures that there is awareness in terms of quality practices.	Have to be achieved through the employment of quality audits and certain standards.	Correct standard operating procedures are followed during the maintenance of the locomotives.	Revised policies of quality are provided to the direct and indirect employees.	Attendance of related training that is organised by the company.
<b>2. What is your understanding of continuous improvement as prescribed by ISO 9001?</b>	Continual improvement influences service quality effectiveness as in the process locomotives' failures will be reduced.	Continual improvement positively influences service quality effectiveness as reliability of locomotives is improved.	The quality of the locomotives is improved as the basic utilisation of locomotives is continuous.	Reaching the quality requirements has an influence on the quality service effectiveness.	Technology employed such as modification on the locomotives influenced positively by continual improvement.
<b>3. Have you been informed of the meaning of product/service quality effectiveness as contained in ISO 9001? Say this in your own words.</b>	No, but product/service quality effectiveness is influenced by continual improvement.	Yes, continual improvement positively influences service quality effectiveness. Reliability of locomotives has improved.	No, but product/service quality effectiveness and quality of the locomotives are improved as the basic utilisation of locomotives is continuous.	No, but reaching the quality requirements has an influence on the quality service effectiveness.	Yes, product/service quality effectiveness is achieved through meeting the quality requirements and specifications of the product or services.
<b>4. In your opinion, which factors do you think could affect Quality Management Practices at Transnet Engineering?</b>	Neglecting minor faults of locomotives.	Poor workmanship, attitude, unskilled workers/ employees and incorrect use of recommended equipment and tools.	Attitude of the employees, the quality of the resources employed and skills levels of the employees.	Lack of necessary skills, knowledge and attitudes of employees.	Failure to adhere to correct procedures of work execution which lead to performance of poor quality.
<b>5. In your opinion, has the implementation of ISO 9001 made any positive impact on quality outcomes at Transnet Engineering? Express your views.</b>	Yes, improvement of locomotives' availability and reduction of failure rate is experienced.	Yes, improvement of the Quality Management System is encountered.	Yes, quality improvement is experienced, and customer satisfaction is reached.	Yes, the quality of locomotives in terms of reliability and availability has an improved.	Yes, as the business ensures quality work execution and the use of high quality resources, i.e. components.
<b>6. Are you conversant with the terms customer focus and customer satisfaction as contained in ISO 9001? What do you think customer focus is all about?</b>	Customer focus can include meeting customer requirements, needs and targets that result in customer satisfaction.	Customer focus is how a good service is rendered to customers to result in customer satisfaction.	The needs of the customers are vital and must be addressed together with the improvement of quality which leads to customer satisfaction.	Customer focus is based on reaching customer requirements and customer satisfaction.	Improvement on the reliability of locomotives serves as a customer focus element and result as customer satisfaction.

<b>Interview questions</b>	<b>Participant 1</b>	<b>Participant 2</b>	<b>Participant 3</b>	<b>Participant 4</b>	<b>Participant 5</b>
<b>7. How would you explain customer satisfaction?</b>	Meeting customer requirements, needs and targets result in customer satisfaction.	Customer satisfaction is a result of services; how good service is rendered to the customer.	Customer satisfaction results from meeting the customers' needs by improving quality.	Customer satisfaction results from meeting customer requirements.	An improved reliability of locomotives serves as a customer focus element that results in customer satisfaction.
<b>8. Would you say Transnet Engineering provides quality services to its internal clients? Give reasons for your answer.</b>	No, the availability of locomotives is affected negatively by frequent failure of locomotives.	No, there is an increase in the frequent failures of locomotives.	No, locomotives tend to fail continuously.	No, there is an increase in the locomotives' failures, resulting in early returns.	No, during the hauling of the load, frequent failures of locomotives are encountered.
<b>9. Do locomotives serviced by Transnet Engineering experience frequent breakdowns? In your experience, do locomotives they last long?</b>	Yes, because an increase in the unavailability of locomotives results from frequent failures of locomotives.	Yes, based on failure analysis there is an increase in the frequency of locomotives failing.	Yes, the undersupplying of locomotives is a result of frequent failures and does not represent customer focus.	Yes, locomotives continuously fail during the delivery of goods and this negatively affects the availability of functional locomotives.	No, work is executed as per standard operating procedures and can serve as a continual improvement to reduce frequent failures of locomotives.
<b>10. What efforts have been made at Transnet Engineering to continuously improve quality services to its clients?</b>	Failure analysis of frequent failures of locomotives acts as action of continual improvement.	Adoption of new technology reduces the frequent failure of locomotives and serves as continual improvement.	Knowledge sharing and improved communication relating to locomotives' failures can serve as continual improvement.	Executing work as per standard operating procedures can serve as continual improvement and can also reduce frequent failures of locomotives.	Failure analysis of frequent failures of locomotives acts as action of continual improvement.
<b>11. Has Transnet Management exposed you to training on the various aspects of ISO 9001? If yes, to what extent have you adopted the principles of ISO 9001 in improving quality in your work?</b>	No.	Yes, through the employment of quality audits and certain standards.	No.	No.	Yes. Attendance of related training that is organised by the company.
<b>12. How would you describe the overall impact of ISO 9001 adoption and implementation at Transnet Engineering Locomotive Maintenance, considering the services rendered to internal clients at Transnet?</b>	To meet certain standards of quality during the maintenance of locomotives.	ISO 9001:2008 is an international standard that ensures compliance with Quality Management Practices.	Work execution is expected to meet the highest level of quality and must be achieved first time.	Ensuring that high quality standards are achieved during the execution of maintenance and to maintain the business as a world-class organisation.	ISO is all about safety precautions that must be adhered to during the execution of locomotive maintenance.

<b>Interview questions</b>	<b>Participant 6</b>	<b>Participant 7</b>	<b>Participant 8</b>	<b>Participant 9</b>
<b>1. To what extent are employees of Transnet Engineering Locomotive Maintenance aware of and understand ISO 9001?</b>	Quality issues are addressed and discussed daily.	Auditing takes place within the organisation and courses in relation to quality are attended.	Adoption is effective, but sustainability and practice are problems.	The sustainability of a quality practices is a challenge although employees are aware of the standard.
<b>2. What is your understanding of continuous improvement as prescribed by ISO 9001?</b>	Continual improvement positively impacts the service quality effectiveness if customer needs are met and customer service is improved.	There is a positive relationship between continual improvement and service quality effectiveness depending on the attitude or mindsets of employees.	Changing and improving the specifications of SOPs to improve and reduce rework locomotives' failures.	Utilisation of quality checked components to ensure and improve locomotive reliability.
<b>3. Have you been informed what is meant by product/service quality effectiveness as contained in ISO 9001? Say this in your own words.</b>	Yes, product/service quality effectiveness results from continual improvement.	No, but product/service quality effectiveness depends on the attitude or mindsets of employees influences.	No, but product/service quality effectiveness relies on using the SOPs to improve and reduces rework and locomotives failures.	No, but product/service quality effectiveness results from the attitude of employees towards the execution of maintenance activities.
<b>4. In your opinion, which factors could affect Quality Management Practices at Transnet Engineering?</b>	Pressure on employees, training and development, using old components on locomotives.	Mindsets of employees, reluctance to change and attitudes towards working environment.	Human behaviour, adaptability to the standard, attitude and adaptability to technology.	Knowledgeable employees and inexperienced employees.
<b>5. In your opinion, has the implementation of ISO 9001 made any positive impact on quality outcomes at Transnet Engineering? Express your views.</b>	Employees remain motivated in ensuring that the quality standard of locomotives is improved.	Have improved quality audit findings.	Employees continue to adhere to safety incorporated in the quality of the adopted standard while improving the reliability and availability of locomotives.	Employees continue to have improved quality of locomotives and improve the reliability of locomotives.
<b>6. Are you conversant with the terms customer focus and customer satisfaction as contained in ISO 9001? What do you think customer focus is all about?</b>	The service rendered to customers must surpass their requirements and satisfaction.	Delivering on time with a high level of quality as per ISO standard and surpassing the customer satisfaction.	Customer focus aligns with meeting customer requirements, needs which result in customer satisfaction.	Surpassing the customers' requirements and needs may lead to improving customer satisfaction.

<b>Interview questions</b>	<b>Participant 6</b>	<b>Participant 7</b>	<b>Participant 8</b>	<b>Participant 9</b>
<b>7. How would you explain customer satisfaction?</b>	Surpassing customer requirements through service rendered is regarded as customer focus which leads to customer satisfaction.	Customer satisfaction refers to delivering services on time at the highest level of quality as per ISO standard.	Customer satisfaction results from meeting customers' requirements and needs.	Customer satisfaction is improved by surpassing their requirements and needs.
<b>8. Would you say Transnet Engineering provides quality services to its internal clients? Give reasons for your answer.</b>	Yes, but final products (locomotive maintained) can continuously fail due to manhandling, so customers must be engaged as well for continual improvement.	Yes, improving the maintenance system and getting the high quality of the required resources to reduce the frequent failures.	Yes, the frequent failures of locomotives are analysed, and possible solutions implemented to reduce these failures.	Yes, there is a focus on the possible cause of the frequent failures while working on the failures as continual improvement.
<b>9. Do locomotives serviced by Transnet Engineering experience frequent breakdowns? In your experience, do they last long?</b>	No, maintained locomotives continuously operate and deliver goods on time.	Yes, it is experienced and demonstrated by frequent failures.	Yes, there is an increase in the undersupplying of locomotives, influenced by frequent failures of locomotives.	Yes, frequent failures of locomotives negatively affect the unavailability of locomotives.
<b>10. What efforts have been made at Transnet Engineering to continuously improve quality services to clients?</b>	Motivation to employees to ensure that the quality standard of locomotives is improved.	Improved quality audit findings. However, it is being used as a marketing tool as there is failure in sustainability.	To ensure that employees adhere to safety incorporated in the quality of the adopted standard while improving the reliability and availability of locomotives.	Improvement of the quality of the locomotives and improving the reliability of locomotives.
<b>11. Has Transnet Management exposed you to training on the various aspects of ISO 9001? If yes, to what extent have you adopted the principles of ISO 9001 in improving quality in your work?</b>	No.	No.	No.	No.
<b>12. How would you describe the overall impact of ISO 9001 adoption and implementation at Transnet Engineering Locomotive Maintenance considering the services rendered to internal clients at Transnet?</b>	Quality policy that guides the employees on improving quality and ensuring that the quality expectations of customers are met.	Guidance or policy that directs in terms of work execution to meet the recommended quality standards.	Improving the efficiency of quality and reducing all possible waste such as rework.	To become reliable and get locomotives to our customers.

#### 4.4.4 IDENTIFY THEMATIC FRAMEWORK

Nsun (2016:4) highlights that the thematic framework is the second phase of framework analysis and in this phase, data is organised systematically to enable the order of identifying important themes, concepts and categories or sub-categories. In this study the thematic framework was obtained by reading and re-reading the data while making notes and jotting down early impressions. Then data was examined and organised in a meaningful and systematic form, coding to reduce loads of data into smaller chunks of meaning. The codes and some of them clearly fitted together into a theme of saying some specific things about the research questions. Lastly, the researcher reviewed the themes and modified them to make sense and add meaning to the themes (define them) and produced the results.

Table 4.3 The Thematic framework

<b>1. Current practices</b>	<b>2. Challenges</b>	<b>3. Interventions</b>	<b>4. Expectations and outcomes</b>	<b>5. Relationships</b>
1.1 Undersupplying of locomotives (unavailability of locomotives) 1.2 Unreliability of locomotives	2.1 Attitude 2.2 Skills 2.3 Poor workmanship 2.4 Sustainability	3.1 Training and awareness 3.2 Revision of quality policies 3.3 Adherence to quality audits	4.1 Quality standard compliance 4.2 Product/ service quality improvement or effectiveness	5.1 Frequent failures and continual improvements 5.2 Continual improvements and service quality effectiveness 5.3 Unavailability of locomotives and customer focus 5.4 Customer focus and customer satisfaction

#### 4.4.5 DISCUSSION OF THE THEMATIC FRAMEWORK

As indicated in the above thematic framework, five main themes and sub-categories were identified during the familiarisation process. These themes included the following: current practices, challenges, interventions, expectations and outcomes, and relationships. Current practices had two sub-categories, namely unavailability of locomotives and unreliability of locomotives. Challenges entailed attitude, skills, poor workmanship and sustainability. Intervention pertained to training and awareness, revision of quality policies, and quality audit adherence. Expectations and outcomes involved quality standard compliance and product/service quality improvement or

effectiveness. Relationships looked at combinations such as frequent failures and continual improvements; continual improvement and service quality effectiveness; unavailability of locomotives and customer focus; and customer focus and customer satisfaction. Indexing is the succeeding phase of the thematic framework indexing and is outlined in the following section.

#### 4.4.6 Indexing

In the researcher's opinion, data indexing involves grouping the identified relevant themes with the corresponding categories while highlighting the relationship amongst these elements. According to Nsun (2016:5), the theme or concept and section of data in which it manifested should be identified during the indexing process. Thereafter proofreading of the text is recommended to enable the researcher to identify which part of index to apply. Finally, other categories may be required for refining after this initial index.

During the indexing process, each theme is highlighted individually with its categories and significant examples. Tables 4.4-4.8) shows the themes, descriptions and significant examples relevant to this study using columns and bars. Themes came directly from repeated expressions and concepts in the collected data, while descriptions came from the relationships between the main themes, and the categories and significant examples were obtained from various important statements by participants or interviews. After the indexing phase shown in Tables 4.4-4.8, charting follows and is discussed below.

Table 4.4 Current practices theme

<b>Theme</b>	<b>Description</b>	
<b>1. Current practices.</b>	What are the outcomes of current Quality Management Practices?	
<b>Subcategories</b>	<b>Description</b>	<b>Significant example statements</b>
1.1 Undersupplying of locomotives (unavailability of locomotives)	How is the undersupplying or unavailability of locomotives an outcome of current practices?	a) There is an increase in the undersupplying of locomotives caused by frequent failures of locomotives (participant 8, page 68)
1.2 Unreliability of locomotives	How is the unreliability of locomotives an outcome of current practices?	a) Locomotives continuously fail during the delivery of goods and this affects the availability of functional locomotives negatively (participant 4, page 66)

Table 4.5 Challenges theme

<b>Theme</b>	<b>Description</b>	
<b>2. Challenges</b>	What are the challenges encountered in Quality Management Practices?	
<b>Sub-categories</b>	<b>Description</b>	<b>Significant example statements</b>
2.1 Attitude	How does attitude affect Quality Management Practices?	a) Lack of necessary skills, knowledge and attitude of employees (participant 4, page 65) b) Human behaviour, adaptability to the standard, attitude and adaptability to technology (participant 8, page 67)
2.2 Skills	How do skills impact Quality Management Practices?	a) Lack of necessary skills, knowledge and attitude of employees (participant 4, page 65) b) Knowledgeable employees and inexperienced employees (participant 9, page 67)
2.3 Poor workmanship	Poor workmanship in Quality Management Practices	a) Negligence to the minor faults of locomotives (participant 1, page 65) b) Poor workmanship, attitude, unskilled workers or employees and incorrect use of recommended equipment and tools (participant 2, page 65)
2.4 Sustainability	Sustainability in Quality Management Practices	a) Adoption is effective, but the problem is sustainability and practice (participant 8, page 67) b) Although employees are aware of the standard, sustainability of quality practices is a challenge (participant 9, page 67)

Table 4.6 Intervention theme

Theme	Description	
<b>3. Intervention</b>	What interventions are employed for effective Quality Management Practices?	
Sub-categories	Description	Significant example statements
3.1 Training and awareness	The impact of training and awareness on Quality Management Practices	a) Management ensures that there is awareness in terms of quality practices (participant 1, page 65) b) Attendance of related training is mandated by the company (participant 5, page 66)
3.2 Revision of quality policies	The effect of revising quality policies on Quality Management Practices	a) Revised policies of quality are provided to the direct and indirect employees (participant 4, page 65)
3.3 Quality audit adherence	Quality adherence to Quality Management Practices	a) Because of quality audits, certain standards had to be achieved (participant 2, page 66) b) Auditing taking place within the organisation and courses in relation to quality being attended (participant 7, page 67)

Table 4.7 Expectations and outcomes theme

Theme	Description	
<b>4. Expectations and outcomes</b>	Expectations and outcomes of Quality Management Practices	
Sub-categories	Description	Significant example statements
4.1 Quality standard compliance	Status of quality standard compliance as expectations of Quality Management Practices	a) ISO 9001:2008 is an international standardisation of organisational compliance with Quality Management Practices (participant 2, page 66) b) Work execution is expected to meet the highest level of quality and must be achieved first time (participant 4, page 66)
4.2 Product/service quality improvement	Product/service quality improvement as the outcome of Quality Management Practices	a) Motivation for employees to ensure that the quality standard of locomotives is improved (participant 6, page 68) b) Improved quality audit findings, these are used as a marketing tool as there is failure in sustainability (participant 7, page 68) c) To ensure that employees adhere to safety incorporated in the quality of the adopted standard while improving reliability and availability of locomotives (participant 8, page 68) d) Improvement of the quality reliability of locomotives (participant 9, page 68)

Table 4.8 Relationships theme

Theme	Description	
<b>5.Relationships</b>	Relationship between the challenges, inputs and outputs in a quality management	
<b>Sub-categories</b>	<b>Description</b>	<b>Significant example statements</b>
5.1 Frequent failures and continual improvement	Relationship between the frequent failure as a challenge and continual improvement as an input	a) Executing work as per standard operating procedures can serve as a continual improvement and can also reduce frequent failures of locomotives (participant 5, page 66)
5.2 Continual improvement and service quality effectiveness	Impact of continual improvement as an input on continual improvement as an output	a) Continual improvement positively impacts the service quality effectiveness if customer needs are reached and customer service is improved (participant 6, page 67) b) There is a positive relationship between continual improvement and service quality effectiveness depending on the attitude or mindset of employees (participant 7, page 67)
5.3 Unavailability of locomotives and customer focus	Relationship between the unavailability of locomotives as a challenge and customer focus as an input	a) Yes, the undersupplying of locomotives is a result of frequent failures and does not represent customer focus (participant 3, page 66) b) An increase in unavailability of locomotives results from the frequent failures of locomotives (participant 1, page 66)
5.4 Customer focus and customer satisfaction	Influence of customer focus as an input on customer satisfaction as an output	a) Surpassing customer requirements through services rendered which is regarded as customer focus leads to customer satisfaction (participant 6 page 68) b) Customer focus aligns with meeting customer requirements, needs and result in customer satisfaction (participant 8, page 67)

#### 4.4.7 CHARTING

This section covers the charting of data transformed from the collected data, using themes and categories. Charts include the participants' relative frequency, categories and sub-categories relative frequency, and a hierarchical relationship model. Relative frequency derives from the number of times a response occurs. To determine it, each frequency should be divided by the total number of participants in the sample and then present as fractions, percentages or decimals (Dean and Illowsky, 2010:1).

There is a hierarchy among the relationships mentioned. According to Chattopadhyay and Malhotra (1999:2), the term hierarchy is used to depict interrelationships in various types of organisations. The researcher sees hierarchy as the classification of various entities according to the grading level and interrelationships that hold amongst each entity. Figure 4.4, in this chapter, highlights the interrelationships between themes, arranged according to the significance and influence of each theme. In other words, there is a logical sequence for readers to understand the entire model. In the next section, the participants' relative frequency is discussed, showing each skill level in each theme and sub-category in percentage.

##### **a) Participants' relative frequency**

The relative frequency of each theme and category shows participants' frequency skills level such as specialist or manager. There were nine participants in total, four skilled indicating a 44.4% relative frequency, three were from management a 33.3% relative frequency and two were specialist participants with a 22.2% frequency. Figure 4.2 below is a diagrammatic presentation of participants' relative frequency where the Y-axis indicates themes and sub-categories and the X-axis the relative frequency in percentage. Following this, the categories and sub-categories (relative frequency) are discussed and shown in Figure 4.3.

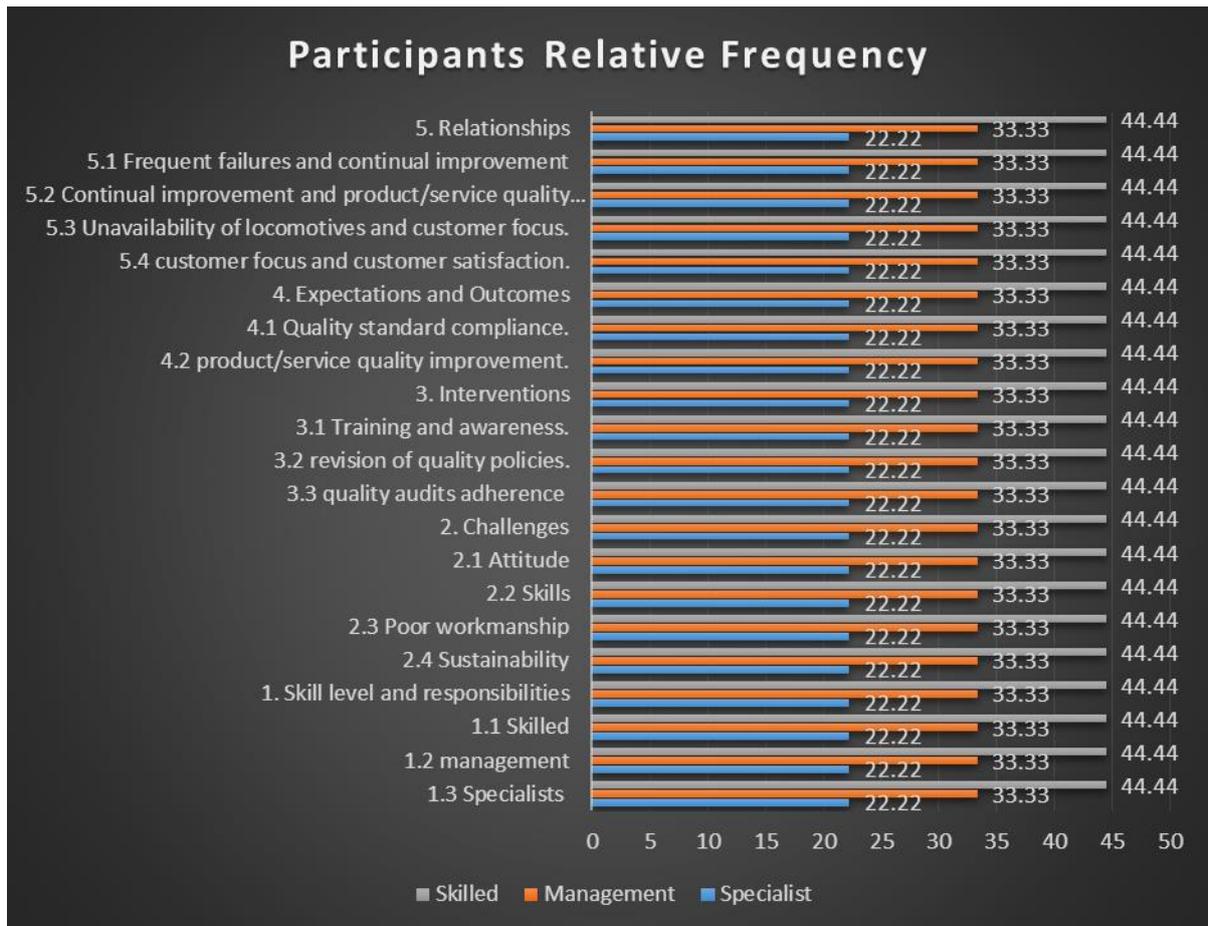


Figure 4.2 Participants' Relative Frequency

#### b) Categories and sub-categories (relative frequency)

Themes regarded as categories and sub-categories are classified or grouped under each theme. The themes or categories are generated from the data collected by looking at words that were repeatedly used by the participants in answering the most relevant research questions of this study. The researcher also discussed the categories and sub-categories of relative frequency to determine and evaluate the importance of each theme and determine the value or non-value added in addressing the research questions. Figure 4.3 contains the categories and sub-categories of relative frequency with the Y-axis presenting the categories and sub-categories and the X-axis the relative frequency in percentage.

As illustrated in Figure 4.3, the relationship category contributed the highest relative frequency of 37.5%, followed by the challenges category with 20.89%, current practices with 18.75%, expectations and outcomes with 12.5%, and interventions with 10.42%. Interventions displaying the lowest frequency raised major concerns as

this sub-category encompasses training and awareness, revision of quality policies and quality audit adherence. As mentioned previously, participants such as the Engineering Technicians, Quality Assurers, Technical Supervisors, Master Diesel Electrical Fitters and Diesel Electrical Fitters were categorised into three groups as skilled, management and specialists. There were four skilled participants (44.4%) as shown in Figures 4.2 of relative frequency, three management participants (33.3%) and two specialist participants (22.2%) for each theme and category.

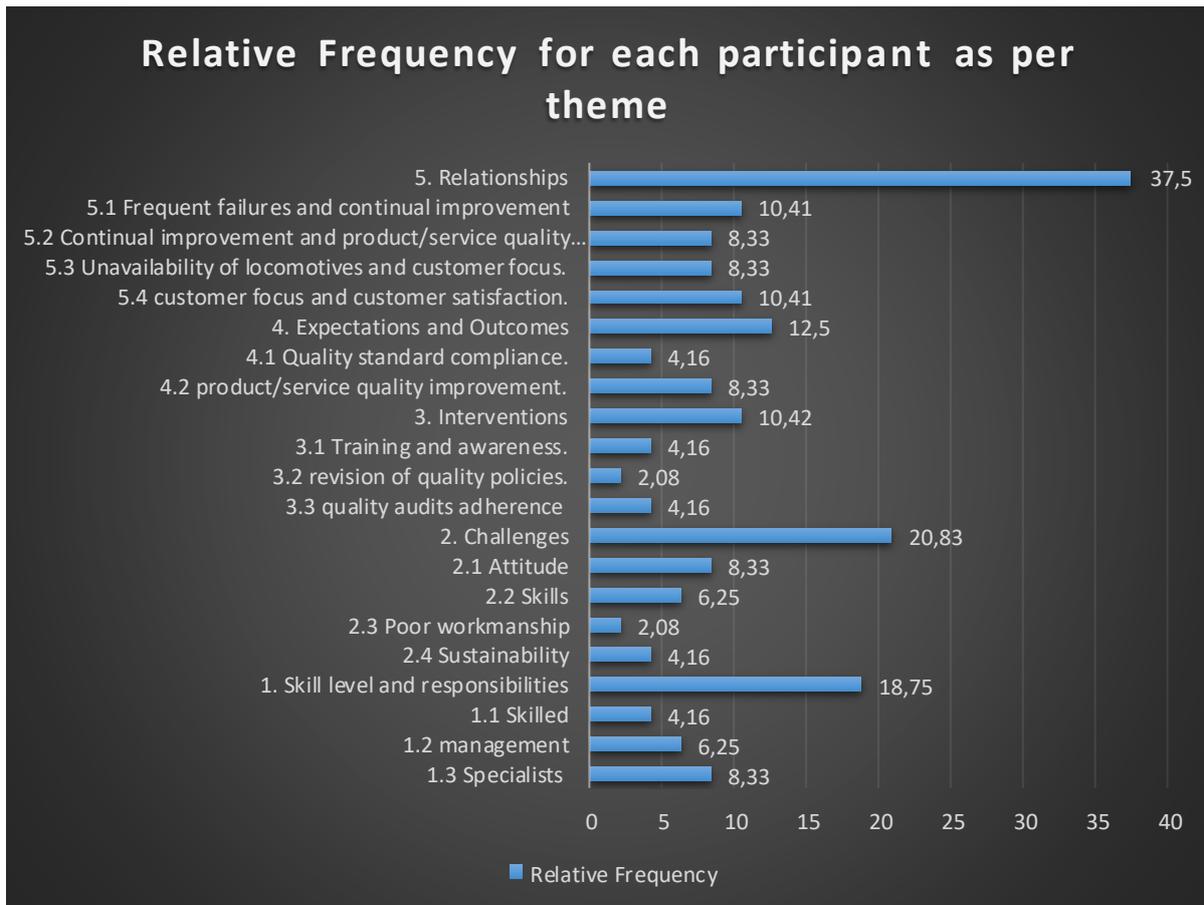


Figure 4.3 Categories and sub-categories (relative frequency)

All the participants managed to answer all the interview questions which were easy and straightforward. Direct questions aided in discovering in-depth information relating to the research questions. Furthermore, the relative frequency of the categories and sub-categories highlighted the themes generated from the data. In this case, themes repeatedly used by the participants were counted and used to develop the relative frequency. It was previously mentioned that the relationship theme contributed to the highest relative frequency, followed by challenges. The researcher found this very intriguing since the study initially addressed quality related challenges but discovered others that were contributing factors to the main challenges being addressed. Howsoever, the initial and discovered challenges were addressed thoroughly and the correlation between them placed under sub-categories.

Figure 4.3, addresses the main findings from the research questions.

#### **a) Relationship theme**

The relationship theme contributed the highest relative frequency between two parameters. As seen in the conceptual framework of this study, these parameters were applied as challenges, inputs and outputs. The participants managed to find the correlation between parameters, explaining why the relationship theme had the highest relative frequency. However, based on Figure 4.3, the relative frequency of the relationship between one or other challenge and input was the same as that of the relationship between the input and the output.

This means that there is a sequential relationship between challenges, inputs and outputs. Furthermore, the relative frequency relationship pertaining to the unavailability of locomotives (challenge), customer focus (input) and customer satisfaction (outputs) was the same as the relative frequency of the sequence of frequent failures of locomotives (challenge), continual improvement (input) and product/service quality effectiveness (output). The challenges theme comprised four sub-categories, namely: attitude, sustainability, skills and poor workmanship. Although the relative frequencies of the sub-categories were different and especially less individually, this does not mean their significance to this study is unimportant.

Since attitude had the highest relative frequency of all the sub-categories, it is discussed first.

Attitude, as a sub-category of challenges, having the highest frequency level of 8.33% is a concern as it has to do with an individual's disposition. A bad attitude always affects the execution of an event or phenomenon negatively. Saari and Judge (2004:397) posit that even though organisations do not directly impact employees' personalities (attitude), assigning the right employee to the right job leads to job satisfaction. In other words, employee attitude might result from how the employee and management of the employees or the working environment. Hence, it is vital for any organisation to have a culture charter work environment are managed. In addition, job description and execution of work duties may also influence attitude.

#### **b) Challenge theme**

Skills refer to the ability and capability of employees to execute a desired phenomenon or event. In this study, skills had a relative frequency of 6.28%. Green (2011:4) highlights that significant data shows that different levels of skills have a huge impact for individuals, employers and entire national economies. Furthermore, skills are personal qualities and comprise expandable and social productivity. This means that skills are commonly determinable, add value to production and can be improved through formal training. Skills are therefore categorised as a challenge because lacking the right skills for a job always leads to failure to achieve the desired outcomes and expectations.

Poor workmanship (with 2.08% of relative frequency) was another sub-category of challenges. From the researcher's perspective, it does have an influence on the performance of an entire organisation as poor workmanship prohibits the execution of certain events using the required skills. Othman and Mydin (2014:301) maintain that problems related to poor workmanship involve the following: poor communication, insufficient required information, failure to check and control, inadequate technical skills and expertise, and failure to provide feedback, thus leading to reoccurring errors. In other words, poor workmanship is the result of inadequate implementation of various elements or aspects adopted in various

organisations to execute various processes or operations aimed at getting expected outcomes.

Sustainability, the last sub-category of challenges had a 2.08% relative frequency. The ability to maintain recommended or desired standards of work execution, processes and operations to satisfy the final user of either a service or product is known as sustainability. It is for many organisations. According to Souter (2012:4), to achieve sustainability, there three things human societies are expected to do differently than how they used to. These are increasing efficiency while reducing resources utilised (production suitability), enabling the improvement of quality while reducing the consumption of the resources employed (consuming sustainability), and proper planning, engagement of participants and stakeholders to improve the management skills (organising sustainability).

The relative frequency of the categories and sub-categories led the researcher to develop a hierarchy relationship model, which highlights the close correlation between the themes and sub-categories. This relationship hierarchy model is depicted in Figure 4.4 and is followed/preceded by a discussion of the mapping and interpretation phase.

## 4.5 MAPPING AND INTERPRETING STAGE

### 4.5.1 DISCUSSION OF THEMES RELATIONSHIP AND HIERARCHY RELATIONSHIP MODEL

The researcher sees hierarchy as grading interrelationships between themes and sub-categories. Figure 4.4 shows the hierarchical relationship model in which there is a correlation between five themes: current practices, challenges, interventions, expectations and outcomes, and relationship. The relationship between all five categories derived from current practices and interventions, the relationship between these two themes and challenges as well as the relationship between challenges, and expectations and outcomes and the relationship between all other themes and the relationship theme. The relationships between all these themes is as follows:

#### **(i) Link between current practices and the intervention theme**

Basically, for the first theme (current practices) to be effectively improved, both the unavailability and unreliability of locomotives required interventions such as training and awareness, revision of quality policies, and adherence to quality audits. Figure 4.4 shows that current practices theme of unavailability and unreliability of locomotives all require interventions like training and awareness, revised quality policies and quality audits to execute work efficiently. In other words, efforts to address the unavailability and unreliability of locomotives had to be increased for intervention. A study conducted by Flynn, Roger, Schroeder and Sakakibara (1995) indicated that different core Quality Management Practices lead to success in different dimensions of quality, and that those dimensions functioned different from order winners and order qualifiers.

#### **(ii) Link between the challenges theme and intervention theme**

These interventions were to address the second theme, namely challenges, and involves attitude, skills, poor workmanship and sustainability. Velasco and Harder (2014) state that intentions have less impact on behaviour (attitude) when participants lack control over their behaviour, there is potential for social reaction, and when performance includes workmanship and sustainability as favourable habit formers. Since this study was based on Quality Management Practices which addressed the challenges relating to quality effectiveness, the findings of the

intervention theme were around quality. Although, the current practices could be improved through interventions that also address challenges, expectations and outcomes they were regarded as outputs. Skills levels and responsibilities for interventions were regarded inputs and desired expectations and outcomes were outputs to address challenges.

As outputs, the expectations and outcomes required compliance with the quality standard and quality improvement of the product/service. Since this study wanted to assess the extent to which current Quality Management Practices were in line with ISO 9001:2008 and it was concluded that challenges about quality, embedded in the failure by the organisation to effectively practice the adopted quality standard, included attitude, skills, poor workmanship and sustainability.

### **(iii) Link between the intervention theme and expectations, and outcomes**

The use of interventions to address challenges raises expectations and requires outcomes as outputs complying with quality standards and product/service improvements. NCOSS (2015:15) mentions that it is the responsibility of each organisation to ensure that quality improvement is a core component of the ethos and systems that guide an organisation. However, challenges to realise the effective practice of this quality standard necessitate the use of intervention tools or strategies such as training and awareness, revision of quality policies and quality audits. Quality standard compliance and product/service improvement are thus expected outcomes of these interventions. In a process where there is a correlation among challenges, inputs and outputs, the relationship between the significant parameters is likely to improve.

### **(iv) Link between interventions, expectations, outcomes, and the relationships theme**

In this case, the links that hold among various challenges, inputs and outputs are: frequent failures and continual improvement; continual improvement and service quality effectiveness; unavailability of locomotives and customer focus; customer focus and customer satisfaction. These relationships were also highlighted as sequential challenges, inputs and outputs in the conceptual framework. The sequence is as follows: frequent failures of locomotives (challenge); continual

improvement (input); and service quality effectiveness (output). Also, unavailability of locomotives (challenge), customer focus (input), and customer satisfaction (output). These sequential relationships are supported by extensive and substantive studies. Voon, Hamali and Ranggai (2012) posit that the success of quality management is consistently evaluated by using customer satisfaction as a criterion measure with customer focus regarded as one of the main pillars in the implementation of quality management. Thus, all resources invested in implementing QM are directed towards achieving the objective of satisfying customers (Mehra & Ranganathan, 2008).

When it comes to continual improvement, a study by Yacob (2014) shows that the implementation of quality management requires a firm to continuously improve the whole aspect that would contribute to the improvement of the planning, process, and/or output. It is a continual journey towards achieving quality objectives, thus demanding a long-term view from managers. Although the positive effects of continuous improvement are likely to be subtle in the short run, many authors have revealed the benefits of this practice to the organisation in the long run.

The relationship theme resulted from the resources employed for improvement strategies and interventions that address challenges to expectations and anticipated outcomes. As indicated in Figure 4.4, the relationship theme includes frequent failures and continual improvement, continual improvement and service quality effectiveness, unavailability of locomotives and customer focus, and customer focus and customer satisfaction. The following section highlights the hierarchical relationship model, followed by the interpretation of the data.

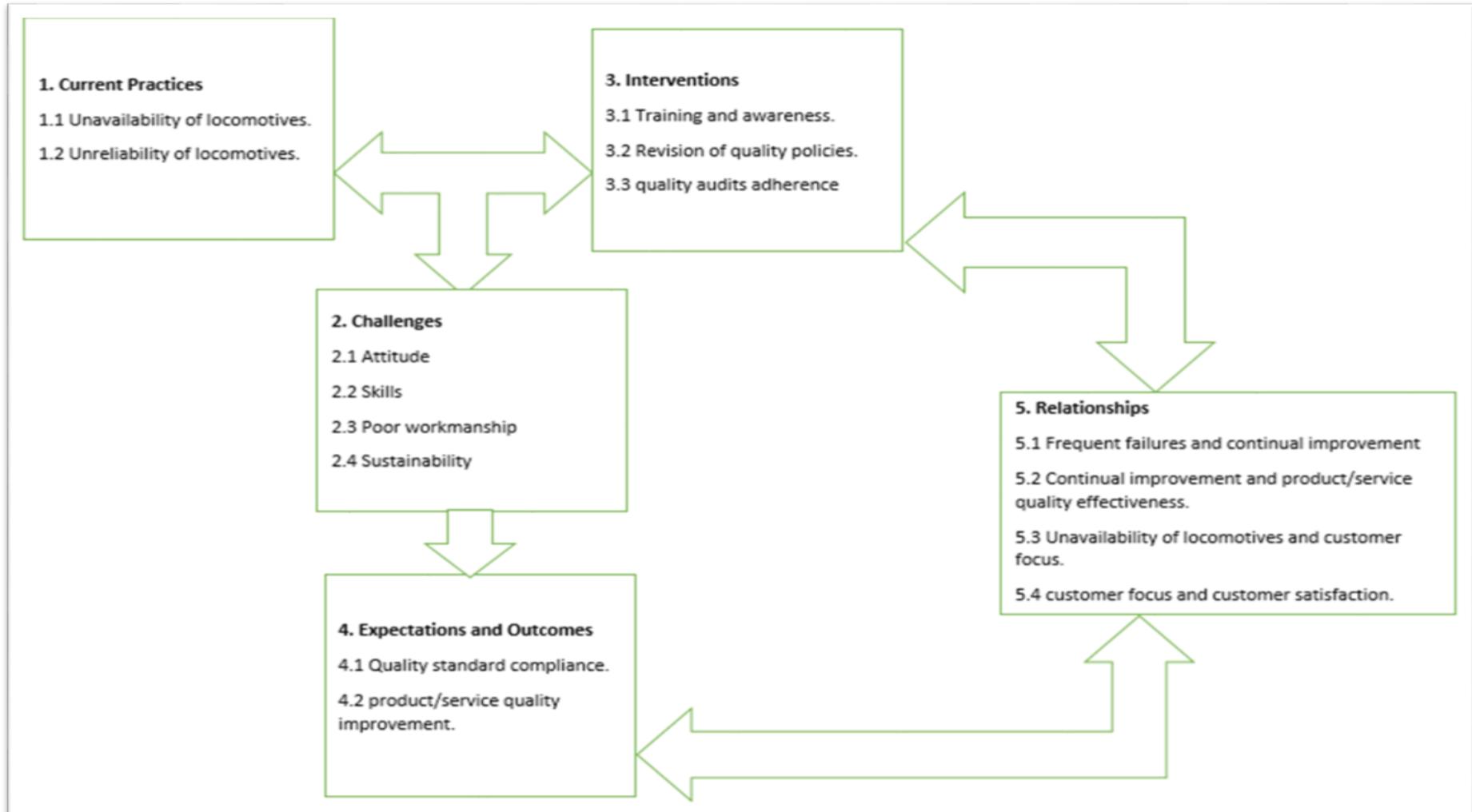


Figure 4.4 The hierarchical relationship model

## 4.6 INTERPRETATION OF FINDINGS

### 4.6.1 THE MAIN FINDINGS FROM THE LITERATURE REVIEW

- Although Quality Assurance and ISO 9001:2008 were management practices at Transnet Engineering Bloemfontein Locomotive Maintenance, a lack of customer involvement inhibited Quality Management Practices.
- Transnet Engineering Bloemfontein Locomotive Maintenance was aware of and practised quality management from an ISO 9001:2008 perspective, for improved product/services effectiveness and customer satisfaction.
- Product quality effectiveness, customer satisfaction, improved operational performance were the outcomes of quality management at Transnet Engineering Bloemfontein Locomotive Maintenance.
- As part of the effective implementation of ISO 9001:2008, customer focus and continual improvement were inputs and improved quality efficiency and customer relationships outcomes at Transnet Engineering Bloemfontein Locomotive Maintenance.

### 4.6.2 THE FINDINGS FROM THE STUDY RESULTS

- Transnet Engineering Bloemfontein Locomotive Maintenance used ISO 9001:2008 as a Quality Management Practice.
- Attitude, skills, poor workmanship and sustainability inhibited Quality Management Practices. From an ISO 9001:2008 perspective, quality management at Transnet Engineering Bloemfontein Locomotive Maintenance involved quality auditing, reliability and quality improvement.
- Quality standard compliance and product/service quality improvement were quality management outcomes at Transnet Engineering Bloemfontein Locomotive Maintenance from an ISO 9001:2008 perspective.
- Participants indicated that Transnet Engineering had adopted Quality Assurance as a Quality Management Approach and International Organisation for Standardisation (ISO) 9001:2008 as a Quality Management System.

- Improved sustainability, enhanced skills, reduced poor workmanship and improved attitudes were areas in which Transnet Engineering Bloemfontein Locomotive Maintenance had adopted ISO 9001:2008 effectively.

A discussion of the findings follows in the next section.

#### 4.6.3 MAJOR FINDINGS FROM THE LITERATURE REVIEW

- a) Major finding 1: Quality Assurance and ISO 9001:2008 were adopted as Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance.

The above major finding which obtained from the Literature Review addressed the first research question: *What Quality Management Practices are there at TE Bloemfontein Locomotive Maintenance?* The literature reviewed identified four approaches of quality management, namely: Total Quality Management (TQM), Quality Control (QC), Quality Inspection (QI) and Quality Assurance (QA) (Brun, 2011:13).

- b) Major finding 2: Lack of customer involvement could inhibit Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance.

The second major finding from the Literature Review addressed the second research question: *Which factors inhibit Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance?* In Chapter 2 it was shown that the sustainability and success of Quality Management Practices also depended on the involvement of the customers as the final users of the service or product (Thakur & Singh, 2011:118). Khadivi and Khdaie (2014:112) posit that since customers are the survival key and success factors for any business, it is imperative that their requirements are identified, and their satisfaction determined and measured to improve any shortcomings. Resisting to involve customers as top priority, accelerating focus on competition rather than focussing on customer satisfaction and failing to understand customer focus could cause firms to continuously fail to grow or effectively implement improvement strategies such as ISO 9001:2008 Quality Management Systems.

- c) Major finding 3: The extent to which Transnet Engineering Bloemfontein Locomotive Maintenance is aware of and practises improved quality product/service effectiveness and customer satisfaction from an ISO 9001:2008 perspective.

The third major finding addressed the third and fourth research questions: *To what extent is Transnet Engineering Bloemfontein Locomotive Maintenance aware of and is quality management practised from an ISO 9001:2008 perspective?* ISO 9001:2008 (QMS) informing activities at Transnet Engineering to deliver high quality aimed to enhance and sustain performance. Raie et al. (2014:111) believe that customer satisfaction is vital to both the present and future of an organisation. Thus, the systematic model (Figure 4.4) was adopted to investigate and examine the challenges of the unavailability and frequent failures of locomotives at TE and the relationship that holds between QMS and organisational performance. Figure 4.4 delineates the hierarchical relationship model that depicts the correlation between challenges and interventions to improve performance.

It was mentioned that the customer satisfaction in the service industry pertains to service quality, product quality, price and location (Jana, 2014:50). There is therefore a strong relationship between customer satisfaction and service or product quality. However, this relationship depends on what is referred to as service or product quality as determined by fewer failures of components or systems, being error free, and doing it right the first time. Along the same line, it was shown that product/service quality effectiveness and operational performance are directly influenced by a standard's effectiveness, while indirectly contributing to the organisational performance through the moderator of operational performance.

- d) Major finding 4: Outcomes of quality management at Transnet Engineering Bloemfontein Locomotive Maintenance include product quality effectiveness, customer satisfaction, and improved operational performance.

The fourth major finding addressed the fifth research question: *What are the quality management outcomes at Transnet Engineering Bloemfontein Locomotive Maintenance?* A conceptual framework was proposed to help Transnet uncover challenges that negatively influence organisational performance and prohibit

success. Quality experts worldwide lauded ISO 9001 for evaluation based on organisational performance and expected outcomes when adopted in a business. Within the literature, it is highlighted that organisations with ISO certification who have implemented QMS may have benefits differ with varying measures of quality effectiveness, customer satisfaction, and operational and financial performance. In Figure 4.4 (the hierarchical relationship model) quality standard compliance and product/service quality improvement are the expectations and outcomes of using the interventions from ISO 9001:2008 Quality Management Systems. Moreover, since the customer determines the achievement and effectiveness of the product/service quality, this could improve customer satisfaction.

- e) Major finding 5: Improved quality efficiency and customer relationships are outcomes of ISO 9001:2008 implementation at Transnet Engineering Bloemfontein Locomotive Maintenance.

The fifth major finding from the Literature Review and study results addressed the sixth research question: *What are the outcomes of implementing ISO 9001:2008 at Transnet Engineering Bloemfontein Locomotive Maintenance?* Various benefits that are likely to result from the adoption and implementation of ISO 9001:2008. Psomas and Kafetzopoulos (2014:766) posit that ISO 9001:2008 certified companies have better product/service quality levels and operational outcomes than non-certified companies. These benefits or outcomes include intensification of company and product quality awareness, customer relations, improved customer retention and satisfaction, encouraged continual improvement, improved quality of products and services rendered, enhanced relationships within the firm, and respect from competitors (Vikas et al., 2015:493). Figure 4.4 showed interventions that have resulted in expectations and outcomes that strengthen the relationship between customer focus and customer satisfaction as well as continual improvement and product/service quality effectiveness. In addition, the relationship theme in Table 4.8 indicated that customer focus and continual improvement, and customer satisfaction and product/service quality effectiveness were the expected outputs of the implementation of ISO 9001:2008 principles. Thus, adoption of this international standard provides some level of confidence and enables world market growth.

Major finding 6: Customer focus and continual improvement are inputs whose effectiveness is reflected through Transnet Engineering Bloemfontein Locomotive Maintenance's adoption of ISO 9001:2008.

The sixth major finding addressed the seventh research question: *To what extent can Transnet Engineering Bloemfontein Locomotive Maintenance adopt ISO 9001:2008 effectively?* It was argued in Chapter 2 that the effectiveness of the ISO 9001 quality system should be evaluated based on performance outcomes in relation to practical inputs aimed at addressing challenges. Inputs for this study were customer focus and continual improvement to address the frequent failures and unavailability of locomotives. With customer focus it was argued that since businesses are sustained by a customer, their survival of said businesses depended on customers being satisfied with a product or service rendered. O'Sullivan and MacCalling (2012) concur that customer satisfaction has a positive impact on the value of firms in addition to regulating the earnings-firm value relationship. Continual improvement requires that a business prioritise improvement continuously to ensure the enhancement of standard operations and processes. According to Russell (2013:3), since continual improvement is an on-going process to bring about change, some industries benefit more than others and simultaneously improve the effectiveness of the organisation. Similarly, Govender (2013:261) asserts that continual improvement in the quality management field enhances the effectiveness and efficiency of the firm. Thus, continuous improvement enables businesses to grow and gain a competitive advantage.

#### 4.7 FINDINGS FROM THE STUDY

- a) Major finding 1: ISO 9001:2008 is the Quality Management Practice implemented at Transnet Engineering Bloemfontein Locomotive Maintenance.

Findings from the primary research described ISO 9001:2008 as an international standardisation of organisations that ensures compliance with quality standards and requirements. Transnet Engineering, which is a Railway Industry, adopted and applied this standard as a Quality Management System. This finding therefore supports literature that the adoption of ISO 9001:2008 as management practices boosts Quality Assurance. This was the case at Transnet Engineering Bloemfontein

Locomotive Maintenance which has adopted and applied this ISO. Since both the primary study and Literature Review support ISO 9001:2008 as a Quality Management System, high quality standards are expected from services rendered by Transnet Engineering.

- b) Major finding 2: Attitude, skills, poor workmanship and sustainability are factors that inhibit Quality Management Practices.

This finding aligns with the major finding from the Literature Review that a lack of customer involvement at Transnet Engineering Bloemfontein Locomotive Maintenance inhibits Quality Management Practices. This also highlights a lack of customer involvement as one of the main factors that inhibit the effective practice of quality management. In addition, this study found that attitude, skills, poor workmanship and sustainability were also factors that inhibited effective Quality Management Practices at TE. From literature review, it was clear that customer involvement was one of the factors inhibiting Quality Management Practices. However, it was surprising that attitude, skills, poor workmanship and sustainability were found to be factors as well.

- c) Major finding 3: Transnet Engineering Bloemfontein Locomotive Maintenance is aware of and practises quality auditing, improved reliability and quality improvement from an ISO 9001:2008 quality management perspective.

There was a slight difference between the findings from the primary study and the Literature Review in this regard. The Literature Review indicated Transnet Engineering Bloemfontein Locomotive Maintenance was aware of and practised quality management from an ISO 9001:2008 perspective which improved product/service effectiveness and customer satisfaction. However, the primary research indicated that quality auditing, improved reliability and quality improvement at Transnet Engineering Bloemfontein Locomotive Maintenance contributed more to quality management from an ISO 9001:2008 perspective. What these findings have in common is that quality improvement is primarily the baseline.

- d) Major finding 4: Quality standard compliance and product/service quality improvement are quality management outcomes at Transnet Engineering Bloemfontein Locomotive Maintenance from an ISO 9001:2008 perspective.

The findings from this study differed slightly from the Literature review. From the Literature Review it was discovered that improved quality efficiency and customer relationship were outcomes of Quality Management Practices at TE from an ISO 9001:2008 perspective. On the other hand, a primary finding was that quality standard compliance and product/service quality improvement were the outcomes. Despite the difference, challenges were likely to be reduced or eliminated because of the strong link among the challenges, inputs and outputs as shown in Table 4.8. Other relationships were frequent and continual failures; continual improvement and service quality effectiveness; unavailability of locomotives and customer focus; customer focus and customer satisfaction improvement; continual improvement and service quality effectiveness; unavailability of locomotives and customer focus; and customer focus and customer satisfaction.

- e) Major finding 5: Transnet Engineering Bloemfontein Locomotive Maintenance's effective adoption of ISO 9001:2008 can lead improved sustainability, enhanced skills, reduced poor workmanship and improved attitudes.

This new finding shows customer focus and continual improvement as inputs resulting from Transnet Engineering Bloemfontein Locomotive Maintenance's effective adoption of ISO 9001:2008. These inputs could address certain challenges encountered by the business that are related to Quality Management Practices. This finding disregards issues related to or involving employees who are supposed to be practicing this quality management within the business. These new inputs can be focussed on in addition to those from the Literature Review for improved Management Practices at Transnet Engineering.

#### 4.8 SUMMARY

The data analysis in this chapter covered the stages framework analysis, namely familiarisation with data; identification of thematic framework; indexing; charting; and interpretation of data. During charting, data was transformed and presented on the participants' relative frequency, categories and sub-categories (relative frequency), and the hierarchical relationship model. The relative frequency of the categories and

sub-categories led the researcher to design the hierarchical relationship model that showed the close correlation between themes and sub-categories.

In the researcher's view, hierarchy refers to grading interrelationship between themes and sub-categories into categories. The first theme showed ordinary correlation between the unavailability and unreliability of locomotives (current practices) and the interventions such as training and awareness, revision of quality policies, and adherence to quality audit to effectively improve these challenges. These interventions were employed to address the second theme of challenges relating to attitude, skills, poor workmanship and sustainability. With the use of interventions to address challenges, expectations and outcomes resulted in outputs involving quality standards compliance and product/service quality improvements. The last theme dealt with the relationship resulting from resources employed for improvement strategies such as interventions that addressed challenges to have the expectations and anticipated outcomes. The conclusion and the implication of the study are discussed in the following chapter.

# CHAPTER 5: CONCLUSIONS AND IMPLICATIONS

## 5.1 INTRODUCTION

The study set to assess the effectiveness of quality management practices at Transnet Engineering (Bloemfontein) based on ISO 9001: 2008 and make recommendations for sustained improved service delivery at the parastatal. This chapter provides the conclusions drawn from the research questions and literature review. Thereafter, the implications are discussed, and recommendations made for practice and policy based on the data analysed in the previous chapter. Lastly, possible further research from the study is suggested. Some limitations have been identified. The next section discusses the conclusion based on the research questions as presented below.

### MAIN RESEARCH QUESTION

To what extent does Transnet Engineering Bloemfontein Locomotive Maintenance practice quality management from an ISO 9001:2008 perspective?

### SUBSIDIARY RESEARCH QUESTIONS

- (i) What Quality Management Practices are there at Transnet Engineering Bloemfontein Locomotive Maintenance?
- (ii) Which factors inhibit Quality Management Practices at Transnet Engineering Bloemfontein Locomotive Maintenance?
- (iii) To what extent is Transnet Engineering Bloemfontein Locomotive Maintenance aware of and does it practise quality management from an ISO 9001:2008 perspective?
- (iv) What are the quality management outcomes at Transnet Engineering Bloemfontein Locomotive Maintenance from an ISO 9001:2008 perspective?
- (v) To what extent can Transnet Engineering Bloemfontein Locomotive Maintenance adopt ISO 9001:2008 effectively?

## 5.2 CONCLUSIONS BASED ON THE RESEARCH QUESTIONS

### 5.2.1 WHAT QUALITY MANAGEMENT PRACTICES ARE THERE AT TRANSNET ENGINEERING BLOEMFONTEIN LOCOMOTIVE MAINTENANCE?

Quality Assurance and ISO 9001:2008 are part of the Quality Management Practices at the Transnet Engineering Bloemfontein Locomotive Maintenance Depot. It is important for any organisation to have an effective QMS that ensures compliance with quality standards. Transnet Engineering having a Quality Management System and Quality Management Approach implies it wants to ensure quality products and services can be delivered. Thus, organisational activities should be executed for the satisfaction of the customers in terms of quality requirements and compliance regulations.

### 5.2.2 WHICH FACTORS INHIBIT QUALITY MANAGEMENT PRACTICES AT TRANSNET ENGINEERING BLOEMFONTEIN LOCOMOTIVE MAINTENANCE?

It was discovered that failure to consider customer needs and satisfaction at Transnet Engineering Bloemfontein Locomotive Maintenance inhibited Quality Management Practices. In Table 4.2, one participant stated that since the needs of the customers are vital and should be satisfied, quality needed to be improved. It can be concluded that although customer involvement is encouraged, some challenges or factors still inhibit the effective practice of quality management. In other words, although customer involvement and the effective adoption of relevant quality management practices do not guarantee the success or growth of a firm, they do increase opportunities for growth and success.

### 5.2.3 TO WHAT EXTENT IS TRANSNET ENGINEERING BLOEMFONTEIN LOCOMOTIVE MAINTENANCE AWARE OF AND DOES IT PRACTISE QUALITY MANAGEMENT FROM AN ISO 9001:2008 PERSPECTIVE?

The extent to which Transnet Engineering Bloemfontein Locomotive Maintenance is aware of and practises quality management could improve product/service effectiveness and customer satisfaction. Thus, continual improvements in addressing

customer needs and improving customer service could positively impact the quality as indicated in Table 4.2. If customers are satisfied, this directly influences customer commitment and customer retention. In other words, although, customer satisfaction is an output resulting from other inputs, it helps to improve customer commitment and customer retention.

The thematic framework categorisation in Table 4.3 shows that product/service quality improvement and effectiveness are expected outcomes. Although, there are some benefits for ISO certified organisations that adhere to QMS, the benefits result from contributions within the organisation and customers having an input in determining the requirements and specifications of the service or products they need. More importantly, there is more than one element or aspect that directly influences customer satisfaction and the level of standards' effectiveness is directly influenced by the product/service quality and operational performance. This means that the organisational deliverance of a product/service influences the effectiveness of the standard as much as the standard influences the quality of the product/service.

#### 5.2.4 WHAT ARE THE QUALITY MANAGEMENT OUTCOMES AT TRANSNET ENGINEERING BLOEMFONTEIN LOCOMOTIVE MAINTENANCE FROM AN ISO 9001:2008 PERSPECTIVE?

Product quality effectiveness, customer satisfaction and improved operational performance are the envisioned outcomes of quality management at Transnet Engineering Bloemfontein Locomotive Maintenance. Table 4.3, containing the thematic framework, indicates that product/service quality improvement and effectiveness as the anticipated outcomes and expectations. With international quality standards as the baseline for Quality Management Systems, it is becoming obligatory for the Automotive Industry to guarantee customers of high-quality services and products. In addition, at Transnet Engineering Bloemfontein Locomotive Maintenance, improved quality efficiency and customer relationship are outcomes of implementing ISO 9001:2008.

Accordingly, Table 4.2 highlights that ISO 9001:2008 ensures that high quality standards are achieved during the execution of maintenance, making the business a world-class one. The conclusion from this is that this quality standard can be applied

to any organisation regardless of type, size and activities for effective quality management. Furthermore, service providers, manufacturing companies and consumers benefit more from sustainable development when using these international standards. Table 4.2 therefore highlights that ISO 9001:2008 as an international standard facilitates Quality Management Practices.

#### 5.2.5 TO WHAT EXTENT CAN TRANSNET ENGINEERING BLOEMFONTEIN LOCOMOTIVE MAINTENANCE ADOPT ISO 9001:2008 EFFECTIVELY?

Customer focus and continual improvement are at the heart of Transnet Engineering Bloemfontein Locomotive Maintenance's effective adoption of ISO 9001:2008. It is believed that continual improvements have positively influenced service quality as the reliability of locomotives is improving, as indicated in Table 4.2. Furthermore, customer focus has improved as the organisation strives to address customer requirements and customer satisfaction.

Certainly, the practice of ISO 9001:2008 quality management is one of the most important organisational strategies for achieving competitive advantage while permitting growth. More importantly, through the adoption of this standard, customer focus and continual improvement principles have enabled the business to ensure that customer needs and requirements are met according to their specifications or expectations and development, growth and sustainability are achieved. Frequent improvements are important for any firm to sustain good levels of performance, while reacting to changes in internal and external conditions and establishing new opportunities. The next section discusses the conclusions drawn from the literature review.

### 5.3 CONCLUSIONS BASED ON THE LITERATURE REVIEW

ISO 9001:2008 is a quality standard aimed at improving Quality Management Practices in organisations. Sipos et al. (2015:7) posit that the Quality Management System, a tool or technique to respond to a largely global market, was accepted by various industries. Expected benefits relate mostly to quality requiring that the standard undergoes regular improvements to meet customers' quality requirements and needs. Ferreira et al. (2015:625) emphasise that the ISO system aids all kinds of

organisations aiming to develop the ability to steadily deliver high-quality products and achieve greater customer satisfaction, continual improvement and intense staff motivation. Quality Management Systems (QMS) can also be used by employers to guide employees to meet a specified quality of products and services (Sipos et al. 2015:7).

Quality Management Systems are adopted in organisations to enable adherence to ISO standards. Ismyrlis et al. (2013:115) add that ISO 9001:2008 is internationally recognised and usually demonstrates organisational capability and ability to deliver quality products and services. According to Hernandez (2010:454), ISO 9001:2008 is a baseline for Quality Management Systems and is obligatory in the Automotive and Truck Industries worldwide. There is also quality auditing to keep those organisations striving to improve quality and reliability of their product and services in line. This is to ensure that the organisation comply and adhere to the standard requirements based on the customers' need, requirements and specification without wasting resources. Salgado *et al.* (2014:357) posit that for products and services to be credible and earn customer confidence, they should adhere to appropriate recommended norms and standards. Ismyrlis et al. (2013:115) add that Quality Management Systems deal with the development and improvement of organisational performance and quality. The next section deals with the implications of the study.

## 5.4 IMPLICATIONS OF THE STUDY

The Railway Industry plays a major role in the transportation business which requires high quality performance. Since customers value quality, the adoption and implementation of ISO 9001:2008 as a Quality Management System assures quality services are rendered to them. However, quality is generally determined by the customer as the final consumers or users of a product or service. Essentially, the principles of quality management are established to improve certain aspects in a business. For instance, organisations such as Transnet Engineering Locomotive Maintenance in the Railway Industry evaluated problems it was experiencing in relation to quality management and attempted to resolve them according to the ISO principles. Although, the study focussed only on two principles of ISO 9001:2008, their effective adoption was worth it based on the outcomes achieved.

#### 5.4.1 OUTCOMES AND EFFECTIVENESS OF QUALITY MANAGEMENT SYSTEMS

Quality Management Systems of ISO 9001:2008 has various outcomes and benefits such improved operational performance, product/service quality effectiveness and customer satisfaction. However, these outcomes and benefits are determined by certain inputs from customers and suppliers and the relationship they have with the organisation. Although services or products may be seen as high quality, the final users, the customer, determines that quality. Significantly, for Quality Management Systems to be effective and successful, employees and other relevant stakeholders should be involved. This requires an understanding of customer expectations and quality requirements.

#### 5.4.2 IMPACT OF TRAINING AND AWARENESS ON QUALITY MANAGEMENT EFFECTIVENESS

Failure to implement proper training and awareness regarding the Quality Management Approach and System of an organisation may affect the effectiveness of implementation and sustainability. This international standard of quality is globally recognised; therefore, the adoption of this standard allows an organisation to grow tremendously locally, nationally or globally provided products and services are of a high standard. The implementation and outcomes of this standard must align with the customers' requirements and organisational needs to culminate in customer satisfaction and customer retention. When customers' and other interested stakeholders' confidence is attracted and retained that leads to sustained success.

#### 5.4.3 CUSTOMER INVOLVEMENT AND EXPECTED OUTCOMES

Customers can be involved in the business for growth and success, but this involvement should be limited so as not to negatively affect the management's effectiveness. Involvement should pertain to quality inputs and outputs regarding customer needs, expectations and satisfaction that translate into customer retention and customer commitment. As previously stated, the customer determines the quality of services and products based on whether his/her needs and expectations were met, and the desired outcomes achieved. When this is the case, organisational growth may occur.

#### 5.4.4 QUALITY MANAGEMENT SYSTEMS' ADOPTION PROCESS AND EXPECTED OUTCOMES

Since the quality auditing in a business depends on adherence to quality standards adopted by the organisation, it is imperative for the businesses to understand quality principles and requirements. Thus, during quality auditing, the quality principles, requirements and systems should be evaluated for compliance and adherence. Literature reviewed indicated that focus should be on what the customer needs and expect and when an organisation can satisfy those with quality products and services this will impact the organisation positively. This requires that the organisation continuously engage with the customer for feedback. The primary research findings indicate that improved sustainability, enhanced skills, reduced poor workmanship and improvement in attitude should be among the things that enjoy attention at Transnet Engineering. The reason for this is that in-house issues need to be resolved for better service and product delivery. Recommendations of the study are highlighted in the succeeding section.

### 5.5 RECOMMENDATIONS

#### 5.5.1 RECOMMENDATIONS FOR POLICY

It is recommended that organisations not only adopt the quality standard as a marketing tool but also for attaining the goals of producing good quality products and delivering good services as encapsulated in ISO 9001:2008. Provided this is done, customer satisfaction, commitment and retention could be expected. The execution of the quality standard and challenges from customers' perspective should be the driving forces. For instance, the execution of activities within an organisation should provide supplier-to-customer assurance of high-quality services and products. It should be a policy in the organisation to ensure that all relevant stakeholders are aware of the quality requirements.

##### 5.5.1.1 CUSTOMER ENGAGEMENT

Organisations should get customer input in decisions that directly affect either their products or services and might have an adverse effect on the organisation. Knowing customer needs and expectations could enhance the quality of products and services as this will enable suppliers to understand and deliver the correct products or service as per the customers' requirements and specifications. Organisation could

then benefit positively as there would be a reduction of wasteful processes and activities due to less rework in attempting to meet the customers' requirements. Furthermore, the organisation will be self-marketing in terms of deliverance on ISO 9001:2008 standards and quality and not the other way around (marketing the standard).

#### 5.5.1.2 ADOPTION OF CONTINUAL IMPROVEMENT AND CUSTOMER FOCUS

For organisations to be successful, a continual drive for improvement and customer focus should be adopted. Without doubt, customer involvement is one of the important elements of customer focus that could result in customer satisfaction. In return, customer satisfaction may lead to customer retention, growth and success of the organisation. Above all, the primary focus of quality management should be striving to surpass customer expectations of quality. In addition, the organisation should also aim at integrating improvement initiatives by adopting new processes for executing work processes and operations.

#### 5.5.1.3 EMPLOYEES SKILLS EMPOWERED OR EQUIPPED

It is important that organisations introduce new improvement strategies to employees to ensure that they are equipped with appropriate skills. Equipping workers with required skills and empowering them could help improve workmanship and attitude. These were some of the challenges at Transnet Engineering. Many of the challenges occur as a result of the above (skills and empowerment) requiring organisations equipping employees with the right skills required for the work. A skilled and empowered employee might have a better attitude toward his/her job and even the customer thereby driving him/her to improve the quality of his/her work and reduce poor workmanship. Moreover, there will be consistency in work delivery based on the specifications and requirements of the customers in a sustainable way.

#### 5.5.1.4 Preparation for revised version of ISO 9001

There are always changes and revisions of the standards as needs and expectations change, and shortcomings are identified. As such, ISO 9001:2008 has recently be revised and replaced by ISO 9001:2015. Although organisations can still evaluate the changes and benefits before adopting the revised standard, it is recommended

those that had adopted ISO 9001:2008 strive to improve quality and adhere to the principles for good quality audit findings as poor audit findings due to failure to adhere to Quality Management Practices might lead to business closure.

#### 5.5.2 RECOMMENDATIONS FOR PRACTICE

It is recommended that organisations that adopt ISO 9001:2008 employ and sustain the Quality Management Systems and approaches according to the desired goals. Hence, it is important for these organisations to deliver their products or services in adherence to ISO 9001:2008 certification. Contained in this standard and important to this study, was customer expectation, satisfaction, commitment and retention through high quality work. Even though benefits could be infinite, they derive from how this quality standard has been adopted and implemented as well as how challenges are addressed from customers' perspective.

For instance, customers' input in decisions that directly affect the product or service could improve quality as this would enable the supplier to deliver services or products to precise customer requirements and needs. Furthermore, this could limit the risk of redoing work and increase the possibility of growth. In addition, there could be a reduction of wasteful processes and activities. Without a doubt, customer involvement is part of customer focus with customer satisfaction as an output. In many cases, customer satisfaction leads to customer retention often resulting in growth and success.

Organisational success and growth are also dependent on continual improvement. This links with customer focus as customers are often the driving force behind improvement. As needs and expectations change, so products and services must change as well to fit in with those needs and expectations. After all, the primary goal of an effective Quality Management Practice is to meet and even surpass customer expectations. For both these principles, customer focus and continual improvement, employees have to be sufficiently equipped with the necessary skills and empowered with relevant knowledge. Skills and knowledge, not only regarding the job but also about quality standards and approaches, impact workmanship and attitudes of employees as well as how they deal with newly discovered challenges.

These challenges can systematically and simultaneously arise from both inputs and outputs. That is why organisations must first ensure that employees are equipped with the most relevant and necessary skills for their jobs. These skills should go hand in hand with compliance with standards as this will have a positive impact on the company, influencing attitudes and improve on poor workmanship. Furthermore, consistency could be maintained in terms of work execution based on customer requirements and specifications. The findings from both the literature review and primary research highlighted the importance of Quality Management Practices and addressed quality related challenges encountered by the suppliers of services and goods and that could negatively affect customers.

### 5.5.3 RECOMMENDATIONS FOR FURTHER RESEARCH

This study has shown various relationships among the component parts (challenges, inputs and outputs) of the quality improvement model proposed in this study. Further to that, this study has revealed new problems areas in relation to Quality Management Practices that could be addressed in future studies. One such challenge was the use of ISO 9001:2008 Quality Management Systems as a marketing tool rather than a guideline for quality. Other challenges that inhibit the effective Quality Management Practices of ISO 9001:2008 include negative attitude, poor workmanship, and lack of skills and unsustainable practices that would also require further investigation. Although many organisations manage to adopt and implement various strategic improvement methods or practices pertaining to ISO 9001:2008, sustainability remains a serious challenge. It is therefore suggested that a future study could focus on investigating the Quality Management Practices and sustainability.

Any of these proposed further studies could either follow a quantitative or mixed method since this study was qualitative. This study aimed for an in-depth understanding of the phenomenon whereas a mixed method study of quality management practices could facilitate a more balanced perspective about investigation. Thus, a mixed method could facilitate a multiple dimensional investigation of quality management practices in organisations for better understanding of the phenomenon.

## 5.6 CONCLUSION OF THE STUDY

To conclude, it is important for an organisation to adopt one kind of Quality Management System effectively to ensure that it, as a supplier, complies with quality standards. Hence, Transnet Engineering has adopted ISO 9001:2008 as a Quality Management System and Approach. Both the approach and system align with the organisational activities to ascertain customer satisfaction based on quality requirements and quality compliance. Moreover, although, QMS benefits organisations, especially those that are ISO certified, benefits are influenced by various aspects within the organisation such as deciding on and determining the requirements and specifications of a service or product that satisfy their needs.

Even though customer involvement is a priority, there are challenges or factors that can inhibit effective practices of quality management that encourage customer focus. ISO 9001:2008 quality management is an important organisational strategy or technique for achieving competitive advantage while permitting growth. Furthermore, in addition to customer focus, continual improvement is also important for any firm to sustain current levels of performance or even advance them, while dealing with internal and external conditions and establishing new opportunities.

Transnet Engineering adopted and implemented the ISO 9001:2008 Quality Management System, but then new challenges were encountered. These challenges include negative attitude, lack of skills, poor workmanship and sustainability raising concerns that the new challenges were more with employees rather than a system that can either be rectified or improved. Rectifying an attitude is a different type of challenge as it relates to a mind-set change. Furthermore, the conceptual model of the study proposed that the challenges such as the unavailability and frequent failures of locomotives would be addressed through the application of ISO 9001:2008 principles of customer focus and continual improvement to improve the output of product/service quality effectiveness and customer satisfaction. The findings of the study sufficiently demonstrated the relationships established in the proposed model (figure 2.3).

## 5.7 LIMITATIONS OF THE STUDY

This study was conducted in a limited geographical area, Bloemfontein in the Free State Province of South Africa and only involved employees at the Transnet Engineering Locomotive Maintenance Depot in Bloemfontein. Therefore, the findings of this study may only be applicable to other units within Transnet or other service enterprises elsewhere on a very limited scale

## 5.8 CHAPTER SUMMARY

In this chapter, it was shown that while Transnet Engineering has adopted and implemented ISO 9001:2008 Quality Management Systems in its day-to-day activities, new challenges have been encountered by the organisation. These challenges relate to negative attitude, lack of appropriate skills, poor workmanship and unsustainable practices. However, these challenges lie with employees rather than the quality management system (ISO 9001:2008 Quality Management Systems) adopted and applied at Transnet. Furthermore, it was demonstrated that the proposed conceptual framework of this study has demonstrated that there is a strong relationship among challenges, inputs and outputs. From the findings, it was shown that organisations need to ensure that employees are equipped with necessary and relevant skills for their jobs. Hopefully, this initiative will have a positive impact on the attitudes of the employees towards their jobs and improve on poor workmanship.

It was also shown that consistency could be maintained in terms of work execution based on customers' requirements and specifications for sustainability. It is emphasised that an effective approach to addressing the challenges at Transnet should include customer involvement, improved sustainability, enhanced skills, reduced poor workmanship and positive change in attitudes.

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# APPENDIX A: INTRODUCTION LETTER



15 February 2017  
Mr TG Mapande  
Hilton Court 8  
89A Raymond Mhlaba Street  
Hilton  
Bloemfontein  
9301

[godfree.Mapande@transnet.net](mailto:godfree.Mapande@transnet.net)

Dear Mr Godfree Mapande

**Re: Request for permission to conduct research at Transnet SOC Ltd**

Your letter of request for permission to conduct research on "Assessment of Quality Management Practices at Transnet Engineering-Locomotive Maintenance Depot" is acknowledged.

Kindly note the conditions of the study for strict academic purposes, the results of the study will be submitted to Transnet and the research will be confidential and that anonymity for both respondents and the organisations is guaranteed. Should you or the Central University of Technology (CUT) want to publish the study in any other manner than the final thesis, Transnet will be approached for permission to do so.

Based on the above conditions, your request to conduct the research study in Transnet is granted. We are looking forward to the outcomes and recommendations of your study and the positive contributions towards Transnet.

Yours sincerely



**Nonkululeko Sishi**  
Chief Human Resources Officer  
Date: 2017/02/22

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## APPENDIX B: RESEARCH QUESTIONNAIRE

<b>Interview questions</b>	<b>Participant 1</b>	<b>Participant 2</b>	<b>Participant 3</b>	<b>Participant 4</b>	<b>Participant 5</b>
<b>1. To what extent are employees of Transnet Engineering Locomotive Maintenance aware of and understand ISO 9001?</b>					
<b>2. What is your understanding of continuous improvement as prescribed by ISO 9001?</b>					
<b>3. Have you been informed what is meant by product/service quality effectiveness as contained in ISO 9001? Could you explain this in your own words?</b>					
<b>4. In your opinion, which factors do you think could affect Quality Management Practices at Transnet Engineering?</b>					
<b>5. In your opinion has the implementation of ISO 9001 made any positive impact on quality outcomes at Transnet Engineering? Express your views.</b>					
<b>6. Are you conversant with the terms customer focus and customer satisfaction as contained in ISO 9001? What do you think customer focus is all about?</b>					

<b>Interview questions</b>	<b>Participant 1</b>	<b>Participant 2</b>	<b>Participant 3</b>	<b>Participant 4</b>	<b>Participant 5</b>
<b>7. How would you explain customer satisfaction?</b>					
<b>8. Would you say Transnet Engineering provides quality services to its internal clients? Give reasons for your answer.</b>					
<b>9. Do locomotives serviced by Transnet Engineering experience frequent breakdowns? In your experience, do they last long?</b>					
<b>10. What efforts have been made at Transnet Engineering to continuously improve quality services to its clients?</b>					
<b>11. Has Transnet Management exposed you to training on the various aspects of ISO 9001? If yes, to what extent have you adopted the principles of ISO 9001 in improving quality in your work at Transnet Engineering?</b>					
<b>12. How would you describe the overall impact of ISO 9001 adoption and implementation at Transnet Engineering considering the services rendered to internal clients at Transnet?</b>					

<b>Interview questions</b>	<b>Participant 6</b>	<b>Participant 7</b>	<b>Participant 8</b>	<b>Participant 9</b>
<b>1. To what extent are employees of Transnet Engineering Locomotive Maintenance aware of and understand ISO 9001?</b>				
<b>2. What is your understanding of the idea of continuous improvement as prescribed by ISO 9001?</b>				
<b>3. Have you been informed what is meant by product/service quality effectiveness as contained in ISO 9001? Could you say this in your own words?</b>				
<b>4. In your opinion, which factors do you think could affect Quality Management Practices at Transnet Engineering?</b>				
<b>5. In your opinion, would you say the implementation of ISO 9001 has made any positive impact on quality outcomes at Transnet Engineering? Express your views.</b>				
<b>6. Are you conversant with the terms customer focus and customer satisfaction as contained in ISO 9001? What do you think customer focus is all about?</b>				

<b>Interview questions</b>	<b>Participant 6</b>	<b>Participant 7</b>	<b>Participant 8</b>	<b>Participant 9</b>
<b>7. How would you explain customer satisfaction?</b>				
<b>8. Would you say Transnet Engineering provides quality services to its internal clients? Give reasons for your answer</b>				
<b>9. Do locomotives serviced by Transnet Engineering experience frequent breakdowns? In your experience, do locomotives serviced by Transnet engineering last long?</b>				
<b>10. What efforts have been made at Transnet Engineering to continuously improve quality services to its clients?</b>				
<b>11. Has Transnet Management exposed you to training on the various aspects of ISO 9001? If yes, to what extent have you adopted the principles of ISO 9001 in improving quality in your work at Transnet Engineering?</b>				
<b>12. How would you describe the overall impact of ISO 9001 adoption and implementation at Transnet Engineering Bloemfontein Locomotive Maintenance considering the services rendered to internal clients at Transnet?</b>				

