

Evaluating ISO9001 principles in a service organisation

T Bowen



orcid.org 0000-0001-7310-4087

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Supervisor: Dr JA Jordaan

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Student number: 21631123

Dedication

Here is to the ones that we got
Cheers to the wish you were here, but you are not

Toast to the ones here today
Toast to the ones that we lost on the way

In memory of
Pieter and Lisa de Jager

Acknowledgements

My Father God, thank you, it is the most wonderful thing to be loved by you. All glory to you.

The completion of this study could not have been possible without the support of the following individuals:

My late father, Pieter, who inspired me every day to be the best version of myself.

My late mother, Lisa, who started this journey with me, but sadly will not see me finish it. Thank you for encouraging and supporting every decision I made till, your last day.

Ava, for being my inspiration every day.

Andrew, who stand by me, always.

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“Oom’ Hannes Loubser, your encouragement every day made a world of difference.

The Something group members, who made me believe that we can make something out of nothing. Dr Innocent Shuro, for teaching me what brotherhood is. Ms Chrisna Lloyd, who taught that where you come from, does not determine where you will be.

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And lastly

Dr Johan Jordaan, my supervisor. Thank you for your patience, support and allowing me just to be me.

ABSTRACT

ISO9000 is a quality management system (QMS), consisting amongst others of ISO9001, which is a set of international quality assurance (QA) standards that enable companies to manage quality effectively by providing an organisation with the guidelines to do so. This study evaluates the application of ISO9001 principles in a service organisation by assessing the data collected from the QMS, based on the ISO9001 standard guidelines of the Centre for Environmental Management (CEM) at the North-West University (NWU) for the years 2012-2019.

The ISO9001 standard guidelines are not industry-specific and can therefore be implemented in any size or type of organisation. ISO9000 can assist an organisation in meeting its customer's needs, as well as comply with and continually improve on their regulatory requirements related to quality. CEM transparently and diligently follows these principles in all their operations. All processes and products at CEM are designed and implemented to support customer satisfaction.

The quality management guidelines are further extended to suppliers and subcontractors, to provide quality service and to maintain mutually beneficial ties. Corporate and operating priorities are periodically developed following the executive assessment cycle, as well as the strategic and the organisational preparation phases. These priorities are included in the quality targets.

This study will focus on this service organisation, Centre for Environmental Management, to evaluate its use of ISO standards guidelines. This research evaluates whether the values outlined in the standard are being implemented within an ISO9001-based active QMS, whether they address quality and whether they allow the organisation to improve service quality and customer satisfaction continuously.

Keywords

Quality management system, ISO9000, service industry, management principles, quality, customer focus, engagement, leadership, improvement, leadership, evidence, decision-making.

LIST OF ABBREVIATIONS

Table 1: Abbreviations used in this document

Abbreviation	Meaning
BS575	British standard (BS) 5750
CEM	Centre for Environmental Management
HLS	High-Level Structure
HR	Human Resources
HRM	Human Resources Management
ISO	International Organisation for Standardisation
LEAN	Lean manufacturing or lean production is a systematic method originating in the Japanese manufacturing industry for the minimisation of waste without sacrificing productivity, which can cause problems.
NWU	North-West University
PDCA	Plan, Do Check, Act, Management
QA	Quality Assurance
QC	Quality Control
QM	Quality Management
QMS	Quality Management System
SAATCA	South African Auditor & Training Certification Authority
Six Stigma	Six Sigma is a set of techniques and tools for process improvement.
SPC	Statistical Process Control
SWOT	Strengths, Weaknesses, Opportunities and Threats
TCP	Transmission Control Protocol
TQM	Total Quality Management

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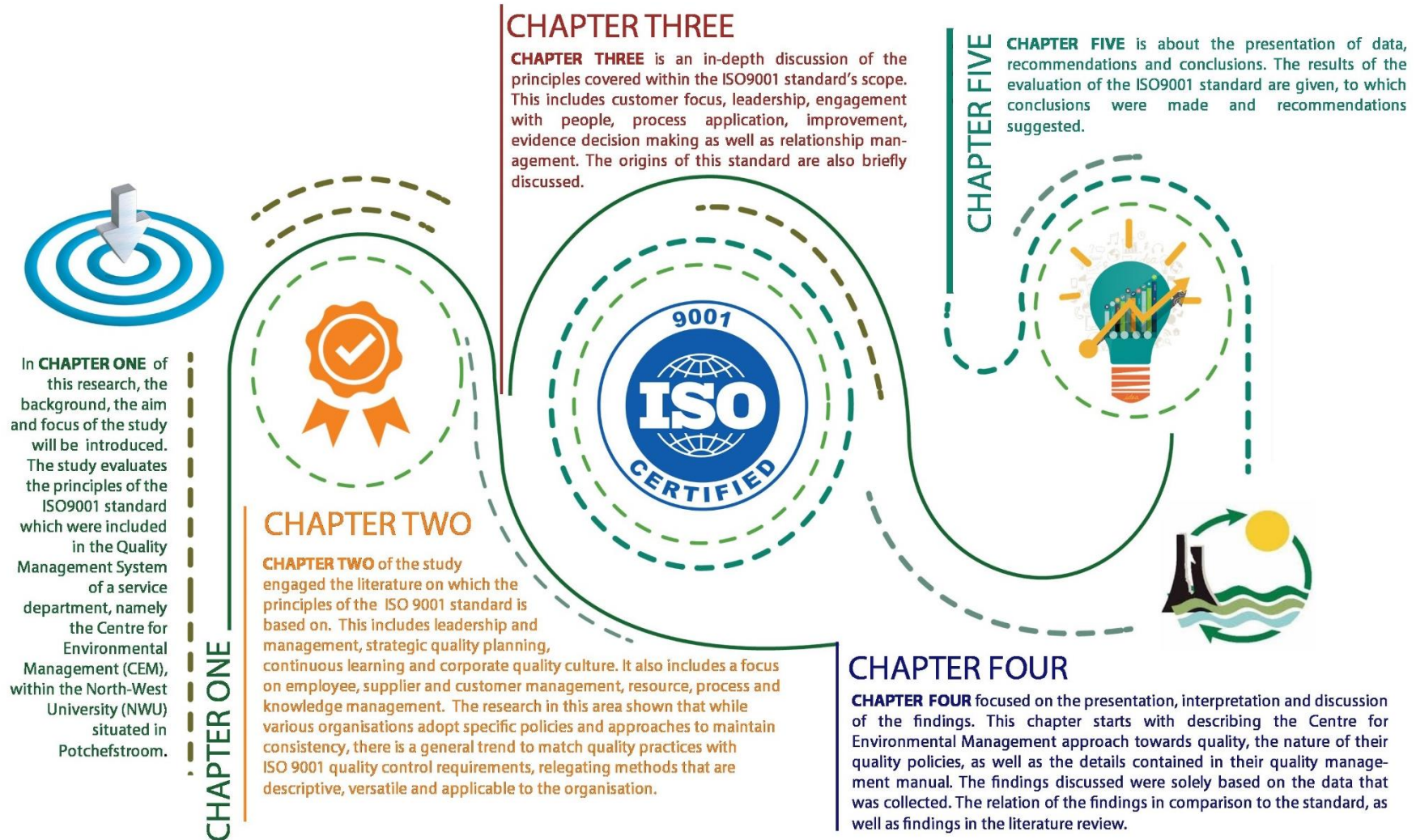
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OVERVIEW OF DISSERTATION



(Source: Authors own)

CHAPTER ONE BACKGROUND TO THE STUDY



This chapter will discuss the following areas as they relate to the background of the study:

Background to the research problem

- This section discusses the root as well as the context of the problem in this dissertation.

Problem statement and core research question

- This section will indicate the direction of the inquiry of this study.

Research objectives / specific research questions

- This section will indicate the objective and goal which will be reached in this study.

Importance and benefits of the proposed study

- This section will indicate purpose of a research proposal.

Delimitations and assumptions:

- This section includes the delimitations (scope) and assumptions of this study.

Research methodology:

- The research methodology will be discussed, including: description of research design, population and sampling, data collection, strategy as a unit of analysis.

Data analysis

- This section will describe the process which will be followed in this research in relation to inspecting data with the goal of discovering useful information, informing conclusions and supporting decision-making.

Evaluating and indicating the quality and rigour of the proposed research design

- This section will discuss the ethical principles used in this study.

Paradigm / Philosophy

- In this section the paradigm or worldview will be discussed related to this study.

- Research ethics

- This section discussed the ethical principles used in this study.

(Image: Authors own)

1.1 INTRODUCTION

During the period of mass-production, organisations realised that it is inefficient to manufacture a product from start to finish. Famous businessmen, such as Henry Ford, implemented the principle of “division of labour”. For Ford, this meant which allowed him to could build multiple Model-T Ford cars in a continuous process. This strategy allowed his company to save costs as well as to improve production. He broke down the production process in smaller parts to simple, repetitive tasks (ISO, 2009); these processes became pre-specified and standardised.

Breaking production into smaller parts may have various benefits to an organisation, one being that quality can be controlled (ISO, 2009). Organisations need to understand the importance of how these smaller processes fit into each other; that changes to one process may have a significant impact on the linked processes that follow (ISO, 2013).

The separation of work processes, however, also poses challenges. A person working in an isolated process focuses on specific elements, and therefore they may fail to understand how this process fits into the broader workflow (ISO, 2009). Separating work processes often leads to the feeling of being disconnected. Additionally, due to the separation, the quality of the overall product is often challenging to manage, as sub-optimisation could occur.

Therefore, the biggest threat to quality is variation. Quality can only be achieved in a controlled environment and needs to be managed intensively by an organisation (ISO, 2007). The organisation needs to realise that the quality of the overall product is determined by the quality of each component manufactured separately (ISO, 2009). It is, therefore, essential for organisations to view quality from a macro- as well as a micro perspective regarding work processes.

1.2 CHAPTER OVERVIEW

This chapter gives a short description of the background, aim and focus of the study. This study evaluates the principles of the International Organisation for Standardisation’s (ISO) ISO9001 standard that is included in the quality management system (QMS) of the Centre for Environmental Management (CEM) at the North-West University (NWU).

1.3 BACKGROUND TO THE RESEARCH PROBLEM

Today, organisations are facing a complex business environment, with more demands placed on the organisation by the shareholder than ever before (Diong, 2017). It has become imperative that organisations manage their processes using a holistic view.

A holistic view may have an impact on the quality outputs of an organisation, by providing early indicators of quality deviations built into the processes. Organisations are encouraged to adjust their operations to counter any quality deviations timeously (Diong, 2017).

ISO9001 QM principles are internationally recognised as a set of principles which allow an organisation to focus on quality products and services and the management thereof (Too and Too, 2015). The principles also assist an organisation to continually improve performance by focusing on customers' gains in terms of service or product delivery (Too and Too, 2015).

Each ISO9001 standard provides organisations with a set of indicators. These indicators allow the organisation to ensure that processes are appropriately managed, with quality as an outcome. The principles in the standard promote integration. Abiding by this standard guides the facilitation of interdepartmental communication and also encourages managers to discuss common problems between departments (ISO, 2009).

As stated, quality should be managed holistically within an organisation, not isolated within individual work processes. Therefore process maps should be developed, describing the process flow and resources in detail (ISO, 2007). Connected process maps will enable all role players to understand process integration. These documented processes may also be used as guidelines and as a training platform when new staff are trained, as the document includes the details of all processes (ISO, 2009).

The process methodology, underlined in ISO9001 as of the 2000 version and higher, must be used by every organisation because it is focused on the organisation's procedures regardless of what they produce or provide (Boudreaux, 2010). By implementing these principles within a service business, the competitiveness of the business is boosted (Boudreaux, 2010).

When the standard ISO9001 system was adopted more than two decades ago, it was generally seen as a tool in the manufacturing sector. It covered the chemical, refining and packaging industries, in areas such as quantity production (Boudreaux, 2010). Although initially intended to be used in manufacturing, it is also used in the service industry (Boudreaux, 2010). In the next section, the problem statement and core research questions will be discussed.

1.4 PROBLEM STATEMENT AND CORE RESEARCH QUESTION

It is often found that service organisations do not manage quality, partly because many people working in service organisations do not understand quality, nor do they manage their processes. They also do not understand what quality entails regarding their services or how to achieve it. The ISO9001 principles can address these issues (Kumar, 2011). Therefore, this study seeks to ascertain which guidelines would physically improve quality in the organisation.

Research Question: Can an active QMS, based on the ISO9001 principles, address quality and allow a service department to increase the quality of services and hence continuously improve customer satisfaction?

The research objectives, as well as the specific research questions, also need to be discussed. In the next section, the key concepts, the main objectives of this research, as well as the sub-research questions, as derived from the ISO9001 standard, will be stated.

1.5 RESEARCH OBJECTIVES /SPECIFIC RESEARCH QUESTIONS

The title of this study is *Evaluating ISO9001 principles in a service organisation*.

Therefore, the key concepts are as follows:

- **Evaluate:** To form an idea of the amount, number, or value;
- **ISO9001:** ISO9001 is defined as the international standard that specifies requirements for a QMS. Organisations use the standard to demonstrate the ability to consistently provide products and services that meet customer and regulatory requirements;
- **Principle:** a fundamental truth or proposition that serves as the foundation for a system of belief, behaviour or a chain of reasoning;
- **Service organisation:** an organisation which generates funds by providing a service to their customers.

The main objective of this research is:

- To evaluate ISO9001 principles in a service organisation.

The sub-research questions, as derived from the ISO9001 standard, are as follows:

- Can ISO9001 principles assist an organisation to retain customer confidence by meeting customer needs?
- Can ISO9001 principles assist an organisation in improving leadership and leadership communication which lead to staff knowing what their role is within an organisation?
- Can ISO9001 principles assist an organisation with the inclusion of staff in processes, which in turn leads to motivation at work and hence leads to effectiveness within the work process?
- Can ISO9001 principles assist an organisation in understanding work processes, which lead to consistency and results achieved?
- Can ISO9001 principles assist an organisation in solving problems by continually improving processes until desired outcomes achieved?
- Can ISO9001 principles assist an organisation in making calculated decisions by analysing evidence from the data?

- Can ISO9001 principles assist an organisation in nurturing supplier relationships, so that organisations can rely on them when it comes to unique production needs that must be met?
- Can a QMS improve the efficiency of an organisation? Additionally, can it lead to improved customer satisfaction?
- Can the understanding and implementing of QMS guidelines lead to improved quality within an organisation?

In the following section, the importance of this study will be discussed. The section will also state the proposed benefits that may be obtained from the research.

1.6 IMPORTANCE AND BENEFITS OF THE PROPOSED STUDY

An active QMS is an integrated system, allowing organisations to improve service excellence in both production and service industries continuously. The ISO9001 provides guidelines to allow an organisation to successfully implemented QMS. Once the QMS has been implemented, the following benefits for an organisation may be achieved, as seen in Table 2 (Chen *et al.*, 2016).

Table 2: Benefits of a QMS

<i>Assessment processes</i>	<i>Customer focus</i>	<i>Work efficiency</i>	<i>Addressing Risk</i>
• A QMS assessment process: Allows the organisation to assess; an organisation has a better understanding of each object. By assessing each object, it may also lead to the identification of new business opportunities.	• A QMS allows an organisation to explore and understand the needs of their customers. By understanding that the customer wants, their needs and expectations may be addressed successfully.	• A QMS allows an organisation to streamline each process within their work flow procedures. By streamlining processes, an organisation allows: workflow and productivity to increase, to bring production costs down, as well as to meet statutory and regulatory requirements.	• A QMS allows organisations to expand to new markets and the ability to identify and address risks

(Source: Chen *et al.*, 2016)

1.7 RESEARCH METHODOLOGY

1.7.1 Description of overall research design

This study makes use of technical analysis as the research methodology, using qualitative document analysis techniques. Historical data will be collected from the Centre for Environmental Management (CEM, NWU) and then sorted logically, according to operational themes. Sorting

the data allows it to be compared and measured, and thereafter conclusions can be drawn (Du Plooy, 2009).

Data is collected from reports made available by the Centre for Environmental Management (Terre Blanche, 2006). Once the data are collected, analysis occurs by combining data from three sources, namely quality principles that emerge from the literature study; the quality principles as included in the ISO9001 standard and finally the data collected from the organisation related to the seven principles of Quality Management (Bryman & Bell, 2014). The process can be represented as follows:

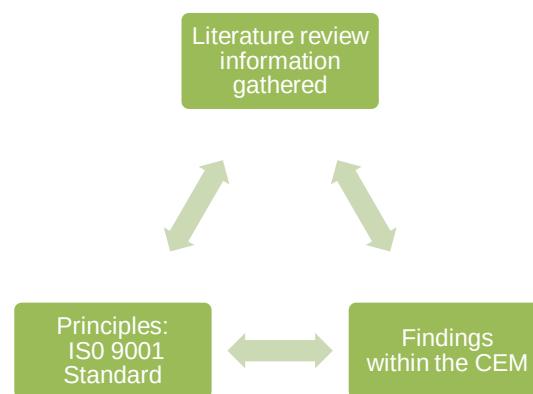


Figure 1: The process of data collection within this study

(Source: Bryman & Bell, 2014)

This method permits the discovery of areas that would improve quality. It further allows the researcher to determine whether the problems and recommendations from the literature study are aligned with the guidelines provided within the ISO9001 standard. Lastly, the researcher can determine if an organisation that based their approaches on the ISO9001 standard would achieve quality-related benefits for their organisation.

The seven principles of quality management are as follows: i) the role that meeting customer needs plays in the organisation; ii) the role of leadership and leadership communication in the organisation; iii) the role that staff play in the effectiveness of work processes; iv) the role of the depth of understanding of staff about processes; v) the role of quality to achieve process improvement; vi) the role of data analysis in decision-making and vii) the role of supplier relationships in achieving quality.

1.7.2 Data description

In this section, the data will be described in terms of the study population, unit of analysis as well as the geographical analysis. The access to and suitability of the population will also be mentioned. The reader should note that as of the start of the study, restructuring had taken place

at the NWU. The CEM no longer operates under this name. This, however, does not affect the data collected, nor the outcomes which were achieved.

1.7.2.1 Study settings

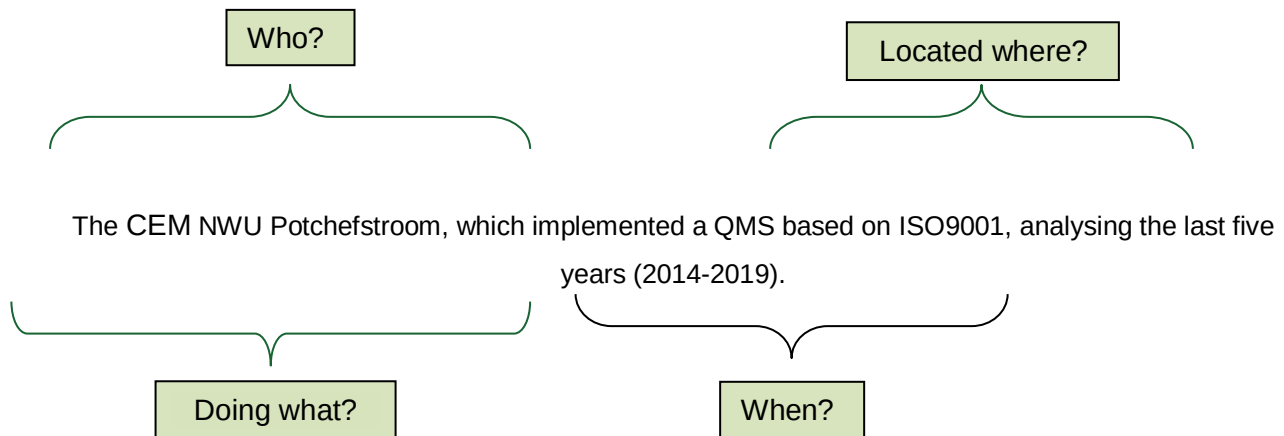


Figure 2: Setting where this study is performed

(Figure: Authors own)

This research is led through a case study of a single organisation, the CEM, which is a “business” unit within the NWU. The CEM consists of around 20 employees, from three different departments, namely course coordination, technical employees and financial employees. The CEM is also an NWU-approved decentralised short learning-program provider in the fields of Environmental and Occupational Health and Safety Management.

The QMS of this organisation is based on the international ISO9001 QM standard. According to CEM’s QM Manual (CEM (NWU), 2019b:18), they aim to achieve the following at the organisation:

To realise the vision and mission of the CEM, as well as to continually satisfy and exceed customer expectations, the CEM staff is committed to:

Maintain and regularly improve our QMS and our performance in line with the plan, do, check and act management principles. Plan and implement all CEM processes and realise all CEM products and services to sustain customer satisfaction while exceeding expectations and needs. Consistently and reliably meet all requirements that may apply to the CEM activities, products and services, to ensure alignment with the strategic context of the NWU, such as the applicable legal requirements, customer requirements, the requirements of NWU and Faculty of Natural Sciences; and any other requirements adopted.

Regularly conduct SWOT-analyses to determine the internal and external contextual threats and opportunities that may affect quality. Plan and realise all of its processes by involving process owners, managers and relevant role-players to ensure the achievement of desired outcomes, customer satisfaction and adherence to this quality policy. Continually improve the CEM QMS and performance using monthly business meetings, self-evaluations, internal and external audits, customer satisfaction surveys, supplier and management reviews, the monitoring and measurement of critical process parameters, the trending of data and the management of non-conformity.

As far as is reasonably practicable, ensure that all planning and improvement processes, as well as all decisions and the realisation of the CEM products and services, are informed by the analysis of data and recorded factual information. To extend the CEM QM arrangements to suppliers and sub-contractors to ensure the delivery of quality service and sustaining mutually beneficial relationships. Adopt a quality risk-based approach to identify, assess and manage threats to sustained quality while harnessing opportunities.

This study seeks to investigate and evaluate the application of ISO9001 QMS principles at the CEM. It aims to determine if the understanding and application of these international guidelines could lead to value-added quality services in the organisation.

Statistics related to quality will be collected for a five-year period. Dividing the dates into themes will make it possible to compare data. These conclusions based on the comparisons may lead to important insights which could describe the effects of QMS on the quality outcomes of the organisation.

The findings will act as evidence to convince other organisations of QMS' benefits. Knowledge obtained in this study could, therefore be useful for other organisations within the NWU.

1.7.2.2. A geographical analysis of analysis

According to the CEM's yearbook: "The Centre for Environmental Management (CEM) is an environmental management knowledge generation and dissemination centre, as well as a skills transfer centre, of the Faculty of Natural Science, NWU, Potchefstroom Campus" (CEM (NWU), 2019b:4).

1.7.2.3 Summary of the unit of analysis

The unit of analysis can be summarised as follows:

Table 3: Summary of the unit of analysis

Unit	Area
Geographical:	Potchefstroom, South Africa.
Sector:	Clients in both the private as well as the public sector.
Individuals:	CEM compiles of + 20 employees, from three different departments, namely: Course Coordination, Technical employees and Financial Staff members.

(Table: Authors own)

Information obtained is not available in the public domain. It has been provided to the researcher directly from the organisation.

1.7.2.4 Access

Permission was obtained from the organisation's managing director, as well as the head of administration, to conduct this research. Information was obtained through annual reports and other historical data, as provided by the department.

According to the CEM (NWU) QM Manual (CEM (NWU), 2019a:18), these QMS aims are:

"The CEM developed, implemented and maintains a QMS to ensure that knowledge generation and dissemination processes as well as the processes supporting these to ensure and exceed both customer satisfaction and to assure sustained conformance to requirements by all.

The QMS is also deemed to be the license to operate as a self-funded, decentralised Centre of the Faculty of Natural Science. At the same time, the registration of some of CEM's courses depends on some of the elements of a QMS.

The following QMS elements are defined by SAATCA as the minimum that is required from training service providers (TCPs)¹ to register courses: roles and responsibilities – defined roles with regards to the management system and provision of training, provision of training related infrastructure and work environment, customer satisfaction (learners and clients), internal audits, control of nonconforming training services, corrective action, preventative action, the design, development and evaluation of course materials and documentation to ensure conformity with the current SAATCA criteria, the presentation of the course, the verification of prerequisite knowledge of learners where this is required, the control of course publicity and advertising; and records.

The following administrative procedures are required by SAATCA as well: The design, development and evaluation of course materials and documentation; the presentation of the course; the verification of prerequisite knowledge of learners where this is required; the control of course publicity and advertising; a document control system for maintaining the currency of procedures and course notes; the selection of on-going training programs for facilitators, including witnessing and evaluation annually; management reviews; records of individual learners and each course offering, including analysis of statistics; learners assessment procedure, including “competent/not yet competent” criteria; operation and conduct of the examination and re-examination, including security and confidentiality of examination questions and answers and marked papers; issue and withdrawal of certificates; storage and eventual disposal of marked papers and continual evaluation records.”

In summation to the criteria mentioned above, this study will evaluate the CEM QMS, which is based on the ISO9001 standard. Data associated with quality has been collected in the same format for a minimum five-year period and is, therefore, comparable. This study aims to provide an understanding of the effects of this quality management system. However, the process of how the data will be analysed must also be explained, as can be seen below.

¹ The CEM accepted this list as the minimum requirements for the CEM's QMS. A detailed QMS as required by ISO9001 (as amended) is not implemented by the CEM, while certification of the QMS is also not an objective of the CEM.

1.7.2.5 Data analysis

The process of data collection is illustrated as follows:

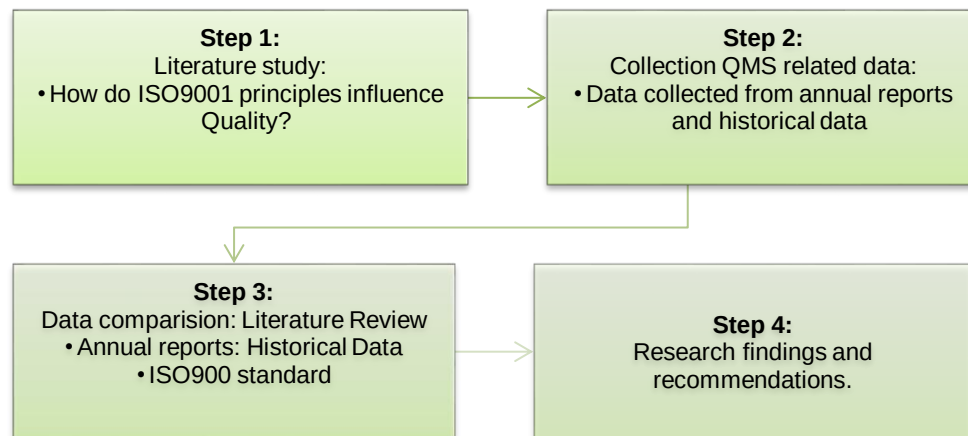


Figure 3: Process of data collection in this study

(Figure: Authors own)

The data is analysed systematically and sequentially. Sets of data are analysed separately by matching ISO principles with empirical results. According to Bryman and Bell, the analysis process is as follows (Bryman & Bell, 2014):

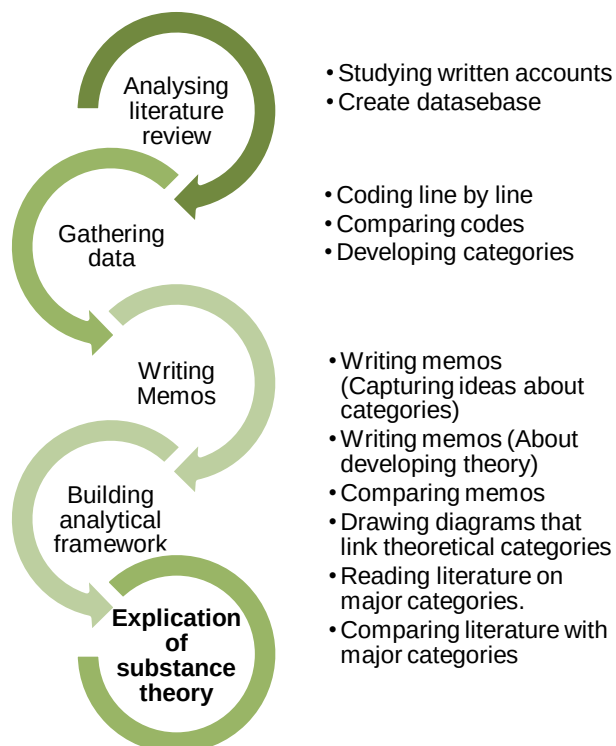


Figure 4: The Theory Process

(Source: Bryman & Bell, 2014)

The data will be broken down into categories. Through this process, the data can be generalised, as significances could be indicated (Bryman & Bell, 2014). These categories are based on the main principles stated in the ISO9001 standard. The main categories are as follows:



Figure 5: The main categories in data analysis

(Source: ISO, 2013)

The historical data, as provided by the department, will be analysed. Conclusions will then be used as a regulator in line with the principles as subscribed in the ISO9001 standard. By making the connection between datasets, comparisons can be made which would assist in reaching conclusions within this study and answering the main research question: *Can the understanding and implementing of QMS guidelines lead to improved quality within an organisation?*

In the following section, the quality of the research design within this study will be evaluated. The rigour of the design will also be discussed.

1.8 EVALUATING AND INDICATING THE QUALITY AND RIGOUR OF THE RESEARCH DESIGN

Rigour guarantees the consistency of research findings (Noble & Smith, 2015) and can be attained by validating objectivity and reliability in research (Lincoln & Guba, 1999). Brink describes rigour as openness, relevance, epistemological and methodological congruence, thoroughness in data collection and the data analysis process (Brink, 1993). Rigour can be achieved through reliability, applicability and non-alignment within the research scope (Noble & Smith, 2015). In this study, rigour is applied as follows:

Table 4: Rigour for this study

Criteria	Means to support
<i>Credibility</i>	• Awareness has been built on the previous data set. • Credibility between the researcher and the institution has been established. • Verification of all data collected and viewed.
<i>Conformability</i>	• Method of collection of information is recorded • System of review has been reported • Process of consistency evidence testing
<i>Dependability</i>	• All data supplied is verified by the Centre for Environmental Management (CEM) • Records of all activities and systems.
<i>Openness</i>	• In the research process, openness was of importance. • Openness made it possible for all involved to have a free flow of information.
<i>Relevance of topic</i>	• The topics discussed by this work are essential because the knowledge can be related to the principles of ISO9001. • The relevance of this guideline to perform results in a business organisation, in the sense of a QMS is essential.
<i>Epistemological and methodological congruence</i>	• There is an active link between the goals of this study, the research questions and the data obtained in this research. • The measured QMS in this analysis is based on the principles of ISO9001.
<i>Thoroughness in data collection and the data analysis process</i>	• The data collected during this investigation process helps the analysis question to be answered, and the results to be evaluated. • The data collected will help the relevant research proposal's hypotheses, concepts and methods.

(Source: Bradshaw et al., 2017)

This study will be conducted with specific protocols in mind, to ensure transparency. Findings will be supported by data collected during the literature review. The research design is grounded in a lucid and well-documented method, which delivers a clear explanation of the use of the methodology. Data collection also ensures equality, dependability and comparability within this study. The comparison of codes among the researcher and the supervisor are conducted to safeguard that the procedure is comprehensive, rational and thorough (Noble & Smith, 2015).

Positivism is a philosophical theory which states that specific knowledge ("positive") is based on natural phenomena and their properties and relations. Consequently, information derived from sensory experiences, interpreted by reason and logic, constitutes the primary source of all

intelligence. Within this study, the paradigm to be used is the positivist approach. In the next section, this philosophy will be discussed as it relates to the study.

1.9 RESEARCH PHILOSOPHY

As mentioned, this study will make use of the positivist approach as the research paradigm. Further explanation is provided in the table below, followed by a description of the parameters of the study. The next table summarises the paradigm used in this study:

Table 5: Paradigm used in this study

Characteristic	Detail
Ontological	The nature of this study is reality. The focus is on a single objective. The social nature of this study is deterministic and reactive. The study aims to discern what the effect of the implementation of the principles are on the outcome of quality within the organisation.
Axiological	The overriding goal of this study is an explanation. It explains the benefits of the principles, practically, to organisations.
Epistemological	The knowledge that will be generated in this study is nomothetic, time-free and context-dependent. The view of causality is that real causes exist: if the principles are implemented: specific outcomes can be expected.

(Source: Authors own)

The next table summarises the parameters used in this study:

Table 6: Parameters in this study

Characteristic	Detail
Dominant data	Technical analysis, using the qualitative document analysis method.
Perspective	Objective.
Focus	Scientific.
Methodology	Experimentalist.
Context	Traditionalist.
Descriptive research	A variable which is defined in terms of the standard which can be measured. This will be done in terms of a case study.

Characteristic	Detail
Experimental research	Aims to identify casual connections. Connections are made between the standard principles, the principles of quality, as well as the outcomes obtained in terms of quality within the organisation.
Basic beliefs	The research scope is external and objective. The observer is independent.
Research	Within this research, the focus is on facts. Understanding is obtained by reducing the phenomenon to its simplest form in terms of drawing similarities between concepts.

(Source: Authors own)

1.10 RESEARCH ETHICS

Minimising the risk of harm and obtaining informed consent: As historical data is used, the theme in this study will not affect the participants personally, and there is no risk of causing harm. Ethical clearance was also received from the NWU Ethical Committee. In the following section, the delimitations, as well as the assumptions (limitations), will be discussed.

1.11 DELIMITATIONS AND ASSUMPTIONS

1.11.1 Delimitations

Limitations: In this study, the benefits of a QMS are investigated in a single organisation. Therefore, the outcome of this study cannot be extrapolated to the broader population. The data only covers a specific period; representing only the results of this organisation during the period.

Delimitations: Delimitations represent the controlled parameter of this study. The study focuses on the impact of the ISO9001 principles in the CEM (NWU). The delimitations, therefore, are as follows:

The aim: This study aims to understand how the principles included in the ISO9001 standard may influence the result of QM within the organisation, namely increased customer satisfaction. The standard is a controlled framework, allowing research to take place solely within these outlined criteria as guided by these principles.

The research questions: This study is limited by the concepts addressed in the ISO9001 standard. These principles limit the scope by excluding other factors that may emerge from the study.

The scope of the study: This study represents an isolated case; a single organisation operating in a single university.

Theoretical perspectives: The perspectives adopted in this study, as set out in this document, represent a controlled view of the influence of the principles of the ISO9001 standard and how they may influence the quality at a university department. The intended study aims to assess this issue from this specific angle. It, therefore, does not represent a generalised view, presenting any other department included in any other location or institution.

1.11.2 Assumptions

This study assumes that all organisations aim to achieve maximum QM and that they would like to improve customer confidence. It is also assumed that organisations strive to adapt their strategy to meet these goals.

Further assumptions include that organisations prefer to achieve a higher level of leadership and that they would like to support their workers to understand their role in the organisation. Organisations also aim to understand how their processes are linked to achieving consistency in their operations.

Subsequently, the assumption is made that organisations formally investigate nonconformities to processes to avoid repeating failures in their processes. Moreover, the organisation makes use of evidence in the form of historical data to make future decisions and that organisations make decisions based on calculated risk analysis. This assumption might be incorrect.

1.12 CONCLUSION TO CHAPTER ONE

This chapter has discussed the background of this study, the research objective, as well as specific research questions which have been formulated. The importance of this study was also discussed. Other important aspects, for example, the research methodology and the method of data analysis, were provided.

Additionally, the aim and focus of the study were introduced. As mentioned, the study evaluates the principles of the ISO9001 standard, which were included in the QMS of a service department, namely the CEM, within the NWU situated in Potchefstroom.

The next chapter of this study engages the literature on which the principles of the ISO9001 standard are based on. This includes leadership and management, strategic quality planning, continuous learning and corporate quality of culture. It also includes a focus on employee, supplier and customer management; in addition to resource, process and knowledge management.

The research methodology will be discussed; this includes the overall description of the research design and the scope of the data that is used, as well as the method of data collection, will also be explained.

CHAPTER TWO LITERATURE STUDY



This chapter engaged the literature on which the principles of the ISO 9001 standard is based on:

Views of quality-management

-This section discusses the two views management have regarding quality.

Role of change towards the implementation of quality

-This section discusses the important role of change in quality.

Relationships of Quality Management Approach towards quality

-This section illustrates the relationship between the areas of quality management, namely: Quality Assurance, Quality Control and Quality Management System (QMS).

Theory of quality management

-The following section discusses the main areas where quality need to be implemented within an organisation:

- Theoretical Area 1: Leadership and management
- Theoretical Area 2: Strategic quality planning
- Theoretical Area 3: Total continuous learning
- Theoretical Area 4: Corporate quality culture
- Theoretical Area 5: Employee management
- Theoretical Area 6: Customer management
- Theoretical Area 7: Supplier management
- Theoretical Area 8: Resource management
- Theoretical Area 9: Knowledge management
- Theoretical Area 10: Process management

Quality Management Tools

- This section discusses the main tool within in quality management, namely the Plan-Do-Check- Action cycle. The guidelines of quality used in the following tools are also analysed: ISO 9001 standard, LEAN, TQM and Six Sigma.

Focus: ISO9001

- This section focusses on the approach of the ISO 9001 standard towards quality.

Quality standards and ISO9001

- This section discusses the purpose and aim of the ISO 9001 standard.

(Image: Authors own)

2.1 INTRODUCTION

Chapter One discussed and explained the research background, aims and objectives of this study. The following chapter will, therefore review the relevant literature supporting the current study and describe how this research relates to existing research concerning Quality Assurance (QA), QC and QM.

The International Standards Organisation (ISO) offers guidelines on how to achieve and manage quality in an organisation. During the ISO survey (ISO, 2007), organisations indicated that various benefits are achieved by adopting this standard. These benefits include well-organised processes, customer fulfilment, enhanced financial performance, the gratification of shareholders, sustainability, continuous development and global acknowledgement (Ahmed, 2017).

This ISO9001 standard defines QM as “coordinated activities to direct and control an organisation concerning quality”, contained in the brochure, “*ISO 19001: How to used it*” (provided by ISO). This brochure indicates that an organisation may benefit in the following areas (Anon, 2019b: 3):

- enable companies to identify and describe new business opportunities;
- help organisations focus on customers to meet their needs to increase business;
- assist organisations, by identifying operational procedures, to function more productively and effectively;
- enable companies to satisfy their quality requirements; and
- assisting organisations in identifying and effectively managing risks.

For an organisation to achieve consistency, it needs to address these critical areas in the form of a QMS; organisations can fail to meet some of these requirements without the proper system in place (this will be discussed in detail hereafter). The following diagram illustrates the evolution of quality in the organisational context.

EVOLUTION OF QUALITY

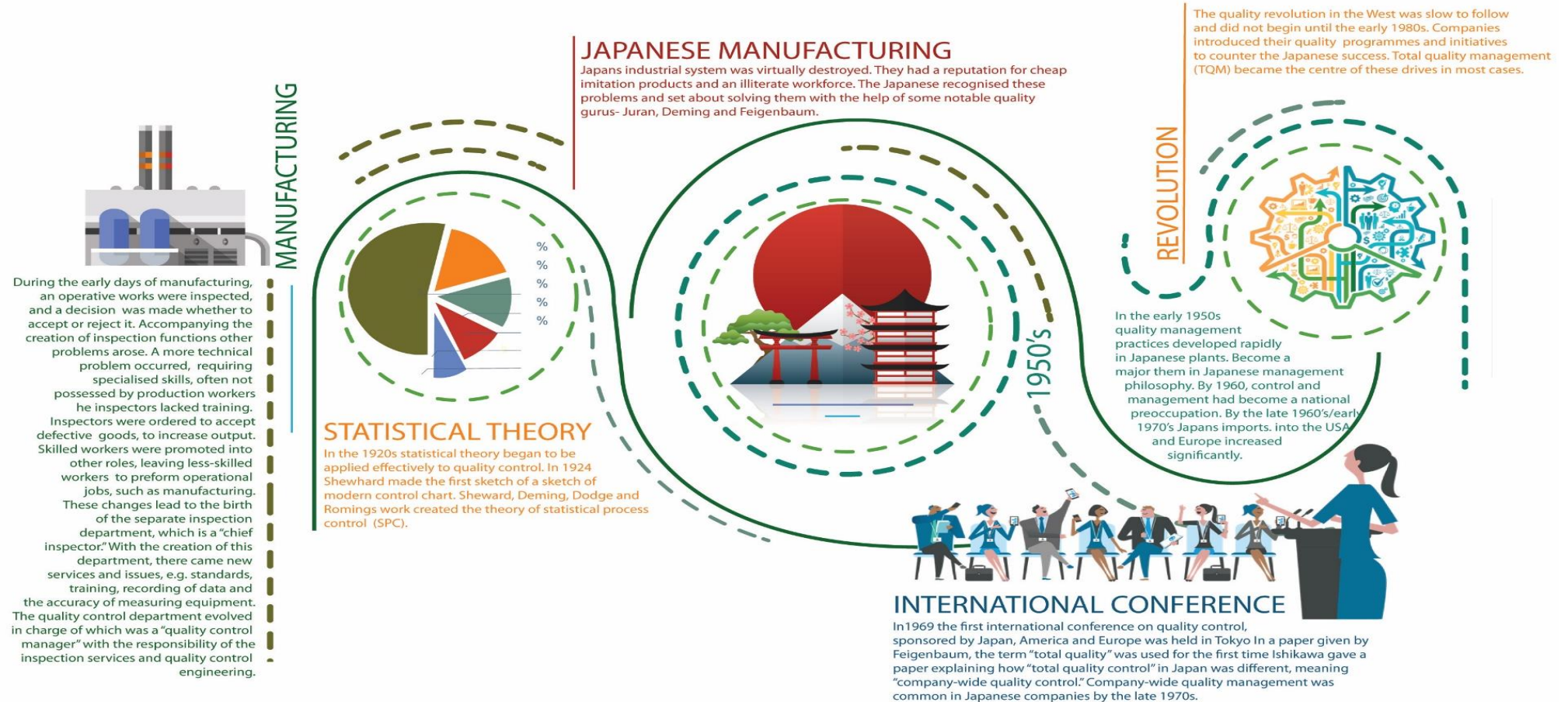


Figure 6: The evolution of quality

(Image Authors own, Source: Adapted from ISO)

2.2 CHAPTER OVERVIEW

This chapter study engages the literature based on the principles of the ISO9001 standard. This includes leadership and management, strategic quality planning, continuous learning and corporate quality culture. It also includes a focus on employee, supplier and customer management; in addition to resource, process and knowledge management. The following section will elaborate on the different views of quality management.

2.3 VIEWS OF QUALITY-MANAGEMENT

The ISO defines quality as the ability of a product to fulfil the needs of a customer, by explicitly focusing on the product/service characteristics. The level of quality that an organisation offers to a client may determine the success of the organisation (Evans & Lindsay, 2013). The following figure represents the two views of quality within the organisation:

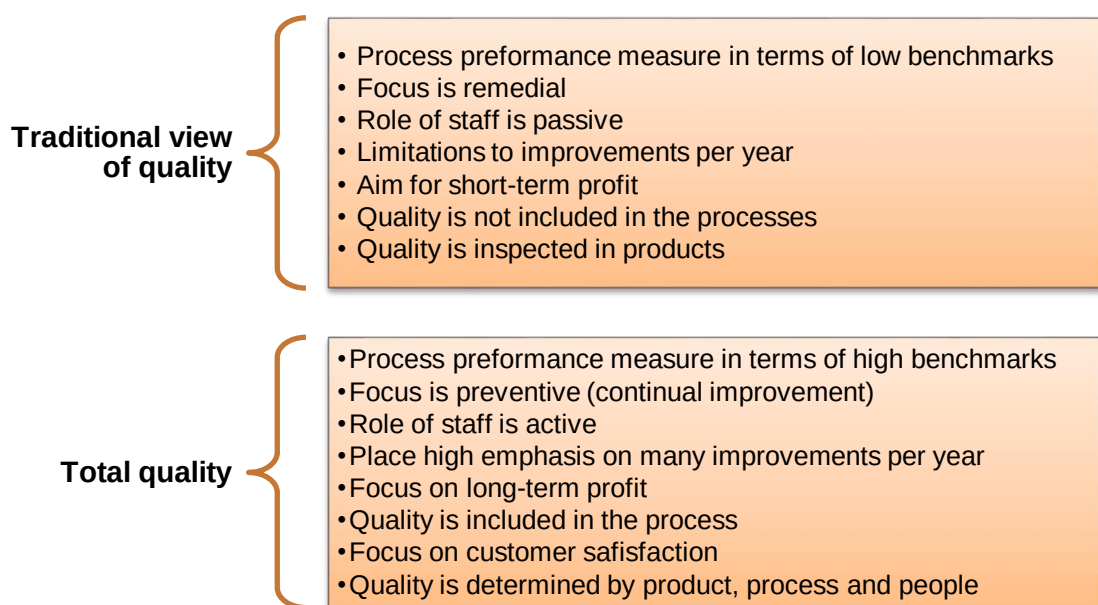


Figure 7: Two views of quality within the business

(Source: Goetsch & Davis, 2006:5).

The figure above represents the two views of quality in business (Goetsch & Davis, 2006). The focus of quality has changed dramatically throughout history. The modern view of Total Quality Management (TQM) has become very popular, leading to various certifications across a diverse range of organisations (Kaziliūnas, 2008). Industries that have adopted quality include manufacturing and services, in both the private and public sectors. The recognition obtained through certification has also led to a growing awareness of quality.

Organisations, however, realised that quality does not automatically follow if a set of rules are applied. Quality is an ongoing process, including improvisation and maintenance. Quality is a culture that an organisation should aim for and workers should be motivated to adhere to (Kaziliūnas, 2008).

The ISO standards state that quality principles need to be implemented on all levels of the organisation (Saxena, 2017). They, therefore, must ultimately form part of the culture of an organisation (Lee & Ebrahimpour, 1985). In addition to this, the role of change towards the implementation of quality must also be discussed.

2.4 ROLE OF CHANGE TOWARDS THE IMPLEMENTATION OF QUALITY

For an organisation to implement quality principles, it must go through a process of change. The most significant challenges regarding change occur on both a technical and structural level. The success of change to be based on the efficiency of leadership, as well as on the involvement of role players at every level of the organisation (Harding, 2005).

The concept of how to address change within processes is also addressed within the ISO9001 standard. Changes must be made to improve the system, but before changes can be made, the impact of these changes must be considered (Harding, 2005). Within the standard, the concepts of corrective and preventive actions are introduced. Additionally, changes can be implemented in a way where the goals and objectives of an organisation can be met through an integrated approach, which is necessary to manage these changes (Harding, 2005).

The Japanese believe that every individual component within the system contributes to the overall success of the system. When changes are made to a single component, the rest of the system is impacted (Harding, 2005). Organisations aim to have all divisions working towards a common goal; all divisions should interact with each other to contribute to the business as a whole (Harding, 2005). The QMS allows all departments within an organisation to integrate processes and in return, to operate as a synchronised system, both effectively and efficiently. In the next section, the three critical areas of quality will be elaborated.

2.5 RELATIONSHIPS OF QM

The modern procedure for the management of quality is addressed within three critical areas of quality, namely the relationship between Quality Systems, QA and QC. While certain practices contribute to QA and QC, these areas are different. Generally, QA tasks and roles span almost the entire quality system, while QC is a branch of QA (Russell, 2012).

QC is an element within the QM process, which enables an organisation to ensure quality during the production of a good or service (Russell, 2012). This evaluation attempts to guarantee that quality requirements are achieved before products or services are delivered. The process of QA allows an organisation to gain the confidence to assure quality (Russell, 2012). These will be explained in more detail in the sections below.

The central theme of QM is ensuring that customer expectations are met (Deming, 2017). Quality must, therefore, be defined as the client's perceived expectations. A product or service is only as good as the customer experience that it provides. The research identified that the approach to quality and the management thereof has changed in the last few years (Saxena, 2017) from a reactive process, aiming to rectify a quality problem, to a proactive process that aims to prevent quality problems before they occur. The concept changes are summarised in the table below:

Table 7: Timeline showing the changes towards approaching the quality

Time	Focus	Concept
Early 1900	Inspection	The old concept of quality: Inspect for quality after production
1940's	Statistical sampling	
1960's	Organisational quality focus	
1980's To Present	Customer-driven quality	The new concept of quality: Build quality into the process. Identify and correct the causes of quality problems.

(Source, Adaption: Wolniak, 2018)

The approaches to quality are based on three critical pillars, QA, QC, as well as QM. In the next section, the definitions of these concepts will be given.

2.5.1 Quality Assurance

Quality Assurance (QA) forms part of Quality Management which aims to ensure that quality requirements are met. An alternate definition is all planned and systematic activities conducted within the quality system, which can be shown to ensure that the product or service meets quality standards (Russell, 2012). In short, this refers to the processes needed to show that the product conforms to quality assurance.

2.5.2 Quality Control

QC is defined as "part of QM focused on fulfilling quality requirements." While QA refers to how a procedure is achieved or how a product is made, QC refers to the review phase of QM –

ensuring that the process produces a quality product. A substitute definition is "the operational techniques and activities used to fulfil requirements for quality." (Russell, 2012)

QC can also be described as a "*part of QM which is intended to meet quality requirements.*" QC is more a QM compliance inspection component, where QA refers to how a procedure is carried out or how a product is produced (Russell, 2012).

2.5.3 Quality Management System (QMS)

A Quality Management System (QMS) is a process implemented by an organisation that enables organisations to manage quality-related processes. This system allows organisations to design their processes to achieve optimal quality. It assists managers with planning, assurance and improvement. This is often also a legal requirement within specific industries. The benefits of implementing a QMS include (Chen *et al.*, 2016):

- *Economical:* Leads to the optimisation of operations and, in return, cost cuts.
- *Focus on customer satisfaction:* Leads to customer needs to be met, increased quality and satisfaction, leading to more sales and returning customers.
- *Market expansion:* Leads to credibility, which opens trade barriers and leads to prospects within global markets.
- *Increased market share:* Leads to increased productivity, as well as a competitive advantage.
- *Environmental awareness:* Leads to better "Green organisation" awareness.

Quality is a culture that requires customer feedback, motivated employees, process focus, a sound quality system and ongoing development. These elements play a critical role in the development of the company's quality system. Therefore, the basis of QM, as well as the theory of QM, will now be discussed.

2.3 THEORY OF QM

QM aims to improve existing processes, as well as redesign systems to achieve high-quality results. By implementing the principles as included in the ISO9001 standard, the principle of proactive management is introduced (Mosadeghrad, 2012). These principles help organisations set clear targets as well as develop and distribute resources to achieve long-term strategic goals. The principles should also be included in the organisation's policies and action plans to promote ongoing quality improvement (Mosadeghrad, 2012).

The structural, contextual and procedural changes are three interrelated classifications of organisational change. QM focusses on procedural changes within an organisation. However, to

ensure that the procedures work optimally to achieve quality, it is also essential to change the organisational structure and culture to allow for the improved quality of products and services (Mosadeghrad, 2012). Mosadeghrad (2012) describes ten areas of an organisation where changes are promoted to achieve quality. This is represented in the figure below:

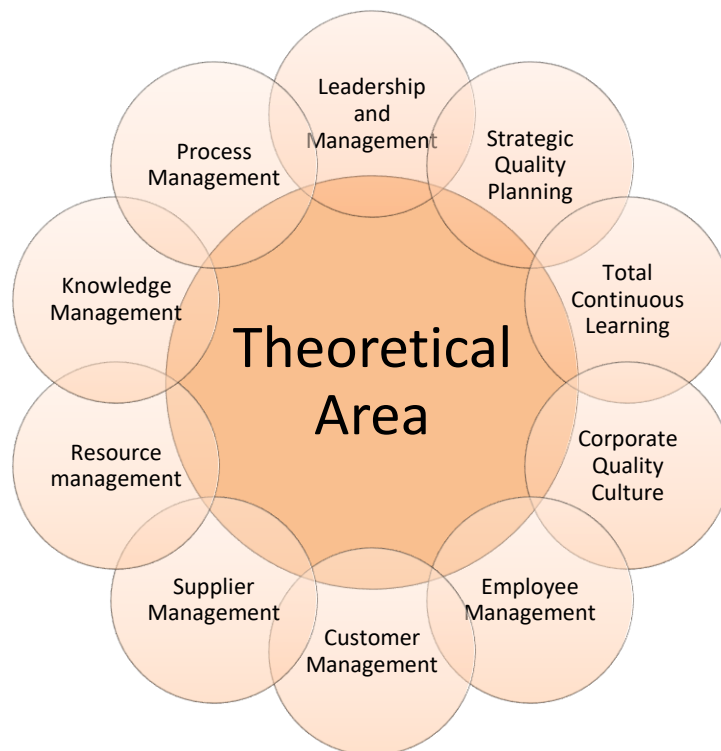


Figure 8: Area of change, quality theory

(Source: Mosadeghrad, 2012).

2.3.1 Theoretical Area 1: Leadership and management

QM, management and administration were among the critical enablers towards the positive enforcement of quality within an organisation. The position of senior management, role model's continuous actions and a strong commitment to QM all play an essential role in the implementation of quality within an organisation. It is of utmost importance that an organisation builds a supportive environment to handle change strategically (Mosadeghrad, 2012). Managers should build a vision, share principles, set clear targets and objectives, as well as inspire and encourage workers to participate actively within the QM process (Mosadeghrad, 2012).

To establish sustainable strategies for improving performance, top management must be fully committed to QM. The commitment of workers to the management of quality relies on management's attitudes towards quality (Taylor & Wright, 2003). Dedication of management will lead to higher engagement on the part of workers in improving quality (Beer, 2003). When management commitment at any level is missing, companies will have a low level of involvement and interest in their QM programmes.

Deming (2017) found leadership to play a vital role in QM performance programs. Efficient leadership creates a competitive atmosphere that helps workers through the advancement of knowledge and self-design, the elimination of barriers and the building of confidence, through constructive and participating leadership (Sosik & Dionne, 1997).

2.3.2 Theoretical Area 2: Strategic quality planning

Performance is a strategic challenge, and therefore a strategic plan is needed to implement quality (Russell & Taylor-III, 2008). A long-term strategic plan, based on maximum consistency, is needed to ensure optimal performance of effective QM. Essentially, company strategy is aimed at ensuring customer satisfaction. To achieve this, a workable quality strategy includes QM concepts of corporate goals, practices, tactics and action plans; it guarantees the provision of QM tools. This assists in identifying the needs of clients and other parties involved and in developing strategies and action plan to achieve priorities and targets (Mosadeghrad, 2012).

2.3.3 Theoretical Area 3: Total continuous learning

QM requires a commitment to learning by concentrating on continuous development (Love *et al.*, 2000). Education and training are essential components of a QMS and play an essential role in the development of a shared standard vocabulary and the dedication to consistent improvement in quality and behaviour. Continuous learning improves the skills, coordination and teamwork associated with workers and contributes to resolving resistance to change in QM (Kaynak & Hartley, 2008).

Managers should build their employees' technical skills and allow them to improve the quality of services consistently. Education and training provide staff with the necessary knowledge, expertise and abilities for productive work. Also, improved vocational training leads to better procedures that enhance the quality of goods (Russell & Taylor-III, 2008).

2.3.4 Theoretical Area 4: Corporate quality culture

The corporate culture is a collection of dominant beliefs and principles that direct the attitudes of a company. This culture is taught to new employees under the guise of 'the right way of seeing, thinking and feeling' (Mosadeghrad, 2012). The culture of an organisation determines how the organisation operates and hence affects its processes (Roodt *et al.*, 2002). Organisational culture is a force for cohesion and can promote a change towards improved QM (Mosadeghrad, 2012), as QM programmes that are compliant with QM standards and fundamental principles are most likely to succeed (Mosadeghrad, 2012).

A QM program requires a quality culture to be established as a whole. The implementation of an authentic culture of QM continuity and assistance is key to the effectiveness of QM in an

organisation (Mosadeghrad, 2012). A significant change in strategic goals, values, behaviours and underlying principles is necessary to turn the corporate culture into a culture of quality (Mosadeghrad, 2012).

An essential framework for the execution of QA systems is an organisational culture that stresses transparency, honesty, trust, respect, constructive communication, empowerment, teaching, teaching, coordination, risk-taking, innovation, research, customer attention and continual development (Mosadeghrad, 2012). Partnership and teamwork also play a significant role in the institutionalisation of QC activities, as the disposition and perception of QM by teams correlate with the successful application of QM (Mosadeghrad, 2012).

2.3.5 Theoretical Area 5: Employee management

People are the pioneers of any change in the company. An organisation's success depends on the level of results and development toward the company's goals and objectives. Thus, an essential component of the effectiveness of QM is the effective handling of human resources (HR) (Mosadeghrad, 2012).

The quality culture in the enterprise must be assisted by HR programs, such as procedures for the recruitment of workers, training and development, evaluation of results and incentives and bonuses. Quality also requires the confidence and willingness of staff to adjust. Jobs need to be refurbished to offer more versatility, individuality and innovation to staff. Performance evaluation and recognition mechanisms need to be updated should concentrate on recognising teamwork and long-term accomplishments (Mosadeghrad, 2012).

QM includes the expertise, keenness, inspiration, commitment, obligation, transparency and quality attitude and mind-set of its workers. Professional programs are provided based on inspired, trained and dedicated workers (Mosadeghrad, 2012). Employees who feel attached to an organisation emotionally will likely contribute significantly to this organisation. Managers must, therefore, shift their strategy from change management to people management. The values and wellbeing of workers should also be taken into account (Mosadeghrad, 2012).

Active involvement of workers in QM practices leads to building an organisational quality culture by reinforcing the behaviour, mentality and capability of employees, as well as cultivating an awareness, engagement and active participation in the resolution of problems at work (Mosadeghrad, 2012). The representation of workers is a fundamental principle of QM. Empowerment encourages employees to take accountability and increases their job efficiency. Additionally, empowerment helps staff to manage their work activities in a way that promotes professional development and personal responsibility (Mosadeghrad, 2012). Enhanced empowerment can be achieved through education and training, management support,

confidence-boosting and recognition (Mosadeghrad, 2012). Therefore, the introduction of QC will improve the morale of workers who are willing to change and encourage their sense of ownership and shared responsibility (Mosadeghrad, 2012)

Employees must be remembered, sponsored and respected as partners in quality improvement (Mosadeghrad, 2012). QM cannot be taken seriously without modifying performance evaluations and compensation strategies which emphasise the accomplishment of quality goals. In order to work successfully and sustainably, the advantages of QM must be apparent to staff. A formal system of reward and acknowledgement that promotes cooperation blends productivity and better performance with compensation, which enables and motivates workers to achieve success (Mosadeghrad, 2012)

Managers recognise and appreciate workers ' appreciation of the priorities of quality increase employee engagement in QM and a contribution to the enhancement of quality. Recognition also strengthens the desired attitudes, builds self-esteem, fosters confidence and respect and reinforces enthusiasm (Mosadeghrad, 2012).

2.3 6 Theoretical Area 6: Customer management

The importance of customers is the foundation of the theory of QM. In fact, without a strong customer focus, QM cannot exist. Customer service refers to the effort of a company to recognise customers' criteria, needs and desires and to satisfy them (Mosadeghrad, 2012). To define and turn customer needs into the proper operational function, systems and processes must be in place. Customer satisfaction is the primary measure of an organisation's success. It is critical that customers are always happy, as this ensures that the company remains operational (Mosadeghrad, 2012).

2.3.7 Theoretical Area 7: Supplier management

Organisations rely on suppliers and their products to produce their products and services (Hoyle, 2007). Suppliers' high-quality and defect-free goods are an essential contribution to achieving consistent quality products. When choosing vendors, organisations must emphasise quality. The selection of suppliers depends on efficiency rather than costs because consistent quality requires dependency on supplier management and a strong relationship between the organisation and its suppliers. Additionally, reasonable vendor control eliminates supply chain loss (Mosadeghrad, 2012).

The critical QM practice occurs in cooperation with suppliers; therefore, a long-term cooperative partnership with suppliers should be developed between organisations (Mosadeghrad, 2012). Long-term customer relationships allow both sides to solve problems in real-time. Continuous

supplier reviews support information sharing and mutual understanding among organisations, as measurement and reviews on product efficiency improve the performance of suppliers (Krause, 1997).

2.3.8 Theoretical Area 8: Resource management

Resources are necessary for the provision of optimal services to meet customer needs. Managers must provide adequate resources to implement QM successfully (Mosadeghrad, 2012). Proper resource management has a significant impact on a quality improvement program's performance. Proper management of resources programs improves efficiency, enhances security and reduces errors (Mosadeghrad, 2012). The success of QM stems from top-level management efforts to create enabling mechanisms and operational processes which control the quality direction of the enterprise and promote the adoption of an organisation-wide QM plan (Mosadeghrad, 2012)

2.3.9 Theoretical Area 9: Knowledge management

Change is a characteristic of today's business environment. The activity should be anticipatory, flexible and based on a shorter knowledge-building process (Mosadeghrad, 2012). The critical success of management efficiency is knowledge. Quality information must be accurate, timely and relevant, and it needs to be analysed and used to promote decision-making at all levels of the organisation. Enhanced collaboration and cooperation between different stakeholders results in successful knowledge sharing among suppliers, partners, employees and customers (Mosadeghrad, 2012).

2.3.10 Theoretical Area 10: Process management

Instead of blaming workers, the priority should be put on strengthening procedures. A variety of methods can be used to plan, monitor and develop processes (Mosadeghrad, 2012). To fulfil functional specifications and customer expectations, systems should be identified and planned. Organisational operations should be standardised to ensure the reliability of results (Mosadeghrad, 2012)

Process management controls stable and consistent production procedures. Tools for statistical process management allow process operations and performance to be consistent and help control processes (Mosadeghrad, 2012). The creation of protocols and reports is essential for tracking and progress in the application of QM, as procedures that are precisely defined and recorded minimise the risk of operator error.

Process improvement as a strategic priority must be a continuous part of all operations and activities for all employees in an organisation. The commitment of all staff with an emphasis on

teamwork and factual management is necessary for continuous improvement. In order to continuously track improvements regarding the application of QC and achieve maximum institutionalisation in the organisation, the objective needs to be assessed and evaluated (Mosadeghrad, 2012).

The key factors promoting a QM program include identifying performance indicators, executive assessments, compliance evaluations and corrective actions. Additional reviews will lead to improving communication and further progress. Regular self-assessment of the operations and the performance of a company according to a quality model provides insight about its capabilities and opportunities for improvement (Mosadeghrad, 2012). This can occur through the use of tools, as discussed in the next section.

2.4 QM TOOLS

Organisations that base their QMS on both Total Quality Management (TQM) and ISO9001 principles perform better in terms of quality procedures, quality culture and quality execution (Duran *et al.*, 2014). Hajji *et al.* (2012) found that by streamlining procedures, organisations can produce quality products/services with a lower level of reject products and product returns (Smith *et al.*, 2014). Organisations use Six Sigma as a TQM tool to improve the organisation's bottom-line performance significantly. Six Sigma can also provide organisations with the useful information they need to make critical decisions. The primary improvement cycle that is included in the Six Sigma system is Plan-Do-Study-Act. The following figure represents the main elements in the Plan-Do-Study-Act cycle, also referred to as the Plan-Do-Check-Act cycle (PDCA).

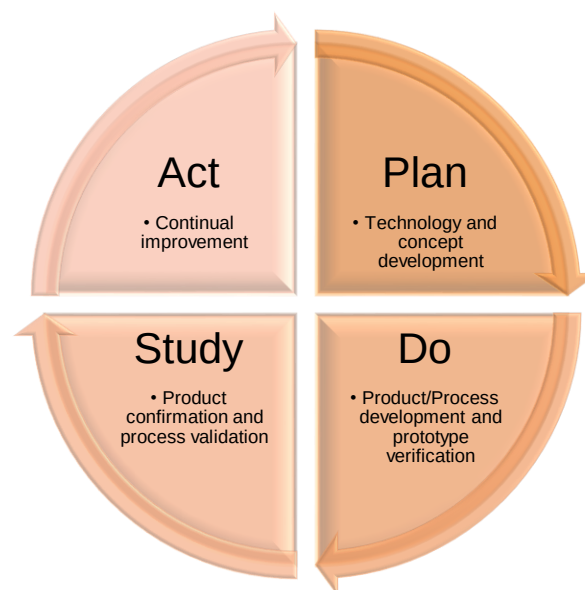


Figure 9: Model of improvement

(Source: Borrer, 2009)

This Six Sigma PDCA cycle, as illustrated above (Borrer, 2009), is a tool that organisations use to manage daily activities. It allows managers to focus on progress within organisational procedures, allowing the manager to guarantee process-centred enhancements. There are many QM methods that an organisation can use to measure and manage performance, for example, business excellence and balanced scorecards.

The selection of a QM method is dependent on the type of industry, the competitive environment, product strategies and the market situation (Smith *et al.*, 2014). Nonetheless, there is a risk of depending excessively on quality administration frameworks. Studies show that there is an organisational risk if the emphasis is placed solely on formal guidelines, such as those included in LEAN or Six Sigma, whilst ignoring the human element (Dahlgaard-Park & Dahlgaard, 2006). The following table represents the difference in the guidelines of quality. These differences include the ISO9001 standard, LEAN, TQM and Six Sigma.

Table 8: Difference: Quality Guidelines

System	Detail
ISO9001	• International standard and certification • From Greek isos, which means the goal • to establish organisational management standards and practices • to set standards to control a company by a systematic approach. • A series of requirements that are widely accepted and mainly address the needs of customers. • A Certification Body is audited to provide them with a certificate that declares that they are ISO9001 compliant. • Customers typically have a QMS carrier – most customers, including public authorities, request ISO9001 from their vendors. • Reflective of the changing world, revised about every seven to eight years.
LEAN	• Cost reduction, waste reduction and operation organisational tool • Excellent for identifying client values • LEAN focuses the management on optimising product and service streams across entire horizontal value streams rather than vertical departments. • The primary objective of LEAN principles is to identify what adds value for the customer • Identification and disposal of waste and wasteful activities and tasks mean that a smaller space and less human effort, less capital and less time than traditional business systems are needed • LEAN was focused on the beginning of production but is now being applied in all types of companies

System	Detail
	• A LEAN driver is usually a senior management team member of modern thinking • There is no global standard to state the LEAN values of an enterprise
TQM	• The secret to a robust QM program is customer satisfaction and feedback. • TQM protocols help organisations to use customer responses correctly to build better goods which may be more beneficial to customers. • Easy to understand and relatively simple • TQM is suitable for individual projects. It is a perfect set of tools to solve problems • TQM was a product of domestic competitiveness in the 1970s and was heavily focused on industry and Japan's ability to produce products of high quality at competitive prices • TQM focused on improving procedures to increase customer satisfaction; while no universal definition of TQM exists, the PDCA period is generally agreed
SIX SIGMA	• Six Sigma is best suited to behaviours with a high volume of reliability • The techniques are more formal, though, comparable to TQM • TQM mostly replaced by Six Sigma • Six Sigma comes from the mathematical monitoring and process efficiency of systems which aim to achieve a disallowance rate of fewer than 3.4 defects per million (DPMO) incentives. • Six Sigma focused on two project approaches inspired by the Deming PDCA cycle • Six Sigma is exceptionally similar to TQM; Six Sigma tends to focus on individual projects within an enterprise to save money by optimisation cycles and fault elimination.

(Source: Dahlgaard-Park & Dahlgaard, 2006)

The most significant difference between TQM and ISO is that ISO certification is internationally accredited. Certification proves that a third-party inspection service has examined the policies and processes used by the firm and found the business to comply with the ISO standards (Anon, 2020). In the next section, the focus will shift from the overview of the tools as mentioned above to, specifically, the international standards of quality (namely ISO9001).

2.5 QUALITY STANDARDS AND ISO9001

The purpose of the QA department is to make sure that all documents conform to the prescribed ISO9001 standard (Harding, 2005). Complying with this standard allows the organisation to meet its quality-related targets, as set out in the business plan. This also allows organisations to understand, review and improve their processes (Harding, 2005).

The ISO9001 standard allows processes to be formalised and new strategies to be formally documented (Harding, 2005). The ISO9001 standard is beneficial to an organisation as it increases values within organisational activities. Organisations can focus on practical procedures and the relationship between them, which allows them to integrate a QMS.

The standard also provides guidelines for leadership towards sustainable success (ISO, 2008), as an ISO9001 certified organisation that applies an active QMS should achieve maximum customer satisfaction, increased and sustained profit, employee motivation and improvements within the organisation. It should also lead to minimum rejections, reworks, customer objections and problems (Djordjevic et al., 2020).

This standard is easy to understand and is written in simple language (ISO, 2008). It provides easy-to-implement guidelines and is also compatible with other already-implemented QMSs intending to improve the currently implemented system (ISO, 2008). It intends to create value for all parties and considers all parties' viewpoints within an organisation (ISO, 2008). Essential concepts, as contained in the ISO9001 standard, are as follows (Wolniak, 2018):

- The implementation of this standard may lead to the sustained success of the organisation.
- Organisations should seek the aptitude to continually deliver products and services for their customers by conforming to a pre-determined high level of organisational standards.
- To provide quality, organisations need to have confidence in their supply chain and have a holistic control thereof.
- All levels of the organisation need to understand, execute and communicate the organisational principles regarding quality and the management thereof effectively.
- Organisations and their staff need to be able to assess their level of confidence related to the delivery of quality.
- Organisations need to provide staff with training opportunities within the field of quality.

A good QMS should be part of an organisational strategy (Li *et al.*, 2015). Sustaining such a system is the biggest obstacle for organisations (Van Dyk, 2013). Research indicates that this is because staff often lose interest or management fails to commit to the QMS (Hammar, 2017). This is crucial, as management plays a significant role in the implementation of quality within an organisation (Porter & Parker, 1993).

In the next section, the focus will shift to the ISO9001 standard. It will, therefore, be discussed in more detail.

2.6 FOCUS: ISO9001

New markets and unique customer demands place pressure on an organisation to shorten its production and service processes. It, therefore, becomes more critical for organisations to streamline their QM within these processes, to provide them with a competitive advantage (Bani Ismail, 2012). The ISO developed a set of standards that aim 'level the playing field' across all countries (Kaziliūnas, 2008). Their quality standards also aim to allow organisations to achieve sustained success.

A QMS provides a framework for an organisation to change its thinking, to elicit the cooperation of all staff. This coordinated effort facilitates change, as all individuals are encouraged to cooperate across boundaries/departments (Brits, 2011).

Organisations progressively utilise integrated administration frameworks to oversee and direct their tasks (Singh, 2008). According to Smith *et al.* (2014), this array of standard certifications, including ISO9001, assist organisations significantly to improve their performance (Easton & Jarrell, 1998). Research by Wynne and Lancaster further proves that organisations that require a deeper level of precision in their work processes, often need stricter guidelines than those provided in this standard (Wynne & Lancaster, 1992). Therefore, the procedure regarding ISO9001 can be summarised as follows (ISO, 2013):

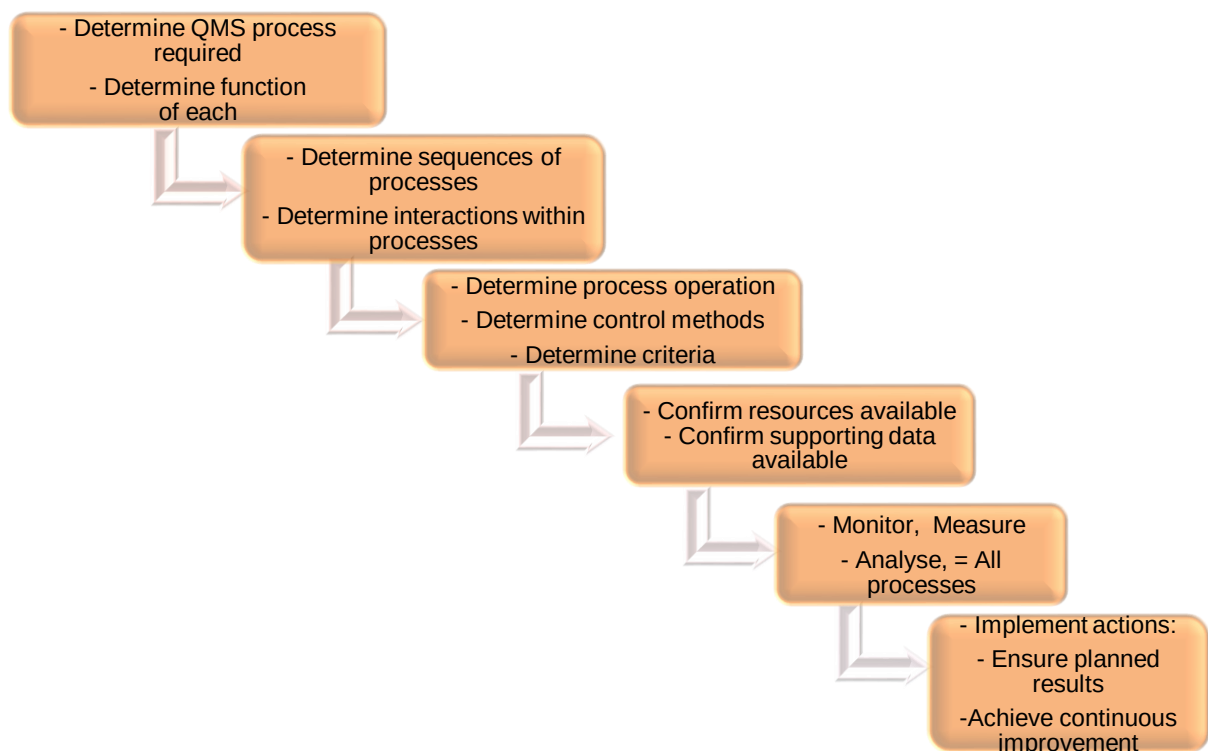


Figure 10: ISO9001- Summary of Procedure of ISO9001

(Source: ISO, 2013)

Within the guidelines of ISO9001, organisations are encouraged to train staff on the following aspects of HR (Hoyle, 2009):

- define the competency level that is required by staff to understand the concepts presented;
- prepare staff in these aspects, in the form of training;
- evaluate the success of the training provided;
- make staff mindful of the significance and relevance of this standard; and
- Ensure staff comprehends the influence of their commitment towards accomplishing quality within the organisation.

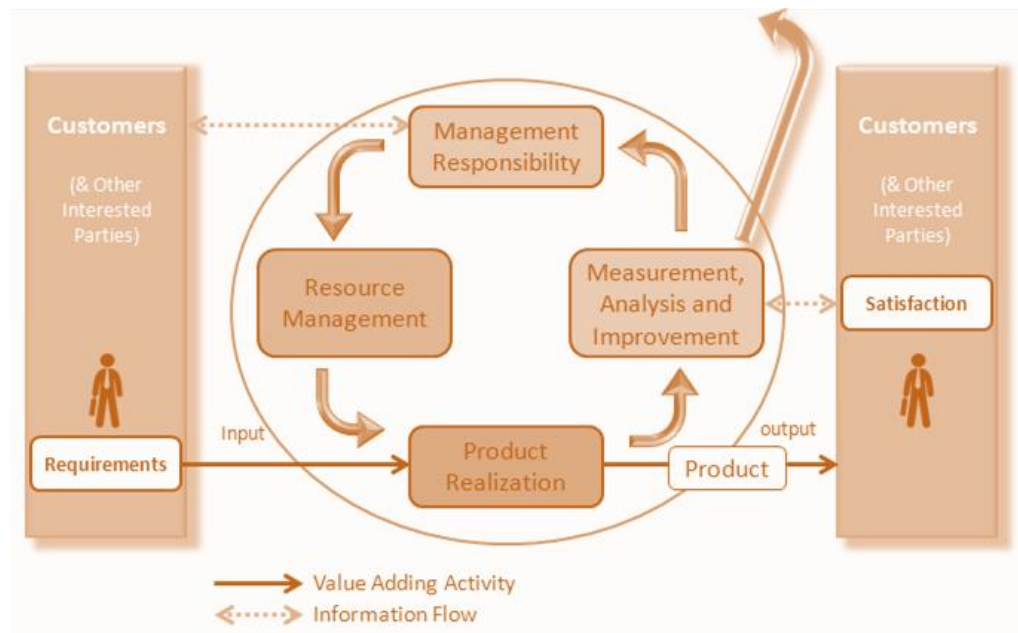


Figure 11: Model of a procedure based QMS

(Source: ISO: 2018)

The procedure model above demonstrates that a QMS involves more than quality plans. This module emphasises the importance of product design in terms of the customer (ISO, 2013).

2.6 CONCLUSION TO CHAPTER TWO

This chapter provided the rationale behind the necessity for organisations to adopt quality-related approaches. Clearly, in developing a QMS, an organisation should adopt certain principles. These principles affect all areas of the organisation, including leadership as well as customer, employee and supplier relations. It is also evident that quality should be incorporated into process management, alongside the development of the organisational strategic plan. The chapter engaged the literature regarding the ISO9001 standard. This included leadership and management, strategic quality planning, continuous learning and corporate quality culture. It also

included a focus on employee, supplier and customer management; in addition to resource, process and knowledge management.

The research in this area shows that, while various organisations adopt specific policies and approaches to maintain consistency, there is a general trend to match quality practices with ISO9001 QC requirements. This requires methods that are descriptive, versatile and applicable to the organisation.

In the next chapter, the principles of the ISO9001 standard will be explored in detail. This includes the origins and current impact of its principles on organisations, amongst others.

CHAPTER THREE ISO9001



(Image: Authors own)

The concepts of the ISO 9001 standard will be discussed in this chapter:

Origins of ISO9001

- This section discusses the origin of the standard.

Impact of this Standard: Previous research

- This section discusses the impact the implementation of the standard had on organisations which implemented its guidelines.

Effectiveness of ISO9001 within the service industry

- This section discusses how effective the standard could be in the service industry.

The ISO9001 standard's scope

- This section discusses the seven areas of focus within the standard:

- 1- Customer focus
- 2- Leadership
- 3- Engagement with people
- 4- Process application
- 5- Improvement
- 6- Evidence-based decision making
- 7- Relationship management

3.1 INTRODUCTION

In the previous chapter, the reasoning and need for companies to implement quality-related strategies were discussed. An organisation should undoubtedly follow those values before implementing a QMS. Such values affect many aspects of the company, including customer, employee and manufacturer partnerships. It is therefore clear that efficiency of a QMS is an integrated process with the organisation.

ISO9001 lays out the requirements for a QMS and is the only standard in the family that can be accredited (though this is not a requirement). This may be used by any entity, big or small, regardless of the area of operation. Also, more than one million businesses and organizations are accredited to ISO9001 in more than 170 countries (ISO, 2013).

The level of quality utilised by an organisation is based on a variety of QM concepts, including clear customer awareness, encouragement and commitment of top management, the process approach as well as continuous improvement. Such principles are explained in more detail in the principles of ISO 9001 quality standard. Using ISO9001 can help ensure that customers receive reliable, high-quality goods and services, which, in effect, bring other business benefits (ISO, 2013).

The concept of the ISO9001 standard will be discussed in this chapter. The roots of this standard will be addressed alongside the present effect these principles have on the organisational values.

3.2 CHAPTER OVERVIEW

Chapter Three is an in-depth discussion of the principles covered within the ISO9001 standard's scope. Each concept found in the standard will be discussed individually. These include the importance of the client in the path to quality, the effect of leadership on QM performance, as well as the role that employee/supplier participation plays in the quality cycle. The chapter will also argue the principle of continuous improvement, as well as the role it plays on evidence-based decision making.

3.3 ORIGINS OF ISO9001

The ISO9001 standard stems from British explosive industries during World War II. Specifically, due to the lack of QM, bombs exploded due to quality procedures not being met (Kumar, 2011). The first standard, British standard 5750 (BS5750), was designed to address problems within the manufacturing processes. This standard was later adopted as an international standard family, named the ISO9001 series (Kumar, 2011).

The following table represents a short chronology of QMS standards, as presented by the International Organisation for Standardisation (ISO)

Table 9: Short chronology of QMS standards

Year	Development
1956	10CFR 50 Appendix B Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants (US NRC)
1959	Mil-Q-9858, Quality Program Requirements (US DoD)
1968	AQAP 1, NATO Quality Control Requirement for Industry (NATO)
1972	BS 4891, A guide to quality assurance (BSI)
1973	Def Stan 05-21, Quality Control Requirements for Industry (UK MoD)
1974	CSA CAN3 Z299 Quality Assurance Program
1974	BS 5179, Guide to the Operation and Evaluation of Quality Assurance Systems (BSI)
1979	BS 5750, Quality Systems (BSI)
1987	ISO9001, QMSs – First series (ISO)
1990	Investors in People Standard (Originally DfEE now IIP)
1992	BS 7750, Specification for environmental management systems (BSI)
1994	ISO9001, Second series
1995	BS 7799, Information Security management (BSI)
1996	ISO 14001, Environmental management systems – Requirements with guidance for use
1996	BS 8800, Guide to occupational health and safety management systems (BSI)
1997	SA 8000 Social Accountability (Originally the Council on Economic Priorities Accreditation, Agency now Social Accountability International)
1999	OHSAS 18001, Occupational Health and Safety Management Systems Specifications (BSI)
2000	ISO9001, Third series (ISO)
2005	ISO/IEC 27001 Information security management systems requirements (ISO)
2005	ISO 2200 Food Safety Management System – Requirements for any organisation in the food chain (ISO), The history of ISO9001 series past 2000 343
2008	ISO9001:2008, Fourth series (ISO)
2009	ISO9004:2009 Managing for the sustained success of an organisation – A QM approach. Fourth series (ISO)
2015	ISO 9000:2015 QMSs — Fundamentals and vocabulary,
2015	ISO9001:2015 QMSs – Requirements.

(Source: ISO)

The modern version of this standard, issued by the ISO, contains various concepts. These concepts were adapted and refined according to the needs of a growing organisation. A summary

of these central concepts contained in the standard documentation (from years 2005-2010), is as follows (ISO: 2018)

Table 10: Main concepts contained in the standards from years 2005-2010

Version	Details
ISO9001:2005	• Fundamentals and vocabulary • Defines the content of the ISO9001 standard cluster • Describes associated terms
ISO9001:2008.	• Sets the requirements of the standard • Demonstrates the standard's capability to reliably supply a product that meets customer and relevant constitutional and regulatory requirements • Intent to increase customer contentment • Repetitive development of the system • Guarantee the conformity towards statutory and regulatory requirements • Requirements are general and could be applied to all organisations
ISO9001:2015	• Provides fundamentals and terminology • It provides a context for the understanding of the standard to implement it properly. • QM fundamentals are defined in detail • All terms, descriptions and notions of this standard are explained. Requirements aimed primarily at providing confidence in the products and services provided by an organisation • Enhancing customer satisfaction • Implementation can also be expected to bring other organisational benefits, such as improved internal communication, better understanding and control of the organisation's processes.
ISO9004:2009	• A management tool to assist the organisation to continually strive, as well as how to sustain this success • ISO9004 includes the concept of self-assessment practice. • Allows an organisation to assess the level of its QMS.
ISO9004	• Sustained success
ISO9001/11	• Demonstrated capability
ISO9001	• Fundamental concepts and vocabulary

(Source: ISO)

3.4 IMPACT OF THIS STANDARD: PREVIOUS RESEARCH

Various research was conducted to determine if the ISO9001 standard allows organisations to achieve the value that it claims (Djordjevic et al., 2020). A summary of some research findings are as follows (Djordjevic et al., 2020):

Table 11: A summary of research findings related to ISO9001

Researcher	Location / Findings
Pan (2003)	- Based on the implementation of the ISO9001 & ISO 14001 standards in counties situated in the Far East. - It is focused on the benefits of the standard, as well as the motivation of organisations to implement it. Conclusion: - Countries have dissimilarities in motivation as well as what the perceived benefit of the implementation. - Some common factors include external pressure, attaining competitive advantage and development of better public relations practices.
Naser ET, AL. (2004)	- Studied focuses on the performance of over a hundred certified organisations in Malaysia. Conclusion: - Certified organisations outperformed non-accredited organisations.
Casadesus et al. (2001)	- Explored the benefits of implementing ISO9001. Conclusion: - Spanish organisations perceived that this standard benefits and supports organisational assurance.
Douglas et al. (2003).	- Evaluated the application of ISO9001 for UK certification within organisations. Conclusion: - UK organisations seek certification to increase their market share.
Magd and Curry (2003)	- Studied the influence of this standard within organisations in Egypt. Conclusion: - Organisations used this standard to develop a quality system which would withstand pressures from competitors.

Researcher	Location / Findings
Quazi and Jacobs (2004)	- Studied the influence of this standard on training and development in organisations based in Singapore. Conclusion: - This system develops a tool where training development needs can be identified. It also assists the organisation within HR development.

(Source: Djordjevic et al., 2020)

Studies have shown that this standard is designed to be implemented in any organisational structure. It can, for example, work successfully for a small or large organisation and is equally adaptable to either the manufacturing or service industry (Chen *et al.*, 2016).

3.6 THE ISO9001 STANDARD'S SCOPE

The latest version of the standard is a combination of standards 9001, 9002 and 9003. This combined standard is known as the ISO9001, which was published on 15 November 2008 (Anon, 2019c). The standard is broken down in eight key clauses, namely (Djordjevic et al., 2020):

Table 12: The standard clauses of ISO9001

Clause	Descriptive
Clause 1	Scope
Clause 2	Normative references
Clause 3	Terms and definitions
Clause 4	<i>QMS: Provide guidelines to compile the documentation needed, for example, the Quality Policy, as well as the Quality manual.</i>
Clause 5	<i>Management Responsibility: Provide guidelines for management. Determine management's responsibilities, for example, the compilation of the policies and determining al objectives. This clause also includes conducting management reviews.</i>
Clause 6	<i>Resource Management: Provide guidelines to plan resources. It also focusses on training and maintenance of records.</i>

Clause	Descriptive
Clause 7	Product Realisation: <i>This provides guidelines for planning quality plans for the products and services. It includes the following focus: 1.7 - Customer-related processes. 7.2–Client relations. 7.3–Product Planning. 7.4–Procurement. 7.5- Manufacture and service delivery. 7.6- Monitoring and assessing tools</i>
Clause 8	Measurement, Examination and Advance: <i>This act as guidelines for an organisation to be able to strategise and implement, measurement, observing, investigation and advancing processes. It focuses on the Screening of the client gratification. It also includes planning, as well as the execution of internal audits. Controlling of Non-conforming products, as well as the management as well as reviewing of corrective/preventive actions.</i>

(Source: Djordjevic et al., 2020)

The scope of this standard focusses on assurances that are managed via formal procedures, for example, preventive actions. Quality is not seen as only a PDCA cycle but also as a documented procedure. The focus of this standard is on the following main areas:

Figure 12: Main Areas of the ISO9001 standard



(Source: ISO)

3.6.1 ISO9001 Focus Area 1: Customer Focus

QM entails focussing on the customer (customer concentration), and it needs constant development. The customer's gratification, as well as organisation performance's rate, escalates when an organisation exceeds the expectations of the customer. Customer concentration leads to improved public accountability, operational/innovation/organisational/financial performance, competitive advantage and customer gratification (Del Prete, 2017).

Quality allows an organisation to deliver consistent performance and meet product or service requirements, as set by customers. ISO9001, therefore, assists organisations in achieving consistent results by continually improving their processes (Oaklands, 2003). A customer-

focused organisation acts proactively within their markets; customers are devoted, leading to repeat business and long-term success (Hoyle, 2007).

3.6.2 ISO9001 Focus Area 2: Leadership

Good leadership encourages organisational commitment and motivation among staff; therefore, organisations should allow staff to contribute to achieving the organisation's objectives (Hoyle, 2007). This complements actions in the organisation and reduces miscommunication between the various departments (Anon, 2019b). Research further indicates that issues such as the lack of leadership and management support, the lack of training, staff's insufficient insight of quality, resource restrictions and staff resistance to change are critical obstacles to the effective implementation of ISO9001 (Solomon, 2017).

3.6.3 ISO9001 Focus Area 3: Engagement with people

Although ISO9001 is generic and can be implemented in any sector, all individuals in the process must comprehend the standard (Basir *et al.*, 2017). Therefore, the principles should form part of the organisational culture (Basir *et al.*, 2017). Staff should be involved in every level of the organisation; their attitudes should be valued, and skills should be utilised (Hoyle, 2007). Content staff are committed and reach their objectives within the organisation in an innovative manner. They are less resistant to change and improvements being made, as they are more involved in the organisation (Hoyle, 2007). Studies by Waldersee and Griffiths found that resistance to change is the biggest hindrance to organisational culture (Bani Ismail, 2012) Training can be used to change organisation culture and therefore, the perception towards change. This change can influence the focus on TQM, as well as customer relations (Borror, 2009)

A proper QMS allows successful internal communication and leadership within an organisation (Barber, 2010). It allows clear communication to customers, which may ensure trust between the organisation and its most important stakeholders. It allows teams to understand processes and milestones and also allows managers to determine likely risks, problems and limitations (Barber, 2010).

Factors that support the sustainability of a QMS include how the management of an organisation is involved, how well everybody understands the standard and, more importantly, the holistic understanding and culture related to quality in an organisation. Therefore quality-training is essential for organisations (Solomon *et al.*, 2017)

The competitive nature of business places more pressure on organisations to be more multi-talented, versatile and inspired. Staff should be skilled at various levels. It is essential for personnel to continually adapt and learn to adjust to these changing environments (Essop,

2015). The process of preparing staff for a specific task is specifically critical in Japanese organisations. These organisations accept that preparation should begin at the top and be implemented downwards (Kondo, 1990). Studies have proven that a high level of abilities impacts quality administration significantly (Gee & Nystrom, 1999).

Culture is essential to the quality of an organisation (Solomon *et al.*, 2017). A continually improving culture allows staff to be mindful, as staff are committed to procedures and teamwork (Irani *et al.*, 2004). Culture can be described as the shared convictions, frames of mind, qualities and personnel standards.

By evaluating employees, organisations can reach a certain level of quality. Additionally, they need to understand the vital role they play in the process. Quality, therefore, needs to form part of their organisational goals, not merely their personal ones (Matlhape & Lessing, 2002). Including staff in the process have a significant impact on organisational culture. Staff should be encouraged to make decisions; not only following instructions (Borrer, 2009).

3.6.4 ISO9001 Focus Area 4: Process application

Process application is vital to operations within an organisation because goals are reached more often when procedures and assets are managed through processes (Hoyle, 2007). Organisations should include staff in the recording process, as the participation of staff in processes improves the results and levels of accomplishment. Defining processes also allows an organisation to lower costs; they allow predictability and consistency, not only in the workflow but in outcomes, which in return, lower organisational risks (ISO, 2013).

The management of processes is emphasised in this standard, as this allows the achievement of objectives. Managers should realise that all processes are linked together, and by seeing ‘the bigger picture’ they can determine which areas need improvement. It also allows management to focus on the main procedures within the organisation (Hoyle, 2007).

3.6.5 ISO9001 Focus Area 5: Improvement

Organisations can use the ISO9001 standard as a tool for managing the constant improvement of quality, avoiding nonconformities and increasing client gratification awareness (Van den Heuvel *et al.*, 2005). Continual improvement should be implemented within every level of the organisation. It assists the organisation to react to opportunities and threats flexibly. Continual improvement progresses the capability as well as the success of an organisation (ISO, 2013)

The ISO9001 standard offers a continual improvement principle, guided by monitoring and measuring (Solomon *et al.*, 2017). This standard embraces communication. It allows

organisations to review past mistakes and rectify them. ISO9001 promotes continual improvement and sustains a PDCA cycle.

3.6.6 ISO9001 Focus Area 6: Evidence-based decision making

The organisation should approach decision-making factually and systematically, based on data evidence (Hoyle, 2007). By implementing this principle, decisions are made clear and transparent to the decision-makers. This also allows results to be reviewed regarding decisions made previously when adjusting future decisions to accomplish the desired outcome (ISO, 2013)

This standard introduces new concepts to an organisation, for example, high-level structure (HLS), as well as the application of risk-based thinking and the notion of change (Diong, 2017). It also allows the organisation to address preventive action formally through risk identification and mitigation. This is because QMS has a structured approach to its activities (Diong, 2017).

3.6.7 ISO9001 Focus Area 7: Relationship Management

Organisations should strive to nurture supplier relationships. Organisations and suppliers are interdependent, and therefore the needs of both parties should be considered (Hoyle, 2007). Strong supplier relationships allow an organisation to respond quickly to change. Optimising communication between parties may assist the organisation in improving the cost of goods and assets within an organisation (ISO, 2013)

A QMS aims to progress the productivity and efficiency of an organisation. The concept of continual improvement needs to be implemented within the process of production (Solomon *et al.*, 2017). The process of a successful QMS is not based on techniques or providing staff with tools. Its matters, such as leadership and communication, are the main criteria for continual improvement irrespective of the level of the organisation (Solomon *et al.*, 2017).

3.7 CONCLUSION TO CHAPTER THREE

Within the chapter, the principles of the ISO9001 standard were explored. The origins of this standard were discussed briefly. Some examples of the changes this standard have made (negatively and positive), once implemented was illustrated by presenting a summary of various cases (Table 13).

The definitions contained in the standard were explored in greater detail, which elaborated to the essential principles contained in this standard. The principles included were the role of the customer in quality, the impact of leadership on the success of QC, as well as the role the

involvement of the people plays in the quality process. The concept of quality improvement was also highlighted, as well as the importance of making judgments based on information.

This chapter included an in-depth discussion of the principles covered within the ISO9001 standard's scope. The principles discussed were customer focus, leadership, engagement with people, process application, improvement, evidence-based decision-making, as well as relationship management.

The next chapter will focus on the presentation, interpretation and discussion of the data collected. It will describe CEM's approach towards quality, the nature of their quality policies, as well as the details contained in their QM manual. The findings discussed are solely based on the data that was collected.

CHAPTER FOUR RESEARCH RESULTS



Within this chapter, the CEM's Quality Management System will be discussed:

Data description and analysis

-Within this section the type of data, and the method of analysis will be discussed.

Course presented at the CEM

-A description of courses presented will be provided.

CEM Quality

- Within this section the quality policy and manual will be presented.

CEM key and supporting business processes and scope

-Within this section the key and supporting business processes of the CEM QMS will be discussed.

- Nonconformity, Corrective and Preventive Action, Complaints and Appeals

-Within this section the tool used by the CEM to manage Nonconformity, Corrective and Preventive Action, Complaints and Appeals will be discussed. These tools are: Management of Change (MOC) and Corrective Action Request (CAR).

Matching ISO Principles to empirical results

-Within this section the ISO Principles to empirical results will be compared, and results will be reached. The areas of discussion are as follows:

- ISO Standard principle 1: Customer Focus
- ISO Standard principle 2: Engagement with People
- ISO Standard principle 3: Evidence Decision making
- ISO Standard principle 4: Improvement
- ISO Standard principle 5: Leadership
- ISO Standard principle 6: Process application
- ISO Standard principle 7: Relationship Management

Trustworthiness

-Lastly the trustworthiness of the study will be discussed.

(Image: Authors own)

4.1 INTRODUCTION

In the previous chapter, the principles of the ISO9001 standard were explored. The roots of this standard have been addressed; in terms of the influence, they have on organisations. The implications of these principles are also discussed in the context of organisations. Additionally, values which may influence organisational culture have been stated. The values represent the role of the customer in quality, the effect of leadership on QM performance and the role that group engagement plays in the quality cycle. The idea of enhancing consistency within quality will also be discussed, as well as the value of making information-based decisions.

QM is about making organisations work for their customers – from enhancing products, facilities, structures and processes to ensuring that the enterprise as a whole is fit and efficient. Managing quality means continuously chasing excellence and ensuring that what the company does is tailor-made and continues to change. CEM, the organisation on which this case study is based, has made use of these principles.

4.2 CHAPTER OVERVIEW

Within this chapter, CEM's QMS will be discussed. This includes their procedures and guidelines on quality within the organisation. Methods to manage their QMS, for example, the non-conformity system (NRC) will be discussed, as well as correction and prevention methods employed by the CEM to support their QMS. Later in the chapter, the CEMS QMS principles will be matched in line with the key ISO9001 principles, as well as the quality concepts to be evaluated. Conclusions are presented and discussed.

Before the results can be presented, the description of the data as well as the method of analysis, must be described. Therefore, Section 4.3 below elaborates on these points.

4.3 DATA DESCRIPTION AND ANALYSIS

The data was analysed by comparing the guidelines provided in the standard, to the data collected from the CEM. The secondary data were verified by using the following aspects:

- Who collected the data?
- What is the data provider's purpose or goal?
- When was the data collected?
- How was the data collected?
- What type of data was collected?
- Is the data consistent with data from other sources?

The following table summarises, which collected data, were used in which cluster. These clusters represent the principles of the ISO9001 standard:

Table 13: Data description and analysis

Guideline (based on ISO 9000 standard)	Data (analysed from the CEM)
Customer confidence & supplier needs - the quality achieved by meeting customer needs	Feedback from customers
Leadership communication, the inclusion of staff in work processes, as well as the flow of processes - the quality achieved by providing a system that allows all role players to understand their role within their processes. - effectiveness of processes - how to process are linked together	QMS procedures QMS review
Non-conformity, corrective and preventive action, complaints and appeals -management of the system in place	Management of Change (MOC) Corrective Action Request (CAR)
Decision-making processes -based on calculated risks	Operational and strategic planning
Supplier relationships	Yearly review of presenters

(Table: Authors own. Source: ISO & CEM (NWU))

If the changes that the CEM implemented do indeed provide the benefits that the ISO seeks, the following conclusions need to be pursued:

- Does the CEM have the established policies, objectives and work environment necessary to motivate people to satisfy these needs?
- Can it be concluded if this QMS is designed to manage and uphold an interrelated process, as well as to implement relevant policies and to attain specific objectives?
- Can the QMS measures be defined, and can the effectiveness of each process be analysed in fulfilling the objectives?
- Does this QMS pursue the continued improvement in the system from an objective evaluation of its performance?

The CEM developed and implemented a QMS to ensure that knowledge generation and dissemination (support) processes are established. This quality system aims to ensure and

exceed both customer satisfaction and sustained conformance to requirements set within their quality policy.

4.4 THE CEM'S QUALITY APPROACH

4.4.1 Quality policy

To realise the mission and vision of the CEM (to satisfy and exceed customer expectations continually), the CEM aims to maintain and regularly improve their QMS in line with the PDCA management principles. It plans and implements all processes and realises all products and services to sustain customer satisfaction while exceeding expectations and needs. The CEM consistently and reliably meets all requirements that may apply to the CEM's activities, products and services, such as the applicable legal requirements, customer requirements, the requirements of NWU and Faculty of Natural Science; and any other requirements adopted.

The CEM plans and implements all of its processes by involving process owners, managers and relevant role-players to ensure the achievement of the desired outcomes and adherence to this quality policy. It furthermore continually improves the CEM's QMS and performance by insisting on monthly business meetings, self-evaluation, internal and external audits, customer satisfaction surveys, supplier and management reviews, the monitoring and measurement of critical process parameters and the management of non-conformity.

The CEM strives to, as far as is reasonably practicable, ensure that all planning and improvement processes, as well as all decisions and the realisation of the CEM's products and services, are informed by the analysis of data and recorded factual information. They also extend the CEM's QM arrangements to suppliers and sub-contractors to ensure the delivery of quality services whilst sustaining mutually beneficial relationships.

CEM quality objectives: The CEM does not formulate specific quality objectives. Business and operational objectives are formulated on an annual basis, following the management review process and the strategic and operational planning processes. These objectives include quality objectives, as and when they are required.

Records: Records are managed in terms of the documents and records procedure.

References: The CEM's QMS is developed by considering the following references:

- *NWU: Vision, Values and Mission*
- *NWU: Institutional Office - Quality Policy*
- *NWU Short Course Policy*
- *Faculty of Natural Science: Mission and Vision*

- *NWU: Potchefstroom Campus Faculty of Natural Sciences – Quality Manual*

4.4.2 Quality manual

The quality manual is a document which describes the CEMs QMS. It also defines the key and supporting business processes. Additionally, it defines the ISO9001 principles which are used.

The Centre for Environmental Management (CEM) to operate as a self-funded, decentralised centre of the Faculty of Natural Science. At the same time, the registration of some of the CEM's courses depends on elements of the QMS. The following QMS elements are defined by the South African Auditor & Training Certification Authority (SAATCA) as the minimum requirements from training service providers (TCPs) to register courses (CEM (NWU, 2019a):

- roles and responsibilities – defined roles with regards to the management system and provision of training;
- provision of training related infrastructure and work environment;
- customer satisfaction (learners and clients);
- internal audits;
- control of non-conforming training services;
- corrective action;
- preventative action;
- the design, development and evaluation of course materials and documentation to ensure conformity with the current SAATCA criteria;
- the presentation of the course;
- the verification of prerequisite knowledge of learners where this is required; and
- the control of course publicity and advertising; and records.

The following administrative procedures are required by SAATCA as well:

- the design, development and evaluation of course materials and documentation;
- the presentation of the course;
- the verification of prerequisite knowledge of learners where this is required;
- the control of course publicity and advertising;
- a document control system for maintaining up-to-date procedures and course notes;
- the selection of and on-going training programs for facilitators, including evaluation annually;
- management reviews;
- records of individual learners and each course offering, including analysis of statistics;
- learners assessment procedure, including “competent/not yet competent” criteria;

- operation and conduct of the examination and re-examination, including security and confidentiality of examination questions and answers of marked papers;
- issue and withdrawal of certificates;
- storage and eventual disposal of marked papers and continual evaluation records; and
- methods, such as statistical techniques, used to measure at least the following:
 - learner evaluations (for example competent/not-yet-competent rates, including re-write statistics);
 - facilitators performance;
 - overall course performance;
 - submission of significant changes to the course(s) to SAATCA for review and acceptance before implementation; and
 - complaints and appeals.

4.4.3 CEM key and supporting business processes and scope

In 2003, the CEM's QMS scope included only the three SAATCA registered courses and the QMS elements specified by SAATCA. In 2004, the QMS scope was extended to include all the short course training programmes offered by the CEM. The QMS has also transformed along business process lines. The QMS includes numerous procedures, as well as work instructions. The system, therefore, includes key and supporting business processes, covering all of the CEM's key business processes throughout the value chain. These now include supporting processes, outsourced and procured processes, including consultation projects.

The CEM value chain can be seen in the following figure (Figure 13). Following that, Figure 14 shows the QMS of the CEM. The QMS is divided into the following supporting process:



Figure 13: CEM value chain

(Adapted from: CEM (NWU), 2019a)

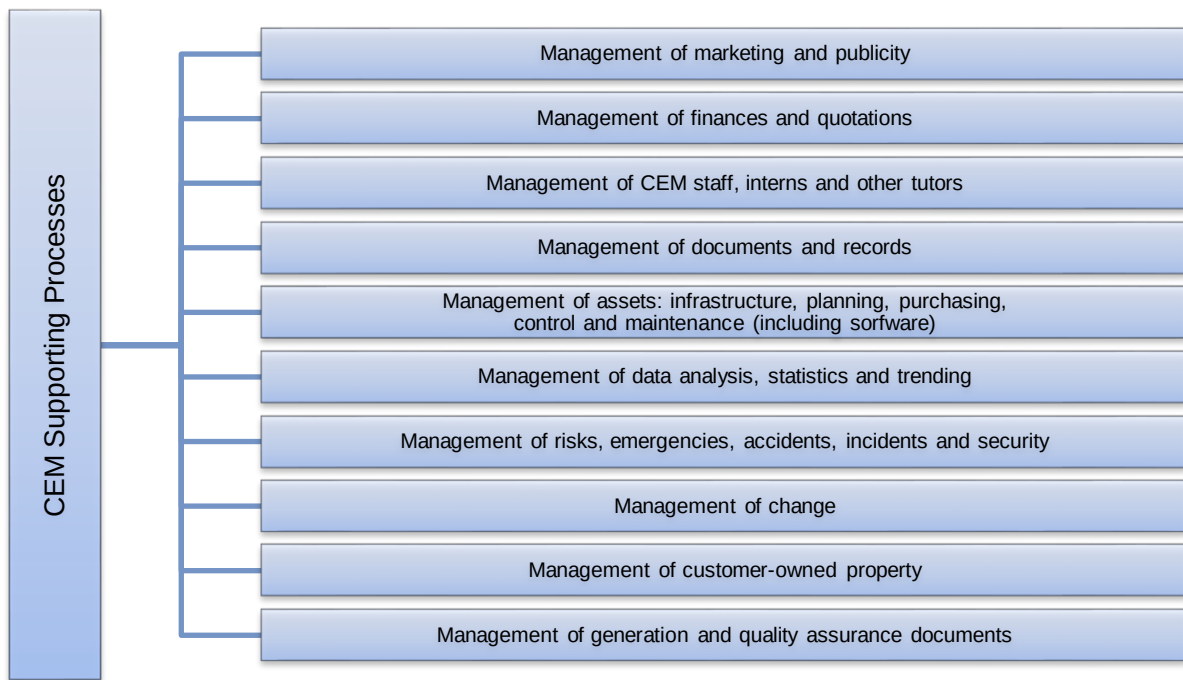


Figure 14: CEM QMS Processes

(Adapted from: CEM (NWU), 2019a)

4.4.3.1 Key business processes

The strategic and operational planning process is supported by management review. It is the foundation of CEM's success. It is, therefore, the key business process for the CEM. The process is planned and documented as a second-tier system procedure.

The CEM's objective is to have at least one strategic and macro operational planning meeting that is supported by a management review, at the end of every year. Progress made against strategic and business objectives and targets, as well as other management review indicators such as non-conformity, corrective and preventive management, are reviewed. Progress is tracked, reported and recorded.

Operational planning, review and progress tracking are conducted at pre-scheduled monthly meetings. Meetings with four different scopes are held:

- CEM technical operations planning and review meeting (every second month);
- Financial planning and review meeting (monthly);
- Project management planning and review (monthly); and
- CEM administrative operations planning and review meeting (every second month).

The actions identified in terms of the annual strategic and management review meetings are operationalised as agenda items of the various operational meetings. These agenda items are

allocated to CEM staff members for execution and are referenced in their annual performance plans. All meetings have minutes made which are kept for the record. The CEM quality objectives are included in the annual Strategic and Operational Plan. The key processes are as follows:

Overview of the management of courses
Management of teaching and learning
Management of projects
Management of continual improvement processes

Figure 15: CEM QMS: The key processes

(Adapted from: CEM (NWU), 2019a)

A management review supports the strategic and operational planning process. This will now be discussed:

4.4.3.1.1 Overview of the management of courses

The procedure “*Overview of the management of courses*” was generated in 2015. This procedure provides an overview of all the processes that are covered in more detail in the specific procedures. This overview provides for a framework that regards:

- The strategic review and planning of courses;
- The application for and registration of courses;
- Scheduling and marketing of courses;
- Planning of and preparation for a course event;
- Delivery of courses; and
- Evaluation and review of the course and tutor performance.

4.4.3.1.2 Management of teaching and learning

Development and presentation of short courses, both in-house and public, are the CEM's primary focus. It is their policy to render courses of high quality that are both innovative and practical, tailored to transfer knowledge and skills in environmental and occupational health as well as safety management and related fields, for which they aim to be the service provider of choice. The management of teaching and training processes must conform to all Higher Education Quality Committee (HEQC), South African Qualifications Authority (SAQA), legal and NWU requirements, as well as the arrangements established by the CEM in terms of its QMS.

CEM's teaching and learning process are one of their key processes. It is divided into dedicated process elements:

- Management of tutors and teaching staff;
- Management of students;
- Management of course content and learning material;
- Management of student assessment and certificates.

Detailed arrangements are made in terms of documented procedures to manage these processes consistently and reliably. All teaching and learning processes are regularly reviewed and revised to ensure that cutting edge information and skills are transferred. New training opportunities are also identified during strategic planning sessions.

The CEM renders this high-quality service in collaboration with experts. These individuals are also rated as excellent tutors as well as leaders in their respective fields. The CEM develops skill profiles of their tutors to use in its programmes because it is their policy to render training services that exceed the expectations of their clients. Specific strategic and operational targets are set for both public and in-house courses on an annual basis. Also, progress made regarding operational targets is tracked, reported and recorded monthly.

Where specific customer specifications apply, all arrangements are made to ensure conformity to such requirements. Customer satisfaction is actively measured and assessed, and records are kept. This is because customer dissatisfaction is a crucial improvement indicator.

4.4.3.1.3 Management of projects

The management of projects process is sub-divided into three core areas, namely:

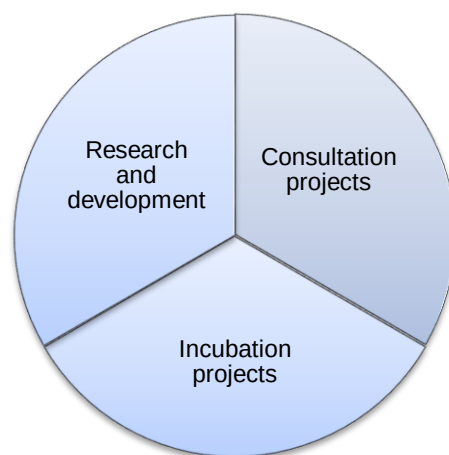


Figure 16: Management of project core sections

(Adapted from: CEM (NWU), 2019a)

Consultation projects: The CEM renders consultation services in environmental and occupational health, safety management and related fields to support the training programmes. The consultation projects allow CEM staff to be exposed to day-to-day challenges faced by clients. Training programmes are therefore efficient and based on real case examples and issues - a trademark that distinguishes the CEM from competing service providers.

Consultation services are rendered on time and within both specifications and the budget, to exceed their client's expectations. However, it is the CEM's policy not to accept commissions without having access to the required skills and adequate time to deliver on specifications, on time and within budget.

Specific strategic and operational targets are set for all projects on an annual basis. Progress made regarding operational targets is tracked, reported and recorded every month. The CEM also manages large projects using private consultants to support the CEM's portfolio of expertise.

Incubation projects: The CEM renders a series of services as incubation projects to promote the concept of sustainability, environmental, health and safety management as well as to seed these concepts in sectors that have not yet made significant advances in these fields. New concepts and models are also developed, tested and verified before they are commercialised. These services include community services and contractual services that are either pro-bono or on a cost-recovery basis. The policy aims to render services of a high quality that exceeds the expectations of both beneficiaries and sponsors. Incubation style projects may be presented in association with donors.

Research and development: Basic and applied research is conducted to support CEM core activities, to generate new knowledge and insights and to find solutions to challenges. CEM research activities provide them with a competitive edge; as its clients regard the CEM as a centre that renders research services which offer innovative solutions to challenges. Additionally, training products remain at the cutting edge. Research results are communicated at conferences and published in leading academic journals.

4.4.3.1.4 Management of continual improvement processes

Management of continual improvement processes is subdivided into three key areas:

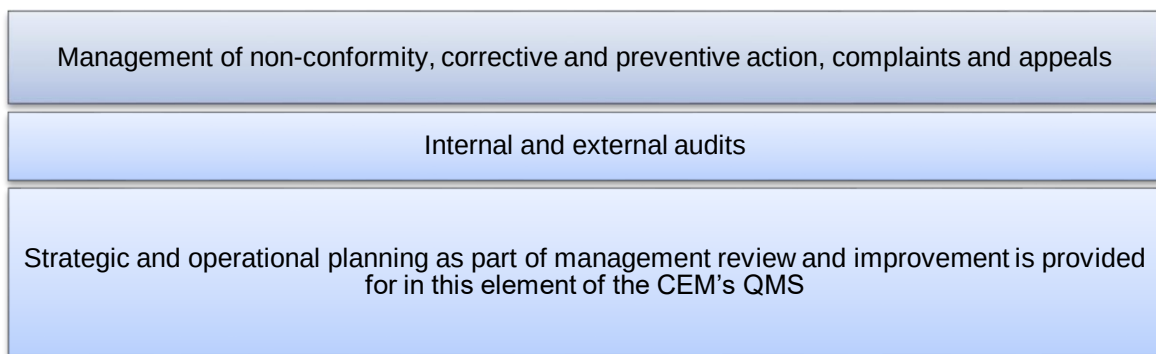


Figure 17: Management of continual improvement processes' three key areas

(Adapted from: CEM (NWU), 2019a)

Detailed arrangements are made in terms of documented procedures to manage these processes consistently and reliably. Other elements that contribute to continual improvement of the CEM's arrangements, activities, products and services include external audits by SAATCA; external Institutional Committee for Academic Standard (ICAS) audits; External HEQC audits; as well as NWU audits. Detailed customer satisfaction surveys of both the products and presenters are used. The CEM also reviews suppliers and contractors (including technical service providers).

4.4.3.2 Supporting processes

The supporting processes are as follows and will be discussed below:

Management of marketing and publicity
Management of finances and quotations
Management of CEM staff, interns and other tutors
Management of documents and records
Management of assets: infrastructure, planning, purchasing, control, maintenance including software
Management of data analysis, statistics and trending
Management of risks, emergencies, accidents, incidents and security
MOC
Management of customer-owned property
Management of generation and QA of documents

Figure 18: CEM supporting processes

(Adapted from: CEM (NWU), 2019a)

4.4.3.2.1 Management of marketing and publicity

Management of marketing and publicity is a necessary process which ensures that the CEM's products and services are common knowledge amongst existing and prospective clients. An annual budget is allocated to marketing based on a marketing strategy approved at the CEM's strategic meeting. Ad hoc marketing opportunities may also be explored and approved pending budget availability as the need arises. The most important marketing instruments used include, amongst others, the CEM yearbook that is published electronically as of 2013; the CEM newsletter; e-mail marketing; adverts and editorials. Detailed arrangements are made in terms of documented procedures to manage these processes consistently and reliably.

4.4.3.2.2 Management of finances and quotations

The CEM is a financially ring-fenced centre within the Faculty of Natural Sciences, NWU, Potchefstroom Campus. The CEM generates an annual budget in line with the annual strategic and operational plans. The budget is then reviewed and approved by the Dean of the Faculty of Science. The CEM then manages all the processes together with approved budget allocations. The budget may be amended and re-approved by the Dean as market conditions change or when greater certainty regarding income and expenditure patterns emerges. The budget is routinely reviewed and revised during June and September of each year.

An annual cost structure for recurring payments and product fees, such as telephone budgets, tutor fees, accommodation allowances, course fees and discount packages are reviewed and approved at the CEM's annual strategic and operational planning meeting. All recurring payments are made in line with the approved cost structure. Any deviations from the approved plan are applied for and approved by the Executive Manager in writing. All projects and courses are managed as projects with full project-based budgeting and financial accounting. The CEM also manages cash flow projections and takes any necessary steps to ensure cash availability to fund activities.

The CEM also manages two reserved funds in line with the policies of the NWU. One funds staff retrenchments, while the second is maintained as a buffer to mitigate any risk exposures. These two reserve funds are provided for in terms of the agreement. The agreement is signed between the Dean and the Executive Manager of the CEM.

The procedure for the management of finance and quotations conforms to all legal and NWU requirements, as well as the principles of sound financial management. The CEM arrangements and performance related to financial matters are audited annually by the NWU auditors. Detailed

arrangements are made in terms of documented procedures to manage these processes consistently and reliably.

4.4.3.2.3 Management of CEM staff, interns and other tutors

HRM is primarily a function of the NWU. The CEM is, however, responsible for:

- Sourcing suitably qualified staff under the NWU Recruitment and Selection Policy and procedures;
- Interview and recommend appointments to the HC function of the NWU under NWU Recruitment and Selection Policy and procedures;
- Managing staff performance through task agreements for academic staff and job descriptions for support staff following the NWU Performance Management Policy and procedures;
- Approve leave applications following the NWU Conditions of Service;
- Plan and execute staff development interventions as required;
- Assess staff performance in line with the agreed-upon performance criteria following the NWU Performance Management Policy and procedures;
- Recommend a surplus sharing allocation as incentive bonus payments for individuals to the Dean for consideration and approval under the NWU Remuneration Policy and procedures;
- Manage the remuneration of CEM staff, including promotions and annual individual remuneration adjustments based on the determinants for remuneration as described in the NWU Remuneration Policy and procedures;
- Provide financially for emergency and unplanned exits of staff from the CEM;
- Manage the CEM's intern programme to ensure sustained continuity of support; and
- Manage the appointment of temporary staff as needed

4.4.3.2.4 Management of documents and records

A useful way to structure the formal documentation system is as a tiered pyramid with five different levels of documentation. Detailed arrangements are made in terms of documented procedures to manage these processes consistently and reliably. This process the record management of all documents.

Figure 17 represents the management process of documents and records in the CEM. These documents, related to the CEM's QMS, can be classified in different areas and they are shown in Figure 18, in the form of pyramid layers (these layers are discussed in Table 18).



Figure 19: Management of documents and records

(Adapted from: CEM (NWU), 2019a)

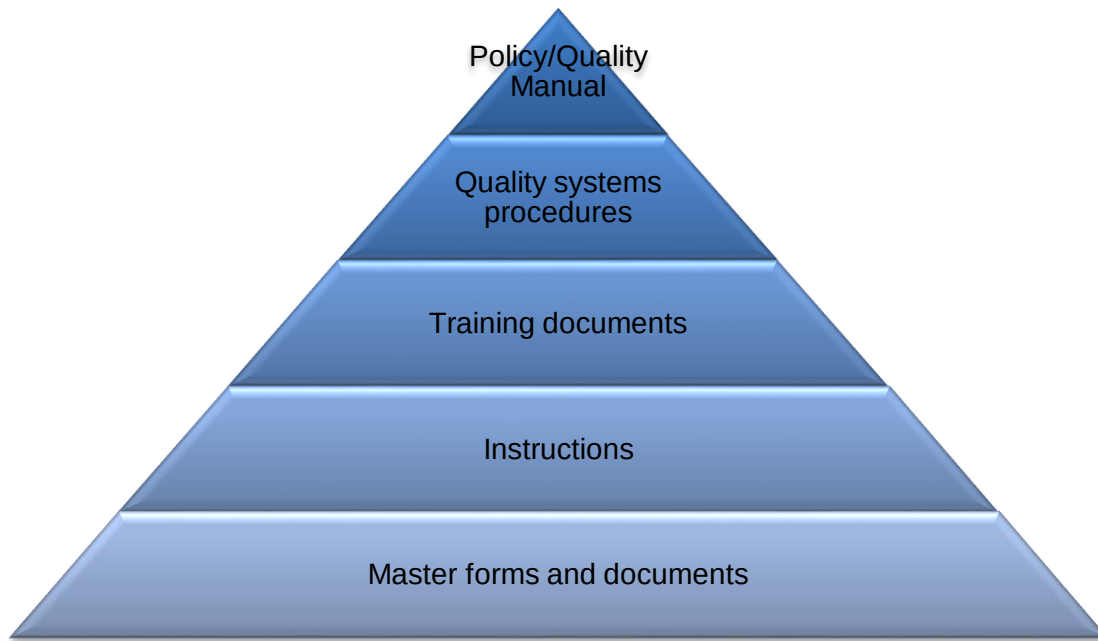


Figure 20: Levels master list of QMS documents

(Adapted from: CEM (NWU), 2019a)

Table 14: CEM QMS document system

(Adapted from CEM, 2019)

Level	System documents	Purpose
TIER 1	QMS Policy Manual	The purpose of the Policy/Quality Manual is to provide direction to the QMS, an overview of the CEM's position at the NWU, broad quality policy per business process and reference to the documentation structure of the QMS.
TIER 2	Second-tier management system procedures.	The second-tier documents are detailed descriptions of how processes are to be managed.
TIER 3	Training material	The material used to train CEM staff, suppliers and contractors on matters related to the QMS.

Level	System documents	Purpose
TIER 4	Instructions	Instructions are generated, documented, approved and implemented as an interim <i>ad hoc</i> arrangement until new procedures can be generated or existing procedures amended.
TIER 5	Master forms and registers	Master forms and templates to be used by CEM staff, including registers.

(Adapted from: CEM (NWU), 2019a)

4.4.3.2.5 Management of assets: infrastructure, planning, purchasing, control, maintenance including software

CEM's assets, infrastructure and software, are managed on an ongoing basis. This ensures:

- sustained fitness for purpose;
- that the right equipment, assets, infrastructure and software for the correct purpose are at the right place at the right time;
- management of CEM's assets, infrastructure and software always in order to demonstrate location and possession objectively;
- the timely maintenance of CEM's assets, infrastructure and software to ensure sustained availability;
- that buildings and facilities are maintained for fitness for use - safely and lawfully; and
- that computer software is used lawfully by all, at all times.

4.4.3.2.6 Management of data analysis, statistics and trending

The CEM generates a series of data that may be transformed into visual information for consideration at both the monthly operational and the annual strategic meetings. Care is taken to ensure the accuracy of both data and information, to ensure that management information that is fit for purpose and is trending is available as required. To manage data analysis, statistics processes and the data and information needs of the CEM are recorded in a register, where roles, responsibilities and authorities, as well as the required frequency and timing of information, are addressed.

4.4.3.2.7 Management of risks, emergencies, accidents, incidents and security

In order for the CEM to establish and maintain their procedures, they adhere to the following guidelines:

- To pro-actively identify hazards associated with CEM's activities, products, services and facilities (hazard sources) as well as interfacing business processes, on an ongoing basis.
- To pro-actively assess and classify identified hazard sources associated with CEM's (routine and non-routine) activities, products, services and facilities for significance on an ongoing basis.
- To ensure that the risk assessments conform to the following criteria:
 - Normal conditions; abnormal conditions; controlled maintenance; pro-active rather than reactive, i.e. timeliness of the risk assessment; risk assessments are done on an ongoing basis; consistent with operational experience; consistent with the capabilities of the risk control measures; consistent with the scope of the CEM's activities; consistent with the EMS policy statement and consistent with legal requirements.
- To ensure that the following risks are assessed:
 - Actual and potential impacts; controllable and influenceable hazard sources; positive and negative impacts; current, planned or modified hazard sources and routine and non-routine hazard sources.
- To generate risk assessment and management registers in line with the prescribed format.
- To make arrangements to manage identified risk exposures in terms of objectives, targets and management plans and other control measures.
- To generate objectives, targets and a management plan that have the following characteristics:
 - Documented; relevant to different levels and functions; as well as measurable where practicable.
- To consider the following, when objectives and targets are formulated in terms of legal requirements:
 - Other requirements; commitment to preventing pollution; continual improvement; significant risk effects; views of interested parties; technical requirements; operational requirements; financial requirements and business requirements;
- To regularly review and revise the risk register (timeliness of the risk assessment and effectiveness of the controls).
- To provide for consultation when occupational related hazards are identified and assessed.
- To inform training requirements for significant hazards.
- To monitor the effectiveness and timeliness of management and control arrangements.

4.4.3.2.8 Management of change

To establish and maintain a standard operating procedure, the method by which risks associated with any change(s) to facility, activities, process, people, course contents, administrative arrangements or procedures are adequately identified and addressed before change implementation. Changes are then recorded, communicated and consistently managed to ensure sustained conformity.

4.4.3.2.9 Management of customer-owned property

The Centre for Environmental Management's Procedure for the Management of Customer-Owned Property is based on the need to identify, verify, protect and safeguard customer-owned property, per the requirements of ISO 9001

4.4.3.2.10 Management of generation and quality assurance of documents

To establish and maintain a procedure for ensuring that reports and letters delivered to the CEM's customers meet quality requirements and ensuring customer satisfaction.

The CEM ensure the following in terms of document control:

- Approve records for adequacy before an issue
- Review, update as necessary, and re-approve documents
- Identify the modifications and existing document revision status
- Ensure that records are legible and easy to find
- Identification and dissemination of external documents
- Prevent accidental usage of outdated documents
- Upon retention of expired records apply sufficient identification

4.4.3.3 Generic titles

Generic titles are used within the CEM QMS. Each role is given an abbreviation which is used within the system as a reference. The role denominators used in the QMS are listed below:

Table 15: Roles and responsibilities

Role	Abbreviation	Role	Abbreviation
CEM Executive Manager	EM	Internal Auditors	IA
Management Representative	MR	Technical Co-ordinator	TC
Internal Auditors	IA	Head Training Support	HTS

Role	Abbreviation	Role	Abbreviation
Registration Officer	RO	Marketing Officer	MO
Marketing Assistant	MA	Examination Officer	EO
Certification Officer	CO	Quality Officer	QO
Course Admin Co-ordinator	AC	Assistant Head Training Support	AHTS
Project and Course Co-ordinator	PCC	Quotation Officer	QuO
Course Registrar	CR	Staff Officer	PO
Statistics Officer	SO	Senior Financial Officer	SFO
Debit Officer	DO	Senior Financial Officer	SFO
Credit Officer	CrO	Asset Manager	AM
Asset Manager	AM	Rotating Asset Officer	RAO
Financial Clerk	FC	Q-Drive Officer	QdO
Technical Intern	TI	First Aid Officer	FAO
First Aider(s)	FA	Floor Representative	FR
Safety Representative	SR		

(Adapted from: CEM (NWU), 2019a)

4.4.4 Internal communication

Annual business objectives, long-, medium- and short-term work plans, management system requirements and achievements are communicated to all staff through several mechanisms. They include:

- monthly CEM management meetings and minutes;
- regular planning meetings;
- notice boards;
- e-mails;
- staff performance agreements;
- annual strategic meetings; and
- CEM's annual business plan.

4.4.5 ISO9001 exclusions

- *Customer property*: No customer property is used in the scope of CEM QMS.

- *Control of monitoring and measuring devices*: No monitoring or measuring devices are used in the scope of CEM QMS.
- *Validation of processes for product & service provision*: The quality of short course material can be verified during subsequent course evaluation and course reviews. Validation of processes is, therefore, not applicable.
- *Interaction between processes*: The interaction between processes is indicated in the various business process flow diagrams.
- *Outsourced or procured processes*: The following processes are outsourced or procured: Suppliers; Maintenance of infrastructure; Duplication of course material; some tutoring; some consultation; Printing of certificates; and catering.

4.4.6 Generic agenda for the annual CEM strategic planning meeting

A generic agenda may, amongst others, include the following items:

- identify new business opportunities;
- strategic issues;
- travel and conferences;
- operations;
 - products- short courses: administration;
 - products- short courses: improvement and maintenance;
 - products- short courses: donor-funded programmes;
 - products- consultation;
- service providers;
- general meetings;
- community service;
- financial management;
- data information and statistics;
- staff;
- assets;
- buildings;
- marketing;
- reports;
- research and publications;
- quotation management;
- QMS management;
- student management;
- tutor management;
- SAATCA;

- highlights/lowlights; and
- threats/opportunities/weaknesses/strengths.

4.4.7 Customer confidence and supplier relationships

Customer confidence is achieved by meeting customer needs. Questionnaires can only address the needs of customers. After the CEM conducts a service (consultation or training), they circulate questionnaires to understand how their clients perceived their services. The questionnaire is divided into presenter, administration and course feedback. Feedback is requested according to the scale of good, adequate and poor.

Presenter: The presenter's knowledge and experience of the subject are discussed (the relevance of the presentation to the subject specified on the programme). The quality of the presenter's course material is determined (the presenter's ability to engage with the delegates and keep the sessions lively and exciting). How the presenter encouraged and allowed sufficient time for discussions (the presenter's adherence to the time scheduled, as well as the presenter's overall performance).

Course feedback: *The course:* This includes the rating of the course as well as material and course duration. *Administration of course:* This includes the rating of the enrolment process, other administration processes as well as course-related communication received. *Venue and Meals:* This includes the rating of the training venue, as meals and snacks provided. *General:* This section indicates if the course addressed the needs and expectations of the learner, as well as to determine if a learner is likely to attend another training session offered by the CEM.

4.4.8 Public courses

The following ratings indicate feedback received from learners via questionnaires. These learners attended public courses (learners from various employers and backgrounds) at the CEM course venues in Potchefstroom. The findings of the last eight years are as follows:

Table 16: Feedback on public courses (2011-2019)

Year	2011	2012	2013	2014	2015	2016	2017	2018	Outcomes 2018
General impression	83%	85%	85%	86%	86%	90%	93%	96%	Highlight
Course administration	95%	93%	95%	96%	96%	89%	96%	96%	Maintain
Tutors	76%	76%	78%	82%	85%	88%	98%	95%	Watch the trend
CEM venues	88%		89%	91%	89%	87%	89%	94%	Highlight

Year	2011	2012	2013	2014	2015	2016	2017	2018	Outcomes 2018
Catering	88%	87%	86%	85%	87%	89%	82%	83%	Maintain

(Source: CEM (NWU))

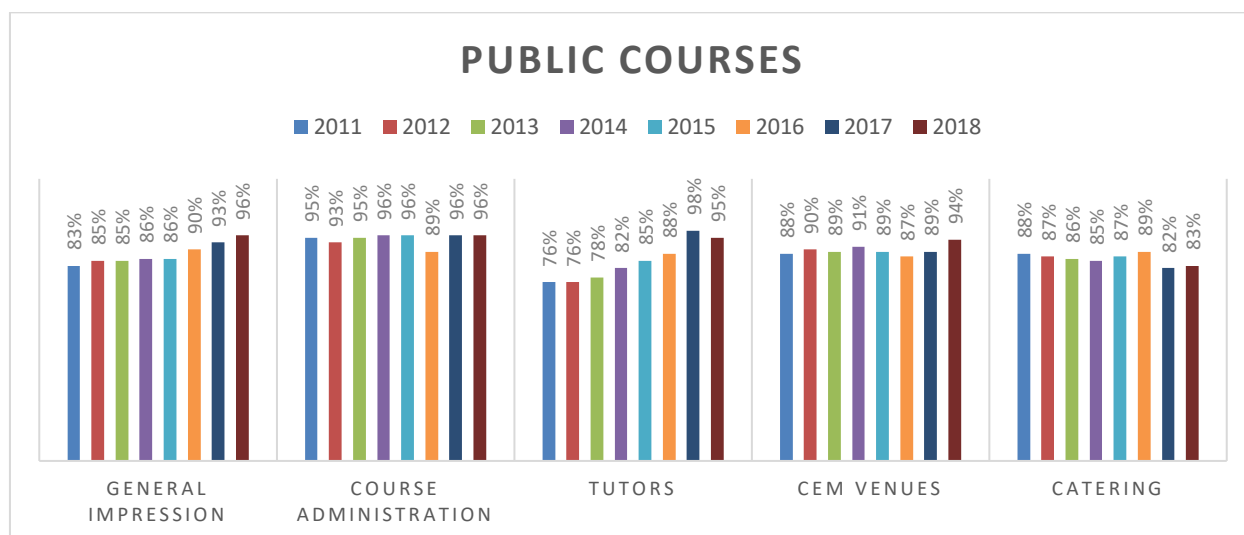


Figure 21: Feedback on public courses (2011-2019)

(Source: CEM (NWU))

General impression: Although the general impression of the CEM public courses has always been high, there has been a small increase over the years. The average is 88%. Furthermore, there is a 13% difference between the lowest year and the highest (2011 and 2019)

Course administration: Although there was a drop in 2016 in the quality of course administration, there remains a steady average in the field, with 95%. This rating is very high, leaving a little room for improvement. Generally, this high standard has remained. There is a small difference between the lowest, as well as the highest ratings by a difference of 7%.

Tutors: The quality of tutors increased significantly over the years, with a difference of 22% between the highest and the lowest rating. The 2017 year was the highlight, with a 98% rating. The average in this area is considered 82%.

CEM venues: The venues remained steady, with an average of 90%. There is only a 7% difference between the highest and the lowest ratings.

Catering: Although different caterers are used, the quality of the food provided to learners remains at an average rating of 86%. There is also a 7% difference between the highest (89%) as well as the lowest rating (82%).

Overall, the ratings indicate an increase and ongoing maintenance of the high standards expected within the different fields. This indicates that the QMS is successful in maintaining its quality standards.

Specific additional areas are only recorded for 2017-2018. They are provided in the table below.

Table 17: Feedback on public courses (additional areas)

Aspect	Trend	Rating aspect		
		2017	2018	Outcomes 2018
Company-sponsored	Downward	94%	89%	No risk of increased private registration as managed—more private delegates due to discount offers. Maintain discount offers.
Satisfied with the pricing of courses	Upward	75%	79%	Improvement
Recommend training session	Same	93%	93%	Maintain. Good client satisfaction indicator.
Satisfied with the length of sessions	Upward	66%	73%	The improvement due to reforms to teaching processes. More room for improvement exists.
Electronic course delivery	Upward	88%	94%	Improvement
Quality of course material	Upward	94%	97%	Improvement
Location	Downward	93%	91%	Slight decrease.

(Source: CEM (NWU))

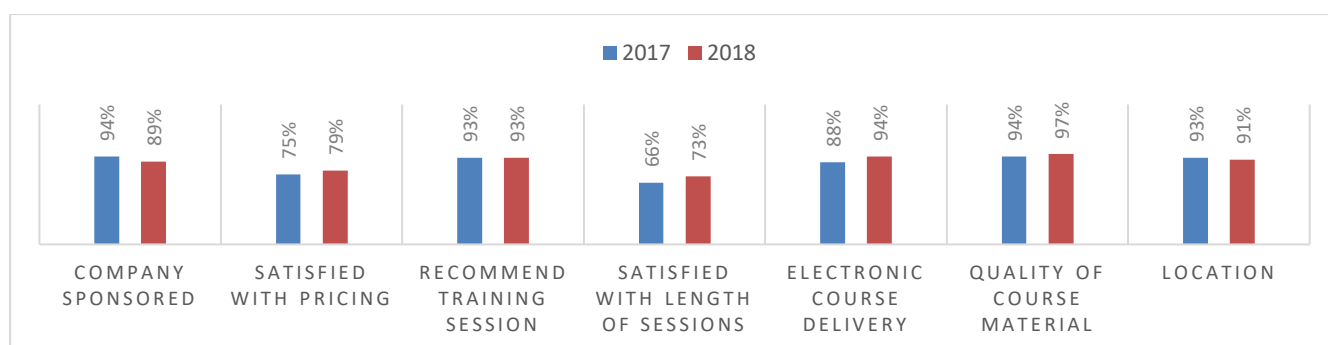


Figure 22: Feedback on public courses (additional areas)

(Source: CEM (NWU))

All areas show an increase in ratings between 2017 and 2018. All areas show a high level of quality; the average in 2017 of 86% increased with 2% to an average of 88% in 2018. This indicates that quality has been maintained.

4.4.9 In-house courses

The following ratings indicate feedback received from learners via questionnaires. These learners attended in-house courses (learners from the same organisation, training arranged by their employers) at the venue of choice provided by the employer. The findings of the last eight years are as follows:

Table 18: Feedback in-house courses (2011-2018)

	2011	2012	2013	2014	2015	2016	2017	2018
General impression	84%	86%	87%	87%	87%	92%	90%	92%
Tutors	78%	81%	89%	86%	87%	84%	93%	98%

(Source: CEM (NWU))

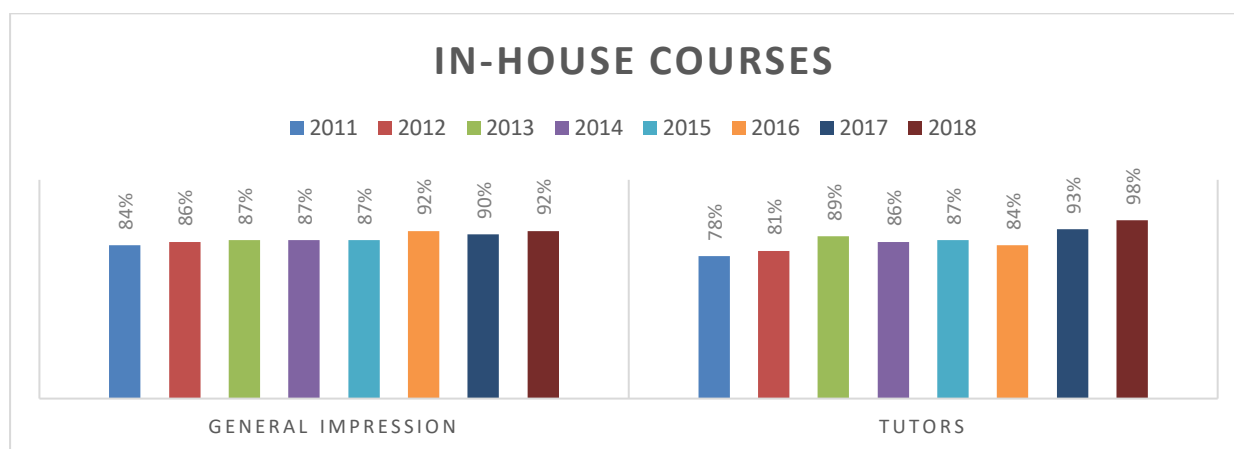


Figure 23: Feedback on in-house courses (2011-2018)

(Source: CEM (NWU))

General impression: Although the general impression is also high for in-house training sessions, there has been a small increase over the years. The average in the field is 88%. Furthermore, there is an 8% difference between the lowest (84%) year and the highest (92%).

Tutors: The quality of tutors increased substantially over the years with a difference of 20% between the highest and the lowest rating, similar to the ratings of the public courses as mentioned earlier.

Overall, the ratings indicate an increase, as well as maintenance of a high standard within the different fields. This indicates that the QMS is successful in maintaining its quality standards.

Specific additional areas are only recorded for 2017-2018. They are provided in the table below.

Table 19: Feedback on in-house courses (additional areas)

(Source: CEM (NWU))

In-house	2017	2018	
<i>Recommend training session</i>	90%	92%	Improvement
<i>Satisfied with a length of sessions</i>	55%	74%	Improvement. A good indicator of adhering to customer needs and satisfaction
<i>Electronic course delivery</i>	90%	95%	Improvement
<i>Quality of course material</i>	93%	95%	Improvement

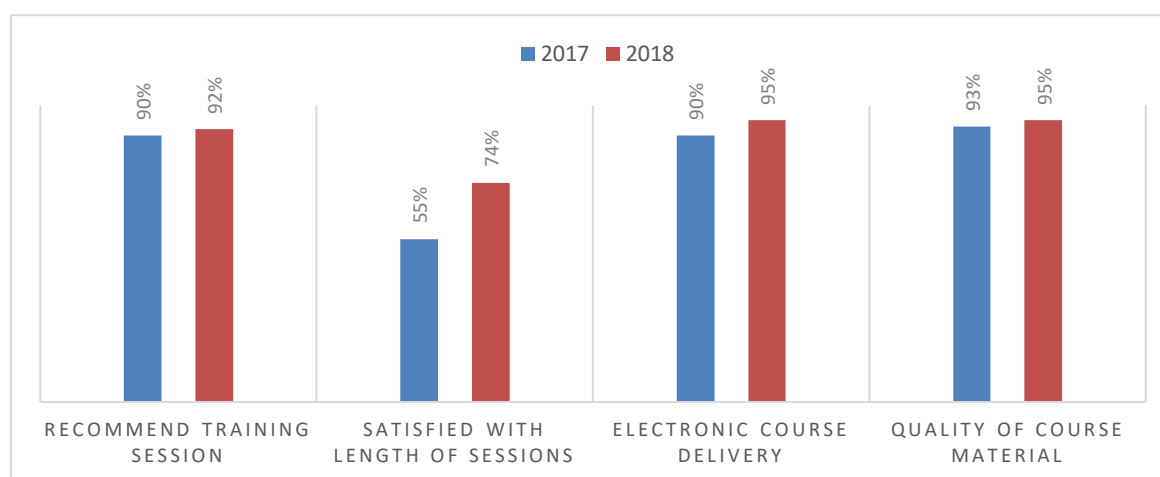


Figure 24: Feedback on in-house courses (additional areas)

(Source: CEM (NWU))

All areas show an increase in ratings between 2017 and 2018 as well as a high level of quality - the average in 2017 of 82% increased with 7% to an average of 89% in 2018. This indicates that quality has been maintained.

4.4.10 Review of quality of consultation services

The CEM only started formalising the process to review the quality of consultation in 2018. Therefore, the statistics only reflected in 2018.

Table 20: Feedback on consultation services

	Aspect	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Outcomes 2018
1	Overall, I am satisfied with the CEM's performance	0%	0%	0%	40%	60%	
2	I am satisfied with the communication by the CEM.	0%	0%	0%	80%	20%	
3	The project was delivered and concluded on time.	0%	20%	0%	0%	80%	
4	I am satisfied with the quality of the project deliverables.	0%	0%	0%	60%	40%	
5	Were any challenges/problems encountered?	60% (No)					40% (Yes)
6	If yes, were these challenges/problems resolved to your satisfaction?				100		

(Source: CEM (NWU))

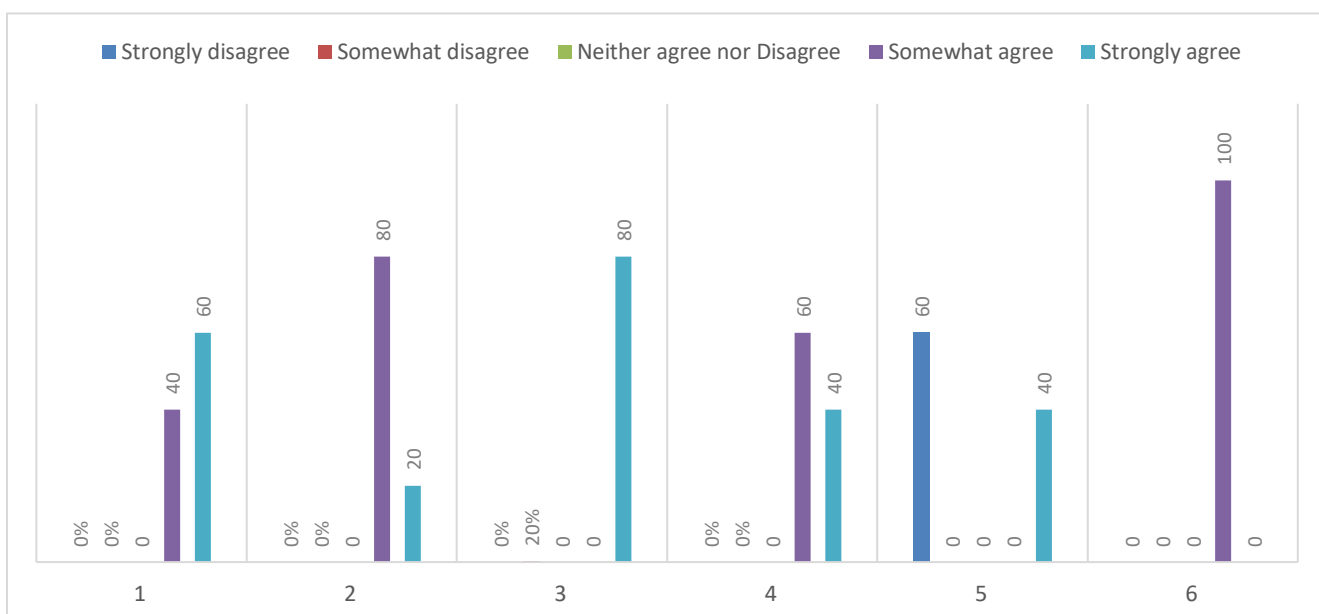


Figure 25: Feedback on consultation services

(Source: CEM (NWU))

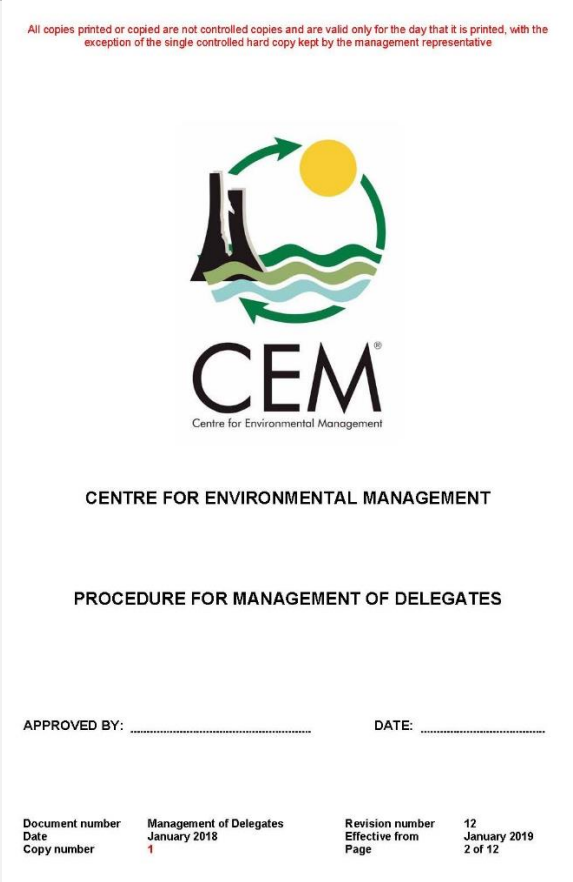
Overall, CEM clients are satisfied with consultation services, with the majority of clients indicating that they strongly agree. Although clients are happy with communication received from the CEM, there is room for improvement within this field. Eighty per cent of clients felt that the project was completed on time. Improvement can be made in terms of how satisfied clients were with the quality of the project deliverables. There are many challenges experienced within the delivery of projects; however, clients do feel that these problems were resolved once indicated to the CEM.

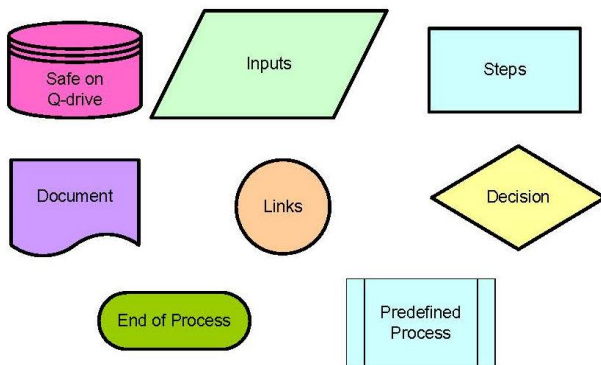
4.4.11 Leadership communication and inclusion of staff in work processes

All procedures are drawn in a flow chart to allow staff to understand the processes whilst visualising how all the procedures fit into the bigger picture. Each of the procedures is compiled similarly.

The following figures represent an example of a CEM procedure (Table 21). After that, the standard layout of a CEM procedure is presented (Figure 26). All procedures are based on the same framework.

Table 21: Example CEM QMS procedures

Page	Description
	The front page consists of the name of the procedure, as well as the day this procedure was approved by management. It also indicates the first date of approval, as well as the number of revisions of this procedure.

Page	Description
All copies printed or copied are not controlled copies and are valid only for the day that it is printed, with the exception of the single controlled hard copy kept by the management representative	Disclaimer of printed copies.
2 SCOPE This procedure applies to all CEM staff.	The scope of the procedure is indicated.
3 REFERENCE 3.1 SAATCA Criteria for EMS auditors training courses 3.2 SAATCA Criteria for training providers	All references to this particular procedure have been listed.
4 DEFINITIONS & ABBREVIATIONS 4.1 EM: Executive Manager 4.2 MR: Management Representative 4.3 CEM: Centre for Environmental Management 4.4 Management Representative is the appointed management representative. 4.5 Technical coordinator: is the appointed technical coordinator per course. 4.6 Distribution list: No distribution list is used as no documents are distributed. The place of storage of records is indicated in the dedicated records register. 4.7 Control sheet for amendments: A document that indicates revisions that were made to a controlled document. 4.8 Revision date: The date that a controlled document is presented for revision purposes. 4.9 Revision number: Indicates the current revision status of a specific controlled document. 4.10 Effective date: The date that a specific controlled document becomes effective. It will normally be a few days after the date of revision. 4.11 Approval: All controlled documents will be approved for adequacy by the designated authority before released for distribution. 4.12 Symbols (next page)	There is a list of abbreviations and definitions specifically regarding this procedure.
Symbols: 	The descriptions of symbols are indicated as an easy reference.
5 Roles, Responsibilities and Authorities Refer to Strategic Documents: Quality Manual: Roles, Responsibilities and Authorities	A reference to the roles and

Page											Description
											responsibilities given.
	CEM VALUE CHAIN Rev 2015-18 Improvement STRATEGIC AND OPERATIONAL BUSINESS PLANNING - Quality Manual - Quality Policy - CEM Strategic & Business Plan - CEM Prospectus - Management of Review, Strategic and Operational Planning - Management Review MANAGEMENT OF TEACHING AND LEARNING Management of: - Overview of management of courses - Tutors and Teaching Staff - Delegates - Course Content and Material - Delegate Assessment and Certificates - Formal teaching and learning programmes MANAGEMENT OF PROJECTS CONTINUAL IMPROVEMENT PROCESSES Management of: - Nonconformity, Corrective and Preventive Action, Complaints and Appeals - Internal and External Audits - See Strategic and Operational Planning CEM SUPPORTING PROCESSES Management of Marketing and Publicity Management of Finances and Quotations Management of CEM Staff, Interns and other Tutors Management of Documents and Records Management of Assets: Infrastructure, Planning, Purchasing, Control, Maintenance including Software Management of Data Analysis, Statistics and Trending Management of Risks, Emergencies, Accidents, Incidents and Security Management of Change Management of Customer-owned Property Management on Generation and Quality Assurance of Documents										The CEM value chain is indicated. Where the procedure fits into the value chain is indicated.
8 RECORDS											The Records table indicates the documents related to this procedure. This includes the name of the document, who is responsible for it, where the document is stored and in which format. Information on historical documents is also given.

Page	Description																																													
CONTROL SHEET FOR AMENDMENTS <table><tr><th>DATE</th><th>NATURE OF CHANGE</th><th>REVISION</th></tr><tr><td rowspan="3">November 2004</td><td>This is a new procedure that replaces the following procedures:</td><td rowspan="3">01</td></tr><tr><td> - Exercises and syndicate work June 2003 </td></tr><tr><td> - Nomination, acceptance and evaluation of EMS Lead Auditor Course </td></tr><tr><td>February 2006</td><td>Comprehensive Review</td><td>02</td></tr><tr><td>May 2007</td><td>List of RRAs expanded</td><td rowspan="3">03</td></tr><tr><td>May 2007</td><td>Procedure: Public Course Learner Registration</td></tr><tr><td>18 April 2008</td><td>The list of RRAs withdrawn, refer to Quality Manual</td></tr><tr><td>December 2008</td><td>Comprehensive Review</td><td>04</td></tr><tr><td>March 2011</td><td>Update of CEM Value Chain, Symbols and new NWU Front Page</td><td>05</td></tr><tr><td>June 2011</td><td>Review and update of procedure</td><td>06</td></tr><tr><td>August 2012</td><td>Comprehensive Review</td><td>07</td></tr><tr><td>November 2012</td><td>Comprehensive Review</td><td>08</td></tr><tr><td>May 2014</td><td>Few general amendments, reallocation of roles, change value chain and change learners/students to delegates</td><td>09</td></tr><tr><td>January 2015</td><td>Updated Value Chain</td><td>10</td></tr><tr><td>January 2018</td><td>Updated logo's</td><td>11</td></tr><tr><td>January 2019</td><td>Updated logo's</td><td>12</td></tr></table>	DATE	NATURE OF CHANGE	REVISION	November 2004	This is a new procedure that replaces the following procedures:	01	Exercises and syndicate work June 2003	Nomination, acceptance and evaluation of EMS Lead Auditor Course	February 2006	Comprehensive Review	02	May 2007	List of RRAs expanded	03	May 2007	Procedure: Public Course Learner Registration	18 April 2008	The list of RRAs withdrawn, refer to Quality Manual	December 2008	Comprehensive Review	04	March 2011	Update of CEM Value Chain, Symbols and new NWU Front Page	05	June 2011	Review and update of procedure	06	August 2012	Comprehensive Review	07	November 2012	Comprehensive Review	08	May 2014	Few general amendments, reallocation of roles, change value chain and change learners/students to delegates	09	January 2015	Updated Value Chain	10	January 2018	Updated logo's	11	January 2019	Updated logo's	12	A control sheet of amendments is included. It indicates when changes have been made to the specific procedure. It also shows when revisions have been made.
DATE	NATURE OF CHANGE	REVISION																																												
November 2004	This is a new procedure that replaces the following procedures:	01																																												
	Exercises and syndicate work June 2003																																													
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May 2014	Few general amendments, reallocation of roles, change value chain and change learners/students to delegates	09																																												
January 2015	Updated Value Chain	10																																												
January 2018	Updated logo's	11																																												
January 2019	Updated logo's	12																																												

(Adapted from CEM, 2019)

Figure 26 represents a page from a CEM procedure. The areas can be described as follows:

- A: The disclaimer of where copies of this procedure are kept.
- B: The title of the procedure.
- C: Reference to the responsible person within the procedure. This is indicated by the number of the step within the procedure, as well as the abbreviation of the role allocated to an individual staff member (refer to Table 19).
- D: Body (of the flow chart of a procedure). This visually represents each step and decisions made within the procedure. Each element is numbered and visually represented by a symbol (refer to Figure 24).
- E: Decryption of activity as well as record concerning the appropriate step within the procedure.
- F: Documents footer, containing specific references to this procedure.
- G: Stop symbol, indicating where the procedure leads to interlinking procedures.

A All copies printed or copied are not controlled copies and are valid only for the day that it is printed, with the exception of the single controlled hard copy kept by the management representative

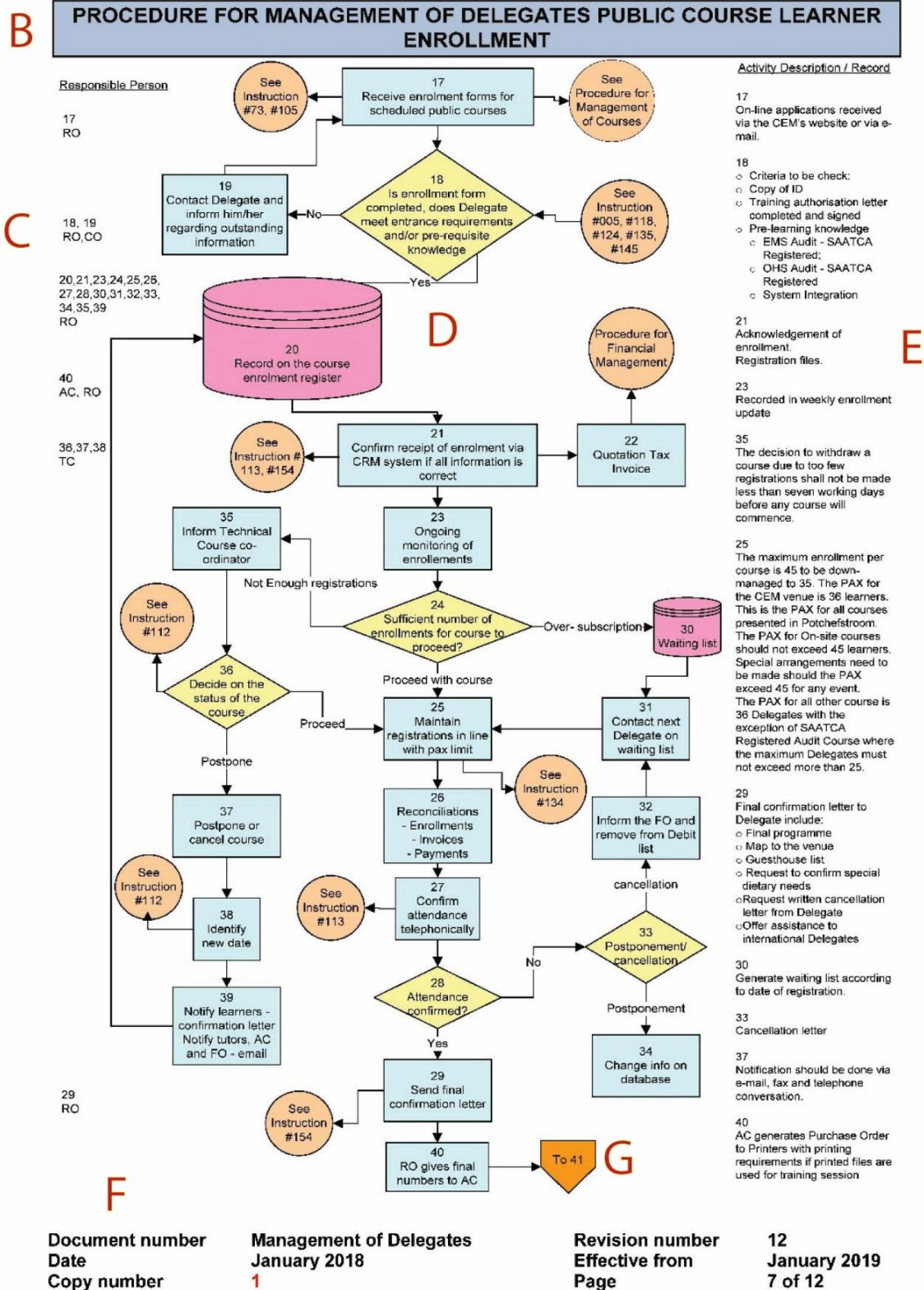


Figure 26: Standard layout of a CEM procedure

(Source: CEM (NWU))

Notably, the CEM strives to make the documents user-friendly to staff members. The CEM has provided distinct colours and shapes to highlight specific responsibilities. This makes the process easy to understand. Flow charts allow individuals to understand the steps in the processes simplistically. It also allows individuals to understand how the processes are interrelated. Breaking down the process also allows the CEM to focus on specific areas of the procedures, as well as to pinpoint areas which may result in system failures. These processes can also easily be used as user-friendly work instructions, and procedures can also be analysed quickly.

These procedures are updated annually to ensure relevancy. An internal audit is scheduled within a three-year cycle to make sure that staff members adhere to the procedures and that procedures are both relevant and up-to-date. Below is the internal audit schedule representing these updates:

Table 22: Internal audits schedule

What	2012	2013	2014	2014	2015	2016	2017	2018	2019
Procedure for management review, strategic and operational planning						X			X
Management of marketing & publicity		X			X			X	
Management of finances & quotations			X				X		
Management of documents & records			X				X	X	
Management of assets			X				X		
Management of data analysis, statistics and trending	X				X			X	
General risk identification, assessment and management					X				X
Management of change			X				X		
Management of customer-owned property		X			X				X
Management of quality assurance of the content of documents			X				X		
Management of tutors, staff & interns	X				X				
Management of delegates		X			X			X	
Management of course content and material		X			X			X	
Management of delegate assessment and certification			X			X		X	X
Management of projects	X		X			X			X
Management of non-conformities, corrective action and preventive action		X			X			X	
Management of internal audits					X		X		X
Emergency procedure			X				X		
CEM Internal SAATCA audit	X		X			X	X		X
CEM IKAS review	X		X			X			X
Software audit		x		X		X		X	
Legal compliance audit (legal register)		X			X		X		
Management of caterers (Contracts, municipal approvals, management of actual nr of meals)						X			X

(Source: CEM (NWU))

4.4.12 Non-conformity, corrective and preventive action, complaints and appeals

Managers should make use of charts which enable them to monitor all projects within their project cycles at any given time to determine if they are running on schedule. The impact of non-conformity should be monitored. Reports of failed processes and essential changes made to procedures should be documented and analysed to avoid failure in future. Currently, this is not dealt with formally. Systems, for example, the Corrective Action Request (CAR) and the Management of Change (MOC) forms, can assist managers in managing and understanding these problems as they assist in managing the risks associated with these processes. These systems will now be discussed.

4.4.12.1 Management of Change (MOC)

The purpose of this MOC form is to establish and maintain a standard operating procedure. This form creates a method to define risks associated with any change(s) to the facility, activities, processes, people, course content, administrative arrangements or procedures adequately and address them before change implementation. Within this document, changes are recorded, communicated and consistently implemented. This procedure applies to all staff, including suppliers to the CEM within the defined scope of the QMS. This procedure applies to all facilities, activities, products, equipment, services and business processes of the CEM. The responsible person to manage the MOC process is the Registration Officer.

The MOC form enables a department to manage a request for change within a department. To visually represent the process, the following can be seen below: i) the procedure to be followed during MOC (Figure 27); ii) the sections of the MOC form (Table 23), and iii) the statistics regarding the regularity of change requests made (Table 25 and Figure 28).

PROCEDURE FOR MANAGEMENT OF CHANGE

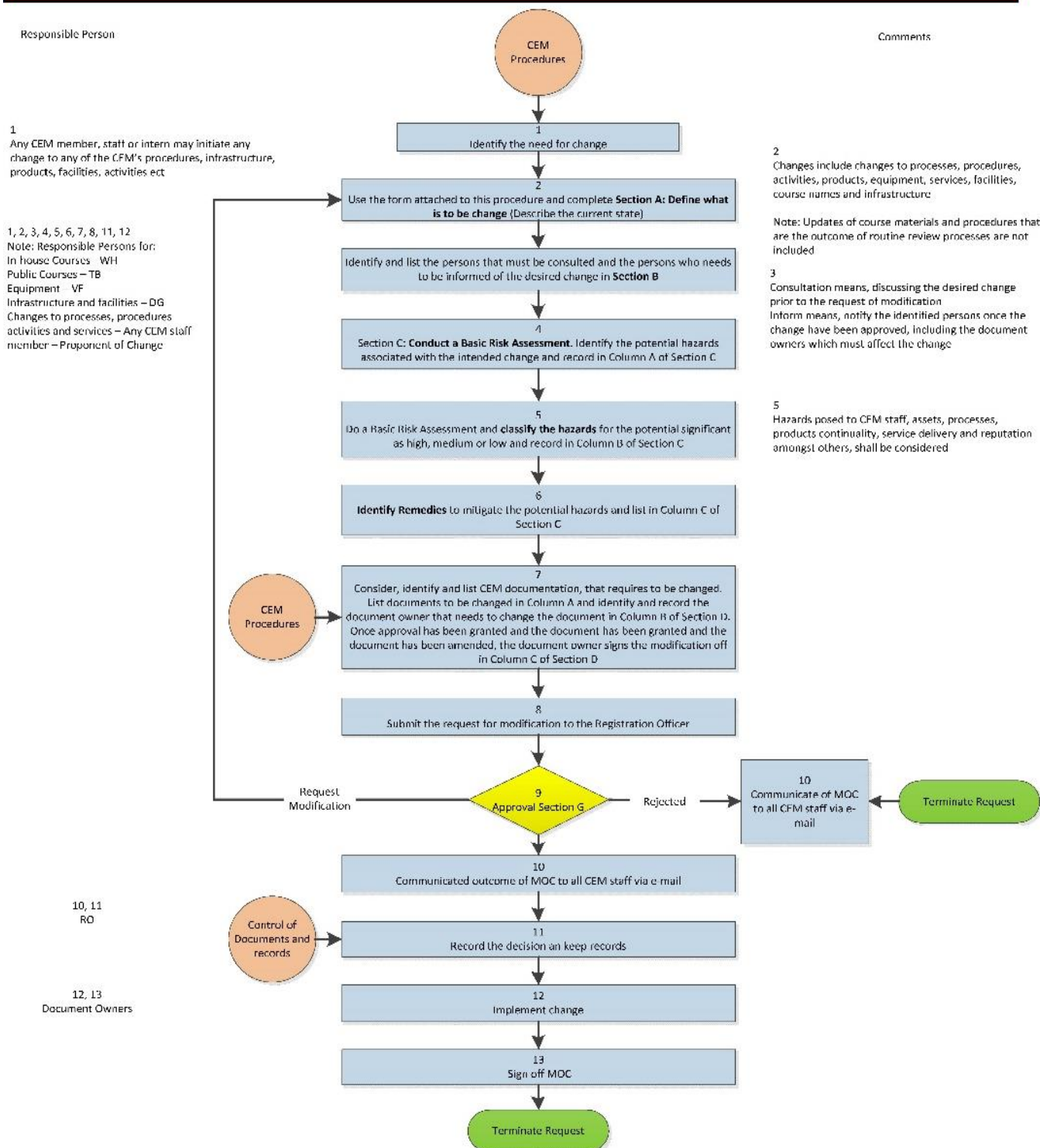


Figure 27: MOC procedure flow chart

(Source: CEM (NWU))

Table 23: Change request form

Page	Description						
Reference No: CRF	The document has a unique number which is entered on a change register (database) for future reference.						
SECTION A : Define the Change and describe current state 1. Define what is to be changed: 2. Description of Current State: 3. Motivation for the desired change:	This section defines the change and current state; as well as motivation for the change. Within this section, the nature of the desired change is defined.						
SECTION B : Consulted persons Provide a list of the persons consulted:	Within this section, a list of the individuals who need to be consulted before the change is identified as well as the list of the individuals who need to be informed about the change is provided.						
SECTION C : Conduct a Basic Risk Assessment <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">A Potential Hazards</th><th style="width: 33%;">B Classify Hazards (H – High, M – Medium, L – Low)</th><th style="width: 33%;">C Remedies to Mitigate Potential Hazards</th></tr> </thead> <tbody> <tr> <td style="height: 20px;"></td><td></td><td></td></tr> </tbody> </table>	A Potential Hazards	B Classify Hazards (H – High, M – Medium, L – Low)	C Remedies to Mitigate Potential Hazards				A primary risk assessment is conducted in this section. Potential hazards for the change are listed, a rating of the hazard on a scale of low, medium and high is allocated. Moreover, remedies to mitigate potential hazards are indicated.
A Potential Hazards	B Classify Hazards (H – High, M – Medium, L – Low)	C Remedies to Mitigate Potential Hazards					
SECTION D : Documents that require change & Document Owner <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">A List Documents to be Changed</th><th style="width: 50%;">B Document Owner</th></tr> </thead> <tbody> <tr> <td style="height: 20px;"></td><td></td></tr> </tbody> </table>	A List Documents to be Changed	B Document Owner			Within this section, documents in the processes are identified, as well as the document owner. The document owner must sign off this section once the desired change has been implemented.		
A List Documents to be Changed	B Document Owner						
<table style="width: 100%;"> <tr> <td style="width: 60%;">Form submitted to Registration Officer</td><td style="width: 40%;">Date</td></tr> </table>	Form submitted to Registration Officer	Date	The change needs to be formally approved by the Manager of the department. A review of the successful implementation of this change needs to be conducted. The person who initiated the change needs to complete this document to initiate the process.				
Form submitted to Registration Officer	Date						

(Adapted from Source: CEM (NWU))

)

Table 24: Change request form (continued)

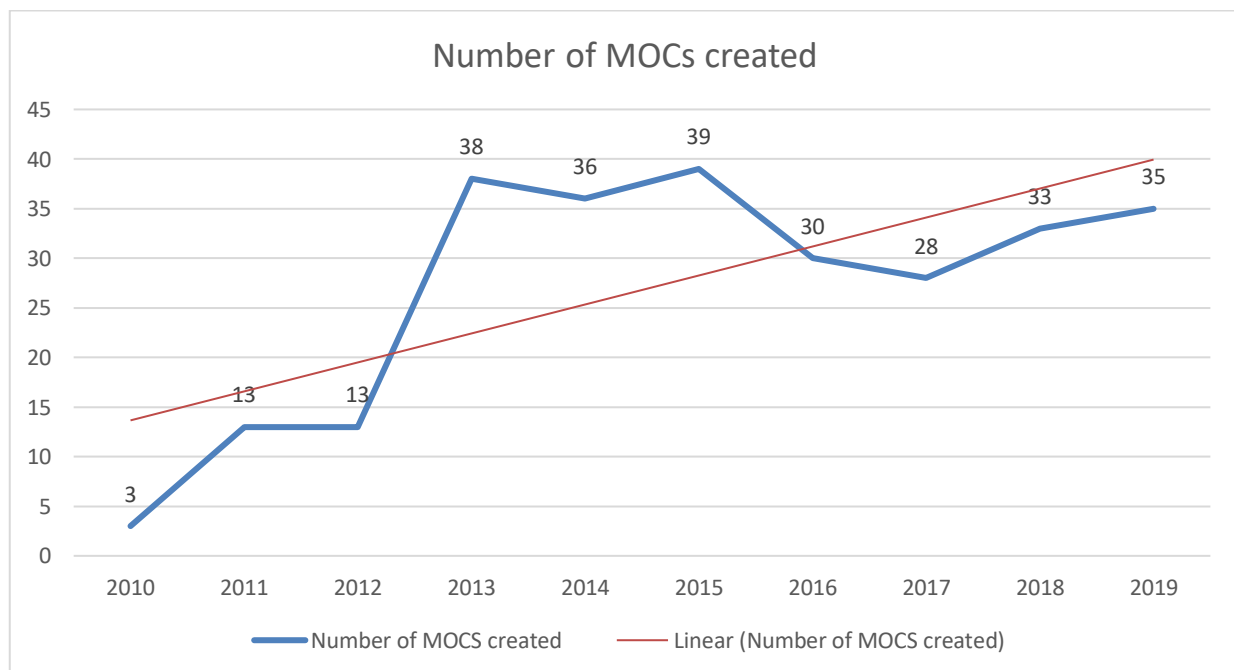
Page	Description
SECTION E : Signed Off ☐ Approved ☐ Not Approved CEM Manager (Name) Signature Date	After the change have been implemented the Quality Officer or Manager of the department must control if the change has been implemented and then sign off on the document. This change needs to be documented in the minutes of a formal departmental meeting.

(Adapted from Source: CEM (NWU))

Table 25: Statistics MOC (2010-2019)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of MOC created	3	13	13	38	36	39	30	28	33	35

(Source: CEM (NWU))

**Figure 28: Statistics MOC (2010-2019)**

(Source: CEM (NWU))

The number of MOC forms created differs from year to year; however, there been a steady increase. This is an indication that staff members are increasingly making use of this tool.

4.4.12.2 Corrective Action Request (CAR)

A non-conformity is the failure to meet a requirement within the QMS. Once the failure occurs a Non-Conformity Request (NCR) is raised. The purpose of an NCR is to establish and maintain a procedure to define actual and potential non-conformities. Its purpose is, furthermore, to:

- formulate, document and implement *corrective actions* to prevent recurrence;
- formulate, document and implement *preventive actions* to prevent occurrence;
- review effectiveness, to provide for management of complaints and appeals received from delegates and service providers;
- to provide for linkages of non-conformities to NWU processes;
- emergency response; and
- incident reporting.

This procedure applies to all staff, including outsourced persons and delegates working for or on behalf of the CEM or otherwise attending CEM courses. The procedure applies to both actual and potential non-conformities. The document is divided into the following sections:

NCR FORM CENTRE FOR ENVIRONMENTAL MANAGEMENT			
CAR/PAR or Audit No	CEM012_17 Internal audit: Enrollment form are not in accordance to the POPI Act	Business Process /Area	Internal Audits Procedures
SECTION 1: SOURCE			
• External Audit ☐ • Internal Audit ☐ • Customer/Client ☐ • Internal Observation ☐ • Management Review ☐			
SECTION 2: DETAILS OF COMPLAINT/INCIDENT/REQUEST/NON-CONFORMANCE/FINDING & EVIDENCE			
• Customer requirement ☐ • Audit finding ☐ • Inquiry/request ☐ • Complaint ☐ • Appeal ☐			
Detail: Application form does not comply to the POPI Act			
Initiated By:	IA	Date:	11/29/2017

SECTION 3: FINANCIAL/REPUTATIONAL IMPLICATIONS OF NON-CONFORMITY	
Reputational concern/implications	Consequences
None	None

SECTION 4: RISK ASSESSMENT & MANAGEMENT (NONCONFORMITY)		
Risk assessment		
What risk is foreseen as a result of the non-conformity?		
Hazard	Impact / Risk	Risk rating
Low	None	None
Assumptions and uncertainties		
None		
Risk management		
What management interventions to manage the impacts/effects of the non-conformity?		

Risk	Controls/Action	Sign-off
Intolerable	Immediate additional controls/action	Executive Manager
ALARP	Improve current controls/action	Line manager
Maintain	Ensure current levels of control/action	Line manager

SECTION 4: IMMEDIATE ACTION(S) TAKEN TO MITIGATE EFFECT/IMPACT AND DEAL WITH CONSEQUENCES				
Who	What	Target Date	Date Completed	Initials
AJ	NCR Generated	12/1/2017		

SECTION 5: ROOT CAUSE ANALYSIS		
Why did the non-conformity occur- what was the root cause thereof?		
Who	What	When
AJ		

SECTION 6: ACTION(S) PLANNED TO ELIMINATE THE CAUSES OF THE NONCONFORMITY TO PREVENT RECURRENCE					
Who	What Action planned	Documents to be changed	New Target Date	Date Completed	Initials
AJ			12/22/2017		

SECTION 7: ADDITIONAL CONTROLS REQUIRED	New Target Date	Date Completed	Initials

SECTION 8: NCR CLEARANCE		
Cleared by	Signature	Date
COMMENTS		

SECTION 9: EFFECTIVENESS REVIEW		
Effectiveness of action(s) planned to eliminate the causes of the nonconformity to prevent recurrence		
Who	Is/are the arrangement(s) effective? (Yes/No)	Motivation

Figure 29: NCR form

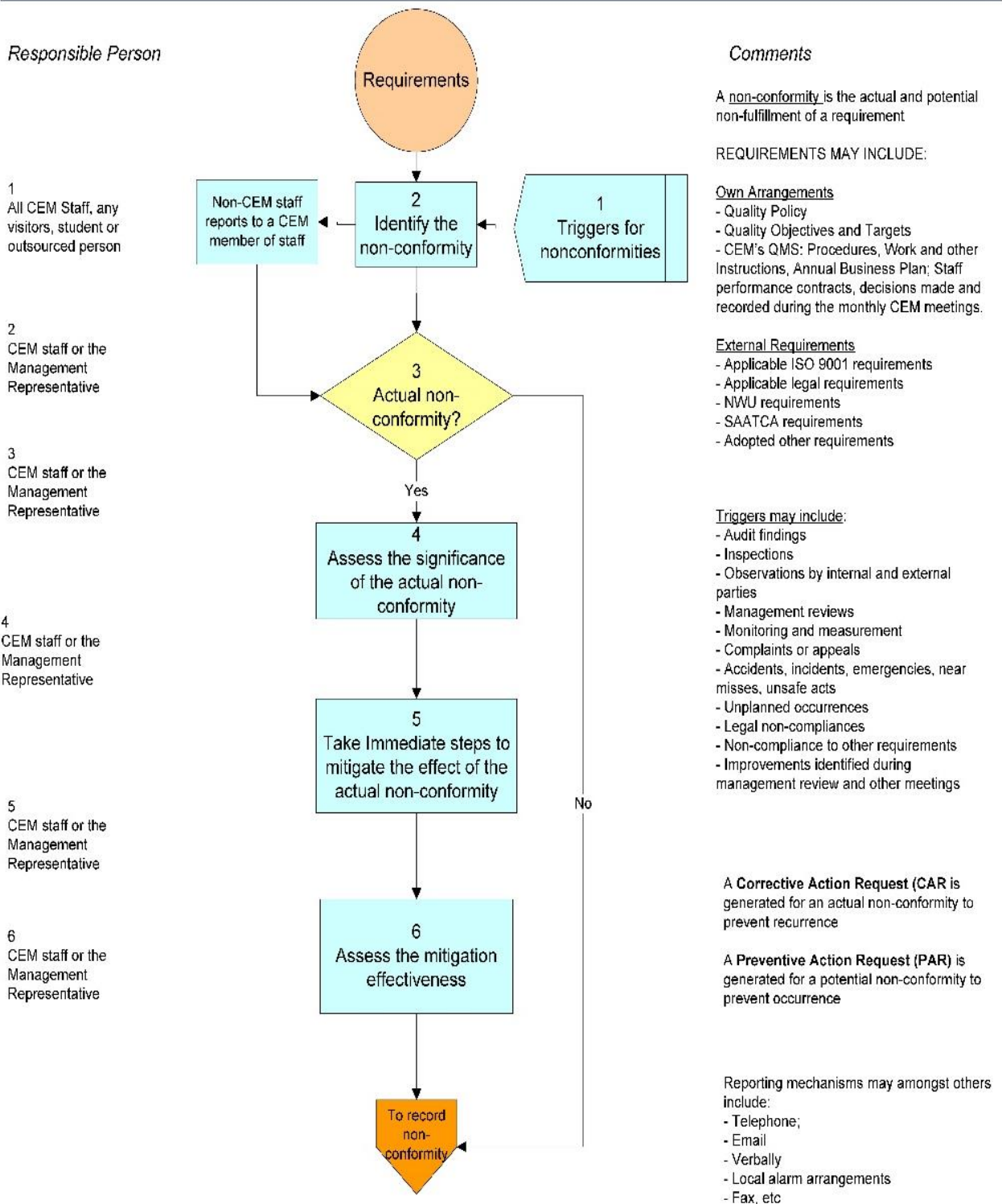
(Source: CEM (NWU))

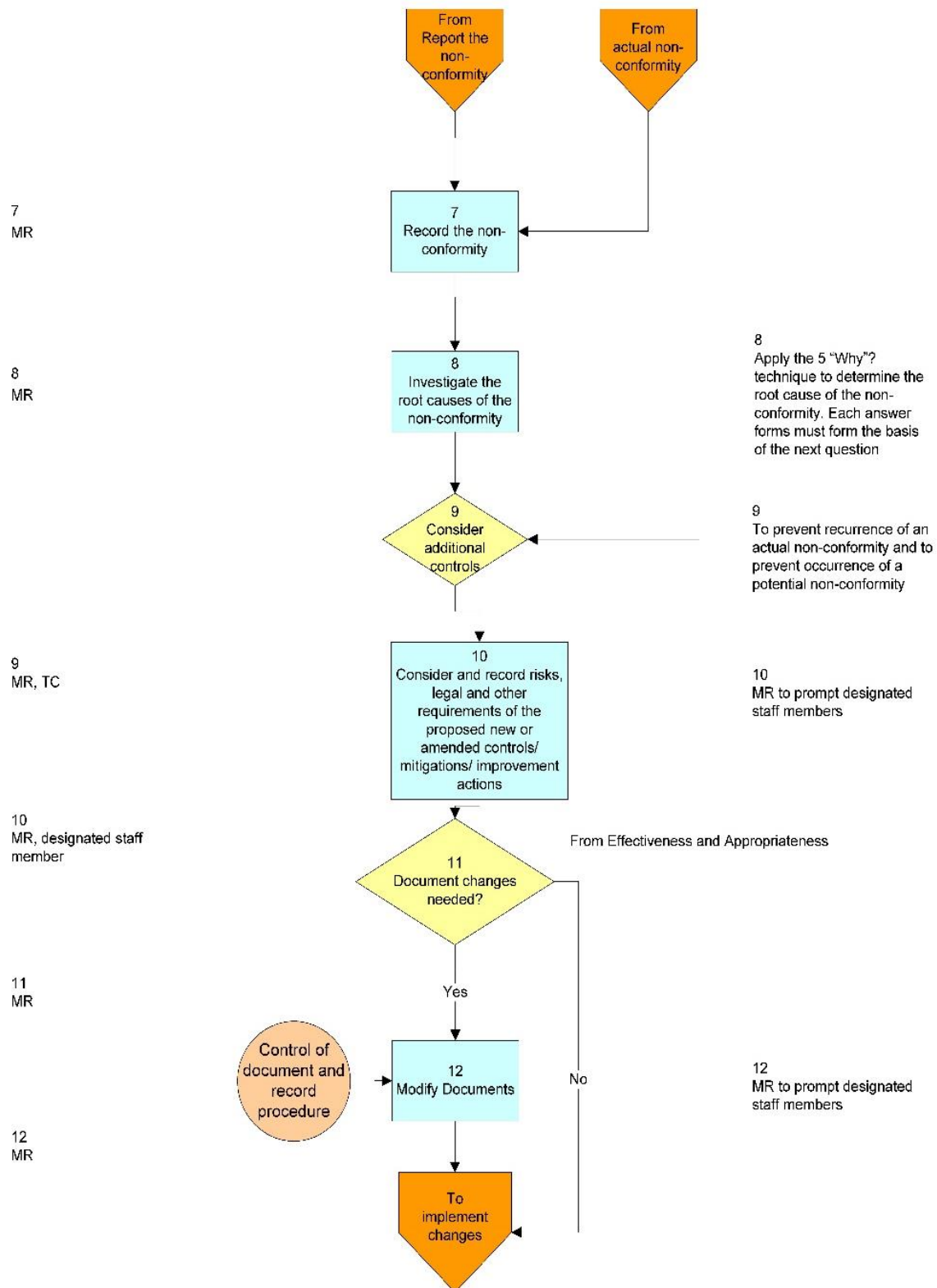
An incident needs to be formally registered on a CAR Register. The document needs to list a unique number, a short description as well as the month and the year in which the incident happened. The source of the non-conformity, as well as detail of the complaint need to be identified. The sections need to indicate:

- *Section 1:* The source of the incident (selected from the list provided).
- *Section 2:* The details of the incident (selected from the list provided). There is also a table in which details of who initiated the NCR, as well as the date;
- *Section 3:* The actions taken with immediate effect to mitigate the incident. Areas of *who* needs to do *what* by *when* are to be completed. The date of completion and person responsible need to be indicated once the action has been completed.
- *Section 4:* This section includes the corrective and preventive action taken to prevent occurrence or recurrence of the incident. This action needs to be implemented by a given date; therefore, the date that the task was/will be completed must be indicated.
- *Section 5:* The results of the effectiveness review; and
- *Section 6:* CAR clearance, once the incident has been resolved.

Processes should be established to plan alternative options as opposed to merely crisis-control tasks. This will enable the manager to determine what influence these tasks may have had on planned cost, quality and time. The NCR procedure flow chart is represented on the next page and shows the possible procedures to be followed.

NONCONFORMITY, CORRECTIVE AND PREVENTIVE ACTION	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
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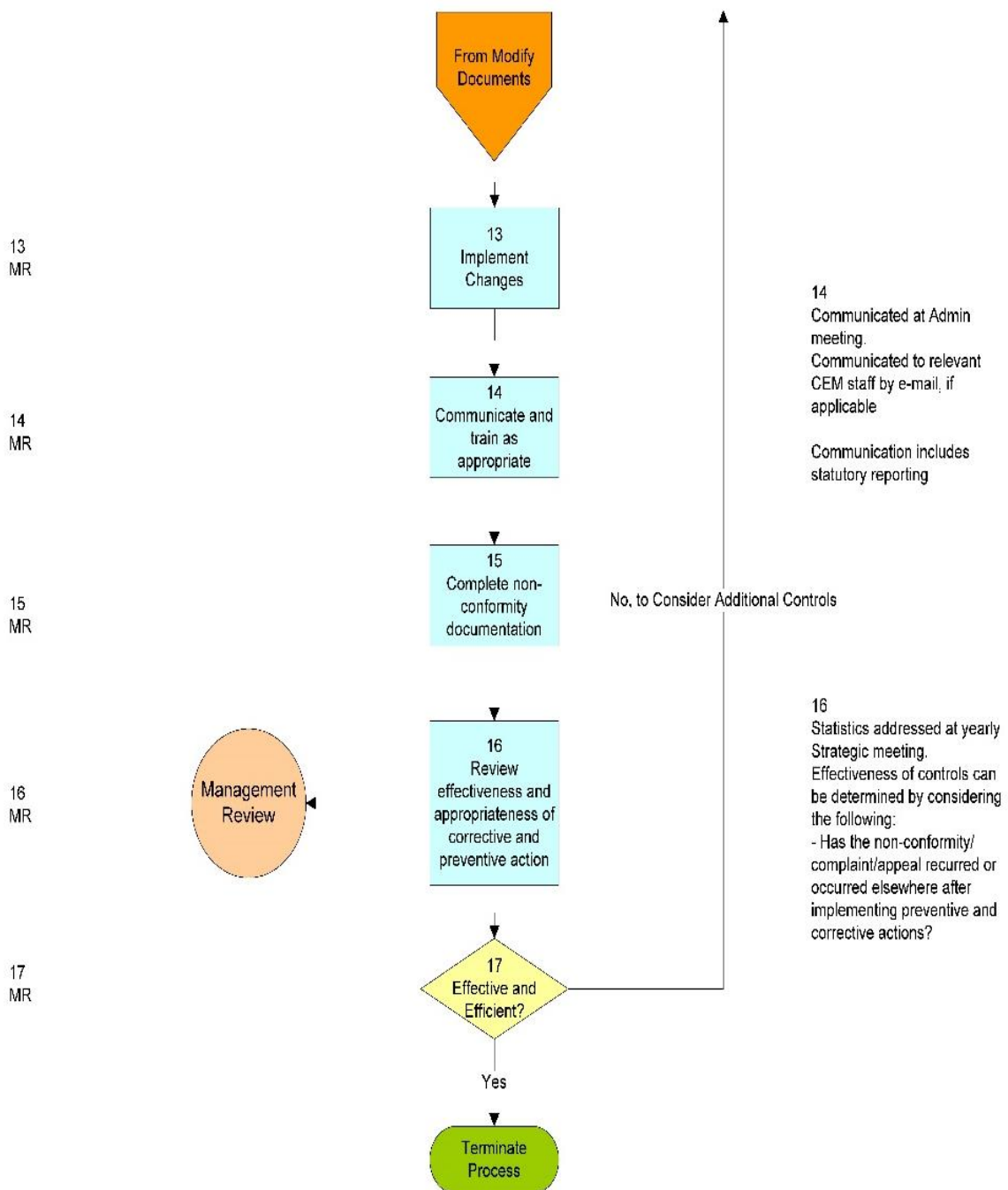


Figure 30: NCR procedure flow chart

(Source: CEM (NWU))

4.3.12 Status of preventative and corrective actions (NCR system feedback)

The overall number of NCR cases declined from 2011 to 2019. This is a positive indication, as less potential non-conformities occurred. This could be an indication that staff members are more aware of how procedures work and understand how to follow them.

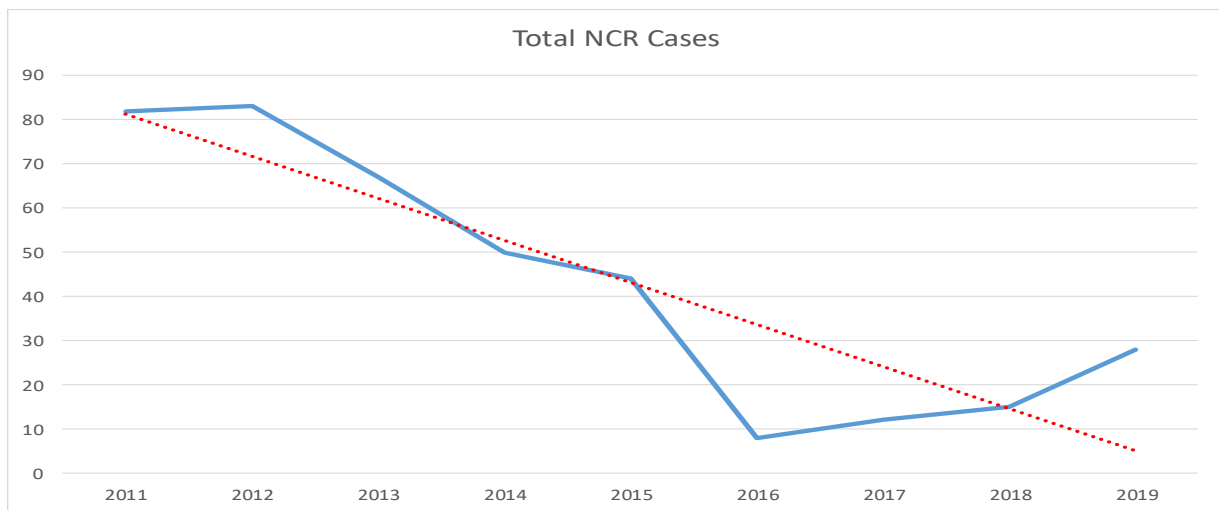


Figure 31: Total NCR Cases (2011-2019)

(Source: CEM (NWU))

4.3.14 Statistics

NCR: Category: The following table represents the categories in which the NCRs are raised.

Table 26: NCR system feedback categories

	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average	Total	Mean
Complaints and Appeals	11	24	9	2	1	4	3	4	4	8	62	4
Corrective Action Request	49	31	52	23	17	4	2	1	3	25	182	17
External Audits	5	2	2	0	0	0	0	5	0	1	14	0
Internal Audits	5	22	1	9	22	0	3	0	0	9	62	3
Preventive Action Request	2	1	2	0	0	0	2	1	15	1	23	1
Request	4	0	0	16	0	0	2	4	1	3	27	1
Suggestions	6	3	1	0	4	0	0	0	5	2	19	1
	82	83	67	50	44	8	12	15	28			

(Source: CEM (NWU))

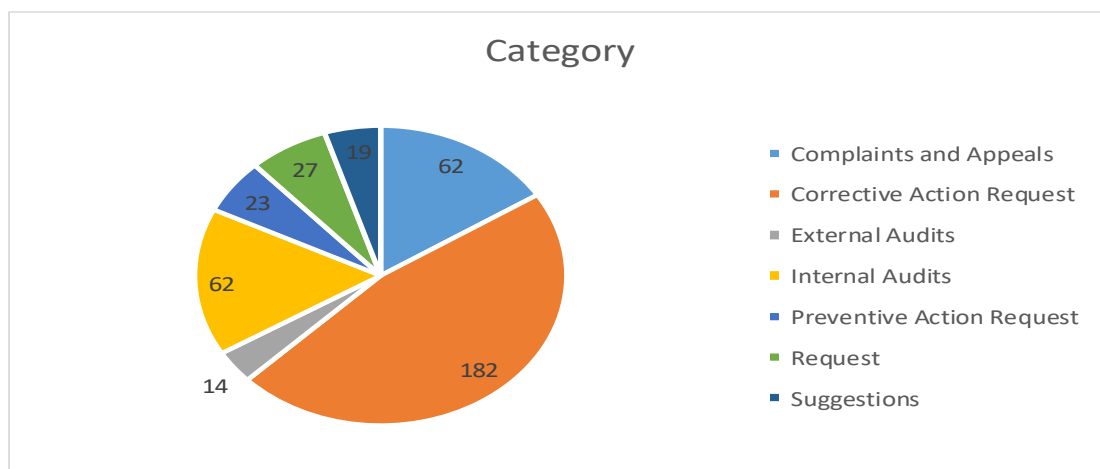


Figure 32: NCR data category

(Source: CEM (NWU))

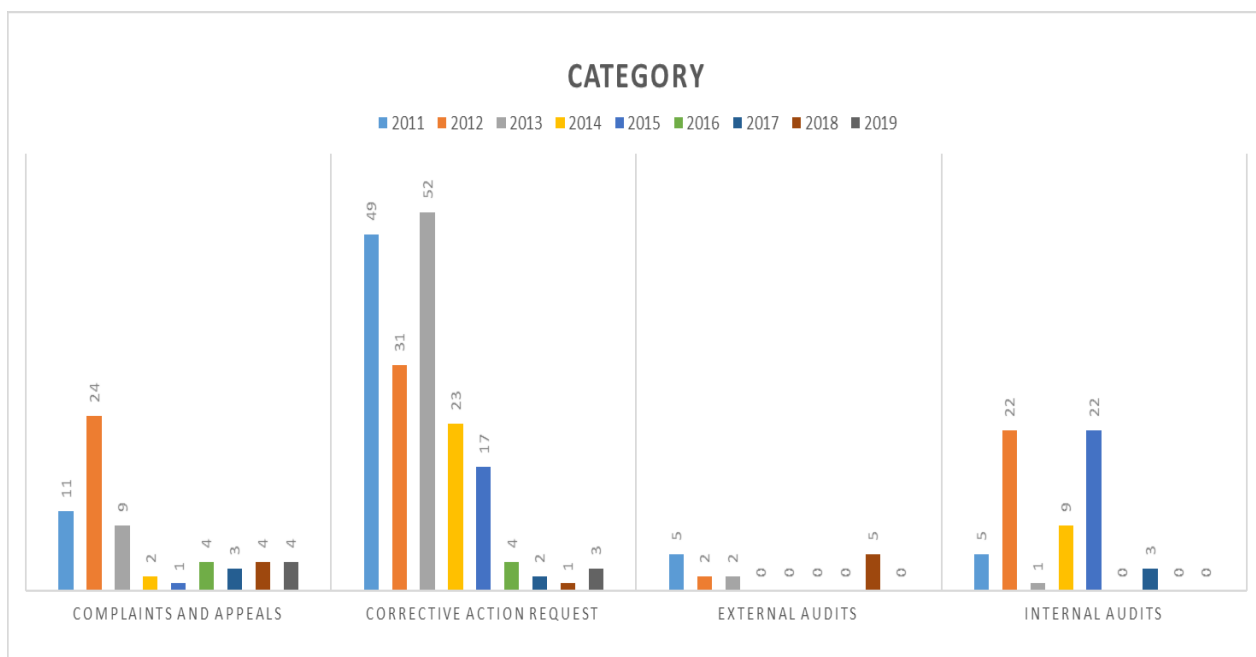


Figure 33: NCR Data category breakdown 1

(Source: CEM (NWU))

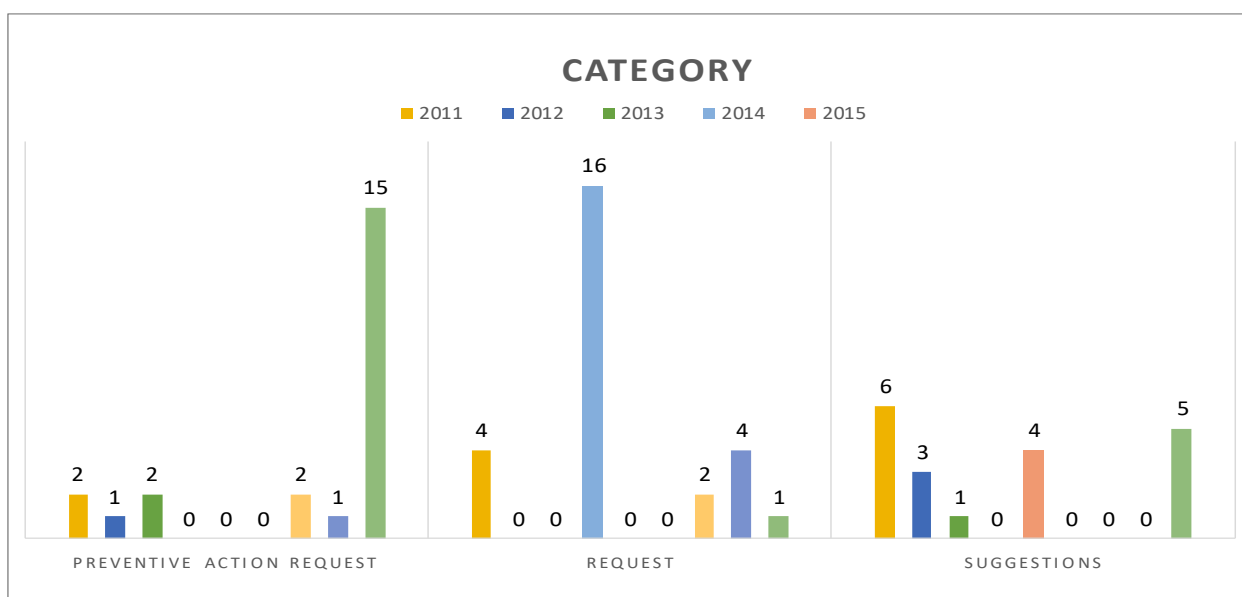


Figure 34: NCR Data Category breakdown 2

(Source: CEM (NWU))

The most NCRs were raised from the CAR categories. In doing so, staff members become aware of when and where they have failed to follow a procedure. Management can also determine if this NCR is due to staff not following the procedure or if the procedure is failing them and therefore is not suitable.

The next categories to be used include complaints and appeals, as well as internal audits. This indicates that the CEM takes complaints and suggestions from clients seriously and also formally deals with these. This, in turn, will influence the CEM QMS to provide for their client's needs.

Internal audits are a critical measure that management uses to make sure that the QMS is working. Issues raised in these NCRs can be used to review, as well as to improve, the CEM QMS.

The remaining categories are requests and external audits. Requests can have an influential role; however, it is not the dominant category. The least NCRs come from external audits. This may be an indication that external auditors are satisfied with their findings. To summarise, the following table presents the types of NCRs which were raised.

Table 27: NCR Type

	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average	Total	Median
Agreements	0	0	0	0	0	0	0	0	1	0	1	0
Assessment	5	6	2	2	2	0	1	4	4	3	26	2
Assets	1	0	0	0	0	0	0	0	0	0	1	0
Caterers	2	3	5	1	0	0	1	0	1	1	13	1
Certificates	1	3	1	1	0	0	0	1	0	1	7	1
Client Services	1	2	1	1	2	0	0	0	4	1	11	1
Contractors	0	0	1	0	0	0	0	0	0	0	1	0
Courier Services	0	0	2	0	0	0	1	0	0	0	3	0
Course Administration	8	13	5	3	1	2	2	3	0	4	37	3
Course Management	1	0	6	2	4	0	1	1	6	2	21	1
Course Material	18	8	3	4	2	1	0	1	2	4	39	2
Courses	3	0	2	2	0	0	0	0	0	1	7	0
DASS	0	0	0	1	0	0	1	0	0	0	2	0
Database	2	0	4	0	0	0	0	0	0	1	6	0
Data Management	0	2	1	0	0	0	0	0	0	0	3	0
Electronic Equipment	1	0	1	1	0	0	0	0	1	0	4	0
Enrollment	1	2	0	2	1	0	0	0	0	1	6	0
Exam Papers	3	3	2	0	8	0	0	0	5	2	21	2
Examination	1	4	1	2	1	0	1	0	0	1	10	1
Finances	5	2	3	4	3	0	0	2	0	2	19	2
Food	2	1	0	2	0	0	0	0	0	1	5	0
ISO's	0	1	0	0	0	0	0	0	0	0	1	0
Marketing	3	0	0	0	5	0	1	0	0	1	9	0
Parking	1	0	0	0	0	0	0	0	0	0	1	0
Presenters	4	5	9	1	5	0	0	0	3	3	27	3
Procedures	3	2	0	1	15	0	2	8	0	3	31	2
Programme	0	1	0	0	0	0	0	0	0	0	1	0
Projects	0	3	0	1	3	0	0	0	0	1	7	0
Purchase Order	0	2	0	0	0	0	0	0	0	0	2	0
Quotations	0	4	2	0	1	1	1	0	0	1	9	1
Results	7	12	6	7	1	4	0	0	0	4	37	4
Revision	0	1	0	0	0	0	0	0	0	0	1	0
Safety/Security	3	2	1	5	1	0	0	0	1	1	13	1
Suppliers	1	0	0	0	0	0	0	0	0	0	1	0
Website	0	1	0	0	0	0	0	1	0	0	2	0
	77	83	58	43	55	8	12	21	28	43	385	27

(Source: CEM (NWU))

In analysing the breakdown in the type of NCRs which have been created, it can be seen that the main focus is on areas related to the core business of CEM, namely course delivery. These areas include course material, course administration, assessment and exam papers. These areas also represent the quality procedures for the CEM’s leading service; which is the presentation of courses. Below is a chart describing these areas.

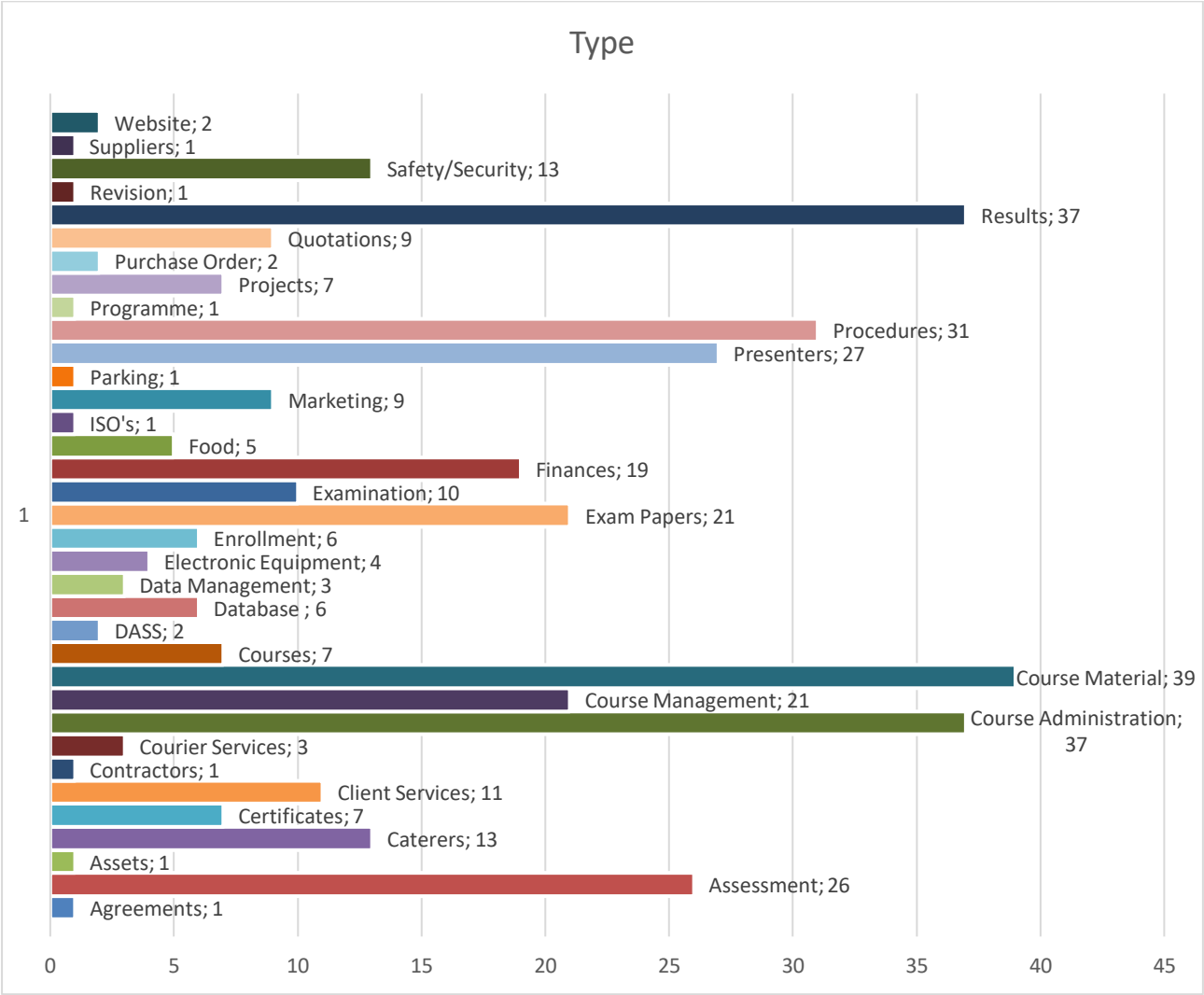


Figure 35: NCR Type

(Source: CEM (NWU))

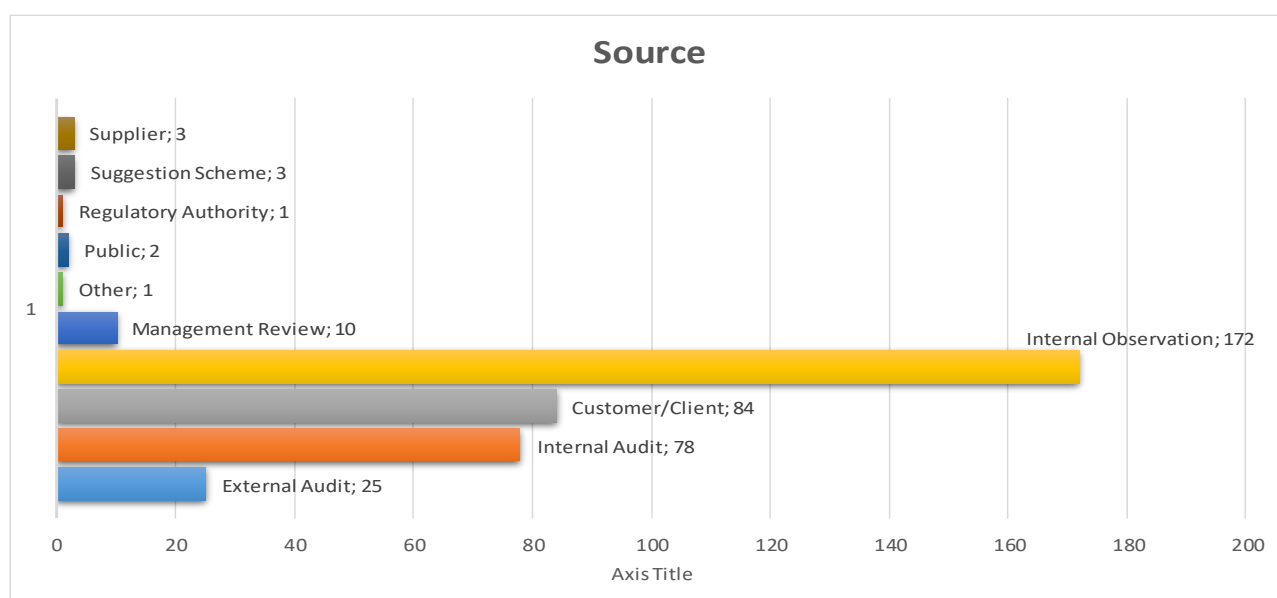
Source: Statistics, Source of NCRs

The following table represents a summary of the sources in which the NCRs were raised:

Table 28: NCR source

	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average	Total	Median
External Audit	7	5	2	2	4	0	0	5	0	3	25	2
Internal Audit	5	22	7	18	24	0	2	0	0	9	78	5
Customer/Client	12	22	16	11	3	4	5	5	6	9	84	6
Internal Observation	48	34	39	12	13	4	5	5	12	19	172	12
Management Review	0	0	0	0	1	0	0	0	9	1	10	0
Other	1	0	0	0	0	0	0	0	0	0	1	0
Public	0	1	1	0	0	0	0	0	0	0	2	0
Regulatory Authority	0	0	0	1	0	0	0	0	0	0	1	0
Suggestion Scheme	0	3	0	0	0	0	0	0	0	0	3	0
Supplier	2	0	0	0	1	0	0	0	0	0	3	0
	75	87	65	44	46	8	12	15	27	42	379	25

(Source: CEM (NWU))

**Figure 36: NCR source**

(Source: CEM (NWU))

By analysing the chart, it can be deduced that most of the NCRs were raised from internal observation. This indicates that the staff of the CEM make use of the tools provided by management to manage and improve quality. It is also an indication that staff have become more aware of what quality is and what needs to be changed to achieve it.

This is followed by feedback from customers and clients. This indicates that the CEM provides clear channels for their clients to raise their opinions. It also shows that the CEM formally considers client feedback. They also incorporate this feedback, to make changes to their QMS

for the sake of providing better service delivery for their clients. This, in return, raises the level of quality within the CEM, as it continually improves their processes.

NCRs are also raised regarding internal audits. An internal audit is an official tool which the CEM uses to monitor and evaluate their QMS. CEM makes use of this tool and formally addresses issues raised by findings in these audits to improve their quality, as well as address flaws within the QMS. The CEM classifies the NCRs according to different types. The areas are actual non-conformity, appeals, audit findings, complaints, customer requirements, non-conformity and requests. The following table is a summary of the details regarding NCR from 2011 to 2019

Table 29: NCR type of detail

	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average	Total	Median
Actual Non-conformity	45	45	44	30	0	5	0	0	0	19	169	5
Appeal	5	7	2	1	4	2	3	3	2	3	29	3
Audit finding	0	0	0	0	0	0	2	5	0	1	7	0
Complaint	4	12	6	0	1	0	1	3	4	3	31	3
Customer Requirement	0	0	1	0	0	0	0	0	5	1	6	0
Inquiry/request	5	0	0	0	0	0	1	3	17	3	26	0
Potential Non-conformity/	13	19	12	13	9	0	0	0	0	7	66	9
Request	3	3	1	0	0	0	6	0	0	1	13	0
	75	86	66	44	14	7	13	14	28	39	347	20

(Source: CEM (NWU))

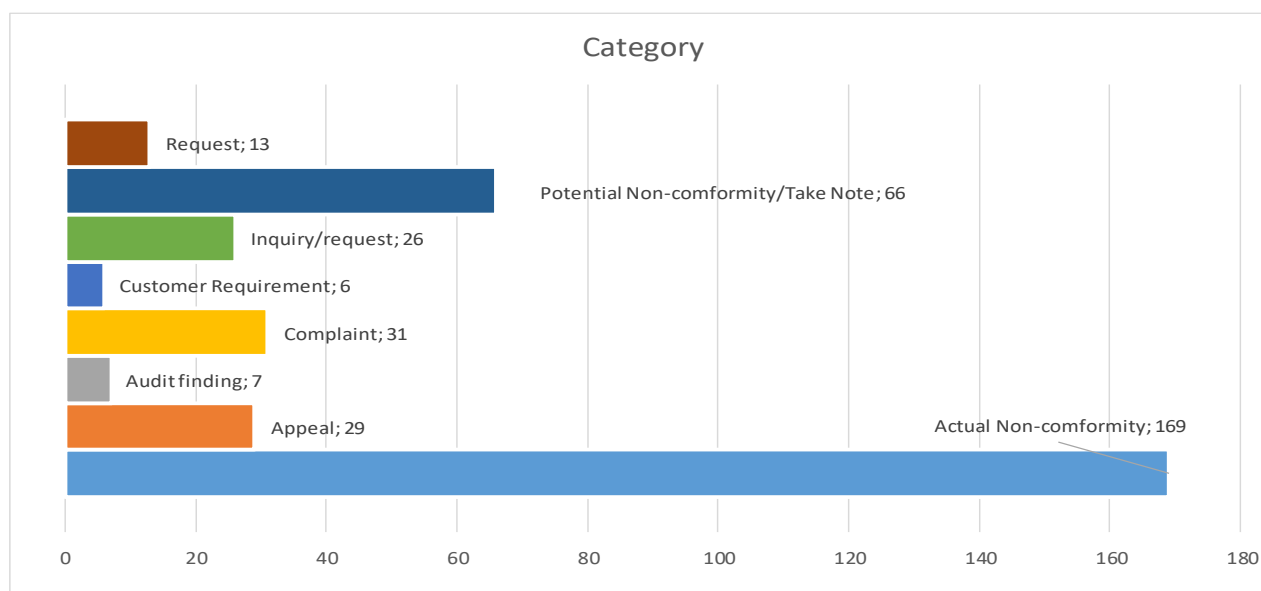


Figure 37: NCR type of detail

(Source: CEM (NWU))

By analysing the table, it is clear that most NCRs are classified as actual non-conformity, followed by potential non-conformity. This represents an indication that staff fail to make use of or do not follow the guidelines when following procedures. However, when assessing the timelines of these two categories, it is clear that most NCRs were raised during the QMS implementation period. This could quite possibly be due to employees' inexperience with the QMS. The number of cases raised decreases over time, as staff become more confident in what is expected of them as well as how to make use of the system and tools provided, relating to QM.

This section analysed the data; the next section makes use of a triangulation technique to interpret it. The researcher used three integrated points of analysis, namely quality facts about the organisation as shown by the literature review; the quality standards found in the ISO9001 standard and, lastly, the data gathered from the company surrounding these areas. The data were summarised with both trustworthiness and reliability in mind.

4.4.15 Trustworthiness

Validity regards the trustworthiness and reliability of methods, procedures and evidence in qualitative analysis (Elo, 2014). This involves an overview of the applicability of research objectives to the desired result. It also addresses the suitability of the approach for research goals and the aptness of the methodology design for data collection and analysis (Leung, 2015).

Table 30: Summary of trustworthiness

Ontology:	
<i>Researchers view</i>	The study evaluates the influence of the ISO9001 standard principles on the effectivity of a service organisation. There is no human impact; therefore, the view of the researcher is thus on a system and not on individuals.
Epistemology:	
<i>Desired outcome</i>	This study evaluates ISO9001 principles in a service organisation. The desired outcome is, therefore, to prove that by implementing the ISO9001 principles, an organisation can receive a higher level of quality and therefore, better results.
<i>Research objectives as the desired outcome</i>	The main objective of this research is Evaluating ISO9001 principles in a service organisation. The sub-research questions can, therefore, be as follows: • Can ISO9001 principles assist an organisation to retain customer confidence by meeting customer needs? • Can ISO9001 principles assist an organisation in improving leadership and leadership communication which lead to staff knowing what their role is within an organisation?

	• Can ISO9001 principles assist an organisation with the inclusion of staff in processes, which in turn leads to motivation at work and hence leads to effectiveness within the work process? • Can ISO9001 principles assist an organisation in understanding work processes, which lead to consistency and results achieved? • Can ISO9001 principles assist an organisation in solving problems by continually improving processes until desired outcomes achieved? • Can ISO9001 principles assist an organisation in making calculated decisions by analysing evidence from the data? • Can ISO9001 principles assist an organisation in nurturing supplier relationships, so that organisations can rely on them when it comes to unique production needs that must be met? • Can a QMS improve the efficiency of an organisation? Additionally, can it lead to improved customer satisfaction? • Can the understanding and implementing of QMS guidelines lead to improved quality within an organisation? This study was limited to the concepts addressed by the principles included in the standard. These principles limited the scope to a specific range of matching the ISO principles to empirical results within the data analysis framework. The desired outcome of the analysis must be successfully checked. The justification of the validity of the quality study appears to follow a logical line up until this point, which implies validity.
<i>Choice of methodology</i>	The methodology chosen is technical analysis, using qualitative document analysis. It is ideally suited, mainly since the analysis focuses on one organisation. The use of this research design ensures that the technique is suitable in support of research goals.
<i>Appropriateness of data design</i>	For qualitative research, the data analysis was transcribed and coded using the Atlas.ti program. Areas of interest were aligned with common main concepts. Conclusions were drawn based on linkages. The research method was then carried out using a logical study framework.

(Source: Authors own)

This study responded in a logical sequence to the areas as mentioned above. Therefore, it is assumed that this analysis yielded accurate results. In terms of validity and trustworthiness: integrity, reliability, legitimacy, transferability and authenticity were used to ensure the study's results (Elo, 2014). These have been described further in the table below:

Table 38: Summary for ensuring trustworthiness

Area	Description
<i>Credibility</i>	Credibility is achieved in this study by reaching an understanding, which is based on previous data collection. Credentials have been identified between the researcher and the organisation. Verification of all the obtained and displayed results was done.
<i>Dependability</i>	The authenticity of the secondary data collected will be verified by answering the following questions: Who collected the data. What is the data provider's purpose or goal? When was the data collected? How the data was collected. What type of data was collected?
<i>Confirmability</i>	Refers to how the qualitative data gathered are internally consistent (Zhang, 2016) The fact that the data collected from the organisation as well as the guidelines provided by the standard endorse each other as ample evidence that the results obtained were accurate.
<i>Transferability</i>	A survey of choice was used in this analysis, not a random sample. Consequently, the findings of this analysis cannot be generalised to the broader community. The research is restricted to the population, as described in the report. The data gathered only reflect the findings regarding this company during a specific period. The presumed effect of this normative guideline on the organisation is confined to the entity; thus, the results do not reflect any other department of any tertiary institution of South Africa.
<i>Authenticity</i>	This research examines the principles of ISO9001 in the service sector by reviewing the data obtained from the QMS based on ISO9001 quality recommendations from the CEM, NWU for the years 2012-2019. Quality-related data was obtained for a total of five years. Splitting the data into themes made it easier to compare the results. The results of the analysis contributed to observations. The findings identified the impact the QMS has had on the efficiency of the company.

(Source: Authors own)

4.4.16 Reliability of qualitative data

Reliability refers to replication (Leung, 2015) and may involve intercoder congruence. To ensure the reliability of the qualitative results, the researcher personally carried out all the matching for the sake of accuracy; an independent researcher later reviewed it.

The matching method is outlined in detail in Section 4.6 of this paper. However, the code structure used was intentionally chosen to reflect the principles of the ISO9001 standard principles—the triangulation of qualitative data-enhanced, both validity and reliability. Furthermore, reliability was developed during the data analysis. In summary, it can be inferred from the measures as mentioned above that qualitative research produces reliable results.

In the next section, the background of this study will be provided. This includes which courses have been presented by the CEM, as well as how many delegates attended these courses and how many learners passed the courses successfully.

4.5 COURSES PRESENTED AT THE CEM

The following tables indicate the number of public as well as in-house courses presented by the CEM from 2015-2018. Table 30 provides an overview of public courses presented by the CEM during this period, and Table 31 indicates the number of delegates who attended the in-house courses presented.

Table 31: Courses presented at the CEM (2015-2018)

Course code	Course	Total courses per year									
		Public					In-house				
		2015	2016	2017	2018	Total	2015	2016	2017	2018	Total
CEM-01.1.1	Fundamentals	2	2	2	2	8					0
CEM-01.1.a	Fundamentals (Introduction)					0				1	1
CEM-01.2.1	SHEQ Management		1	2	1	4					0
CEM-02.1.1	Env Law (5 days)	5	4	4	3	16	6		1		7
CEM-02.1.1a	Env Law (3 days)				1	1					0
CEM-02.1.1b	Env Law (Awareness)					0				1	1
CEM-02.1.2	IWRM	1	1	1	1	4					0
CEM-02.1.3a	Waste law (Introduction)				1	1					0
CEM-02.1.6	Biodiversity law				1	1					0
CEM-02.1.6a	Legal Duties (Mining Sector)					0	1				1
CEM-02.6.4	Contaminated Land					0					0
CEM-02.7.4	Intro HS & Legal Duties					0					0
CEM-02.1.7a	Rehab law				1	1					0
CEM-02.1.8	Mining Law	1	1		1	3	1				1
CEM-02.2.1	OHS Law (3 days)	1	2		1	4					0
CEM-02.2.2	MHS Law (3 days)		1	1	1	3	2			1	3

Course code	Course	Total courses per year									
		Public					In-house				
		2015	2016	2017	2018	Total	2015	2016	2017	2018	Total
CEM-02.2.3	HS Construction Law					0					0
CEM-02.3.1a	Env Legal Liabilities				1	1					0
CEM-02.3.1b	Env Legal Liabilities (Awareness)					0				9	9
CEM-03.1.1	EMS	3	3	3	4	13	1	1		2	4
CEM-03.1.1b	EMS (Awareness)					0				3	3
CEM-03.2.1	OHSms	1	1	1	1	4	3			1	4
CEM-03.2.1a	OHSms (Introduction)					0				2	2
CEM-03.2.1b	OHSms (Awareness)					0				1	1
CEM-03.5.1b	SHEQ (Awareness)					0				1	1
CEM-03.6.2	Doc management systems			1	1	2					0
CEM-03.7.1	Transition		5	3	2	10	3	6	4	1	14
CEM-03.7.1b	Transition (Awareness)					0				5	5
CEM-03.7.1.1	Transition audit (1 day)			1	1	2					0
CEM-03.7.2	OHS Migration				1	1					0
CEM-03.7.2b	OHS Migration (Awareness)					0				2	2
CEM-03.8.1	Improve Organisations EMS					0		1	1		2
CEM-04.1.1	ISO Lead Audit	2	2	1	2	7	1				1
CEM-04.2.1	OHS Lead Audit	1	1	1	1	4					0
CEM-04.4.1	Compliance audit (3 days)					0				2	2
CEM-05.1.1	EIA	2	2	2	2	8	1	1	1		3
CEM-05.1.1b	EIA (Awareness)					0				1	1
CEM-05.1.2	EIA for Reviewers (DEA)					0		6	6		12
CEM-05.2.1	ECO	1	1	1	1	4	1				1
CEM-05.3.1	Risk	1	1	1	1	4					0
CEM-06.1.1	Dangerous Goods (3 days)		1	1	1	3				1	1
CEM-06.2.1	Waste (3 days)	1	1	1	1	4					0
CEM-06.3.1	Essential Air Quality (3 days)	1	1	1	1	4					0
CEM-06.4.1	Water Q (3 days)	1	1	1	1	4					0
CEM-06.6.1	Climate Change	1				1					0

Course code	Course	Total courses per year									
		Public					In-house				
		2015	2016	2017	2018	Total	2015	2016	2017	2018	Total
CEM-06.8.1	Land Management		1			1	1				1
CEM-06.8.2	Rehab	1	1	1	1	4					0
CEM-07.2.1	Green Economic (On-line)				1	1					0
	Total Courses:	26	34	30	38	128	24	20	13	34	91

(Source: CEM (NWU))

Table 32: Courses presented in-house by the CEM (2015-2018)

Course code	Course	TDAS											
		Public						In-house					
		2015	2016	2017	2018	Total	Ave	2015	2016	2017	2018	Total	Ave
CEM-01.1.1	Fundamentals	37	36	34	37	143	36					0	
CEM-01.1.a	Fundamentals (Introduction)					0					23	23	23
CEM-01.2.1	SHEQ Management (2 weeks)		34	39	31	104	35					0	
CEM-02.1.1	Env Law (5 days)	32	33	32	32	129	32	33		33		66	33
CEM-02.1.1a	Env Law (3 days)				20	20	20					0	
CEM-02.1.1b	Env Law (Awareness)					0					-	0	
CEM-02.1.2	IWRM	40	36	41	31	148	37					0	
CEM-02.1.3a	Waste law (Introduction)					0						0	
CEM-02.1.6	Biodiversity law				33	33	33					0	
CEM-02.1.6a	Legal Duties (Mining Sector)					0		21				21	21
CEM-02.6.4	Contaminated Land					0						0	
CEM-02.7.4	Intro HS & Legal Duties					0		7				7	7
CEM-02.1.7a	Rehab law					0						0	
CEM-02.1.8	Mining Law	30	32		20	82	27	31				31	31
CEM-02.2.1	OHS Law (3 days)	34	34		18	86	29					0	
CEM-02.2.2	MHS Law (3 days)		36	32	25	93	31	33			17	50	25
CEM-02.2.3	HS Construction Law					0						0	
CEM-02.3.1a	Env Legal Liabilities				7	7	7					0	
CEM-02.3.1b	Env Legal Liabilities (Awareness)					0					-	0	
CEM-03.1.1	EMS	29	21	30	31	111	28	35	30		31	96	32
CEM-03.1.1b	EMS (Awareness)					0					-	0	

Course code	Course	TDAS											
		Public						In-house					
		2015	2016	2017	2018	Total	Ave	2015	2016	2017	2018	Total	Ave
CEM-03.2.1	OHSms	35	36	36	33	140	35	35			31	66	33
CEM-03.2.1a	OHSms (Introduction)					0						0	
CEM-03.2.1b	OHSms (Awareness)					0						0	
CEM-03.5.1b	SHEQ (Awareness)					0						0	
CEM-03.6.2	Doc management systems			33	22	55	28					0	
CEM-03.7.1	Transition		14	14	14	42	14	17	14	14	14	59	
CEM-03.7.1b	Transition (Awareness)					0						0	
CEM-03.71.1	Transition audit (1 day)			7	7	14	7					0	
CEM-03.7.2	OHS Migration				14	14	14					0	
CEM-03.7.2b	OHS Migration (Awareness)					0						0	
CEM-03.8.1	Improve Organisations EMS					0			36	33		69	35
CEM-04.1.1	ISO Lead Audit	29	25	27	24	105	26	31				31	31
CEM-04.2.1	OHS Lead Audit	30	28	29		87	29					0	
CEM-04.4.1	Compliance audit (3 days)					0					21	21	21
CEM-05.1.1	EIA	34	34	33	32	133	33	36	33	31		100	33
CEM-05.1.1b	EIA (Awareness)					0						0	
CEM-05.1.2	EIA for Reviewers (DEA)					0			31	33		64	32
CEM-05.2.1	ECO	33	33	32	37	135	34	27				27	27
CEM-05.3.1	Risk	38	21	21	34	114	29					0	
CEM-06.1.1	Dangerous Goods (3 days)		32	31		63	32				18	18	18
CEM-06.2.1	Waste (3 days)	35	32	32	20	119	30					0	
CEM-06.3.1	Essential Air Quality (3 days)	34	20	21	19	94	24					0	
CEM-06.4.1	Water Q (3 days)	34	33	33	19	119	30					0	
CEM-06.6.1	Climate Change	35				35	35					0	
CEM-06.8.1	Land Management		32			32	32	35				35	35
CEM-06.8.2	Rehab	34	35	33	32	134	34					0	
CEM-07.2.1	Green Economic (On-line)					0						0	
	TDAS Totals	572	637	590	591	2390		404	231	144	155	934	

(Source: CEM (NWU))

The following table indicates the pass rates of these courses presented by 2015-2018. This table is included to provide an overview of how many learners successfully passed courses presented by the CEM during this period.

Table 33: Pass rates of these courses presented from 2015-2018.

Course code	Course	Pass rate									
		%									
		Public					In-house				
		2015	2016	2017	2018	Ave	2015	2016	2017	2018	Ave
CEM-01.1.1	Fundamentals	96	96	90	76	89					
CEM-01.1.a	Fundamentals (Introduction)									88	88
CEM-01.2.1	SHEQ Management (2 weeks)		93	93	94	93					
CEM-02.1.1	Env Law (5 days)	69	79	62	84	73	84		93		89
CEM-02.1.1a	Env Law (3 days)				62	62					
CEM-02.1.1b	Env Law (Awareness)									100	100
CEM-02.1.2	IWRM	100	96	86	88	93					
CEM-02.1.3a	Waste law (Introduction)										
CEM-02.1.6	Biodiversity law				100	100					
CEM-02.1.6a	Legal Duties (Mining Sector)						92				92
CEM-02.6.4	Contaminated Land										
CEM-02.7.4	Intro HS & Legal Duties						100				100
CEM-02.1.7a	Rehab law										
CEM-02.1.8	Mining Law	100	100		100	100	94				94
CEM-02.2.1	OHS Law (3 days)	73	84		86	81					
CEM-02.2.2	MHS Law (3 days)		86	100	88	91	80			93	87
CEM-02.2.3	HS Construction Law										
CEM-02.3.1a	Env Legal Liabilities				100	100					
CEM-02.3.1b	Env Legal Liabilities (Awareness)									100	100
CEM-03.1.1	EMS	89	94	97	98	94	96	100		97	98
CEM-03.1.1b	EMS (Awareness)									100	100
CEM-03.2.1	OHSms	83	85	100	100	92	85			100	93
CEM-03.2.1a	OHSms (Introduction)										
CEM-03.2.1b	OHSms (Awareness)										
CEM-03.5.1b	SHEQ (Awareness)									100	100
CEM-03.6.2	Doc management systems			100	100	100					
CEM-03.7.1	Transition		100	100	100	100	85	90	84	88	87
CEM-03.7.1b	Transition (Awareness)									100	100
CEM-03.71.1	Transition audit (1 day)			100	100	100					
CEM-03.7.2	OHS Migration				100	100					
CEM-03.7.2b	OHS Migration (Awareness)									100	100
CEM-03.8.1	Improve Organisations EMS							100	92		96
CEM-04.1.1	ISO Lead Audit	96	100	100	91	97	60				60
CEM-04.2.1	OHS Lead Audit	50	100	100		83					
CEM-04.4.1	Compliance audit (3 days)									62	62
CEM-05.1.1	EIA	84	85	85	70	81	100	92	100		97
CEM-05.1.1b	EIA (Awareness)									100	100

Course code	Course	Pass rate %									
		Public					In-house				
		2015	2016	2017	2018	Ave	2015	2016	2017	2018	Ave
CEM-05.1.2	EIA for Reviewers (DEA)							96	95		96
CEM-05.2.1	ECO	83	91	100	100	94	77				77
CEM-05.3.1	Risk	92	95	100	100	97					
CEM-06.1.1	Dangerous Goods (3 days)		92	100		96				70	70
CEM-06.2.1	Waste (3 days)	100	96	91	89	94					
CEM-06.3.1	Essential Air Quality (3 days)	100	100	89	90	95					
CEM-06.4.1	Water Q (3 days)	86	82	85	85	85					
CEM-06.6.1	Climate Change	93				93					
CEM-06.8.1	Land Management		70			70	73				
CEM-06.8.2	Rehab	100	81	83	97	90					
CEM-07.2.1	Green Economic (On-line)				100	100					
	Pass Rate Totals:	1494	1903	1923	2297		1309	859	464	1298	

(Source: CEM (NWU))

4.5.1 Summaries

The tables above can be summarised as follows:

Table 34: Summaries: Total courses, average courses and the pass rate

Course	Total courses per year									
	Public					In-house				
	2015	2016	2017	2018	Total	2015	2016	2017	2018	Total
Total Courses:	26	34	30	38	128	24	20	13	34	91
Average per Course	22	19	20	16	19	17	12	11	5	11
Average Pass Rate:	88	91	92	92	90	87	95	93	93	92
Learners Totals (TDAS)	572	637	590	591	2390	404	231	144	155	934

(Source: CEM (NWU))

The table above shows that the pass rate of courses has increased over the years. This indicates that a higher number of learners are understanding the content of the course and are also doing better in the assessment processes.

4.5.2 Public courses

The public courses pass rate is represented as follows:

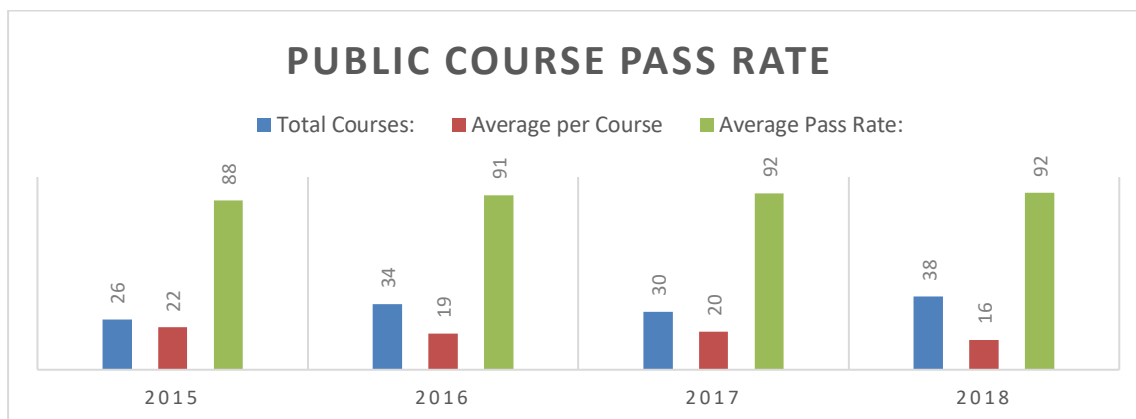


Figure 39: Public courses pass rate

(Adapted from CEM, 2019)

Total courses: The total courses remained steady at an average of 32 courses per year.

Average per course: The number of learners per course also remained steady, with an average of 20 learners per course.

Pass rate: The pass rate remained high and stable at an average of 91%.

The learners who passed public courses can be represented as follows:

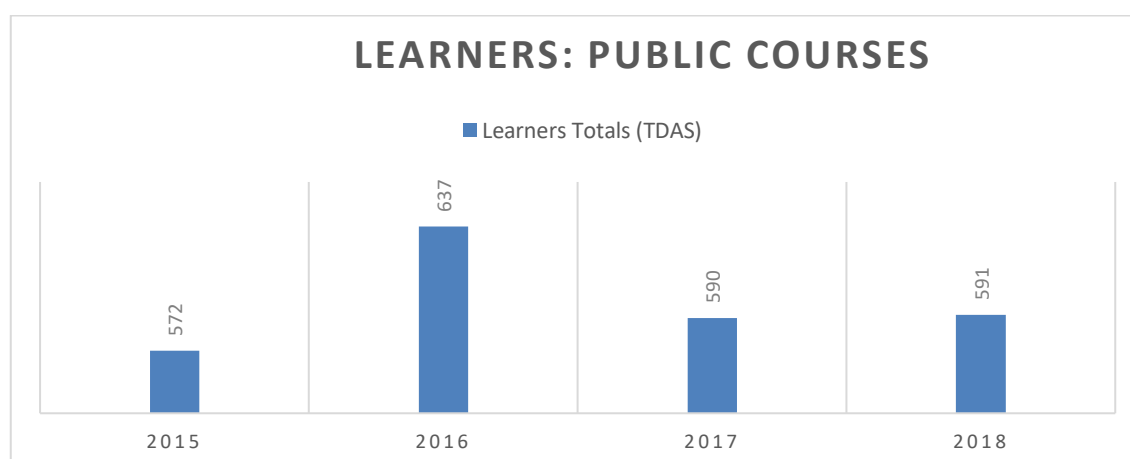


Figure 40: Learners: Public Courses

(Adapted from Source: CEM (NWU))

)

Average of learners per year: 2019 was an exceptional year, with 10% more learners than in comparison to other years. In general, the number of attendees remained stable at an average of 598 learners per year.

4.5.3 In-house courses

The learners who passed in-house courses can be represented as follows:

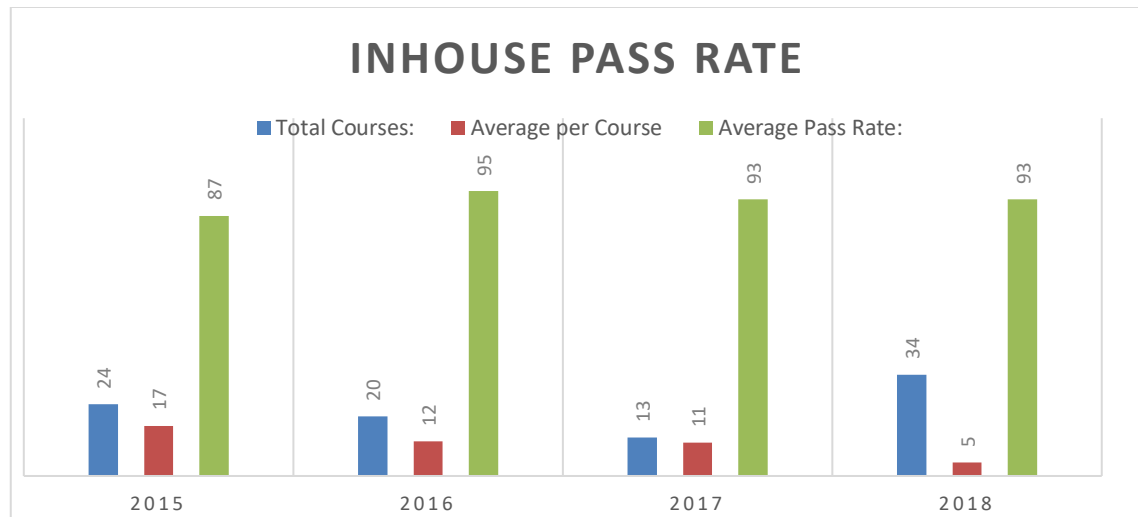


Figure 41: In-house courses pass rate

(Adapted from Source: CEM (NWU))

Total courses: The total courses remained steady at an average of 23 courses per year.

Average per course: There was a decline in the number of learners attending in-house training sessions; this could be due to economic constraints on companies that are cutting back on training sessions.

Pass rate: The pass rate remained high and stable at an average of 92%.

The learners who passed the in-house courses can be represented as follows:

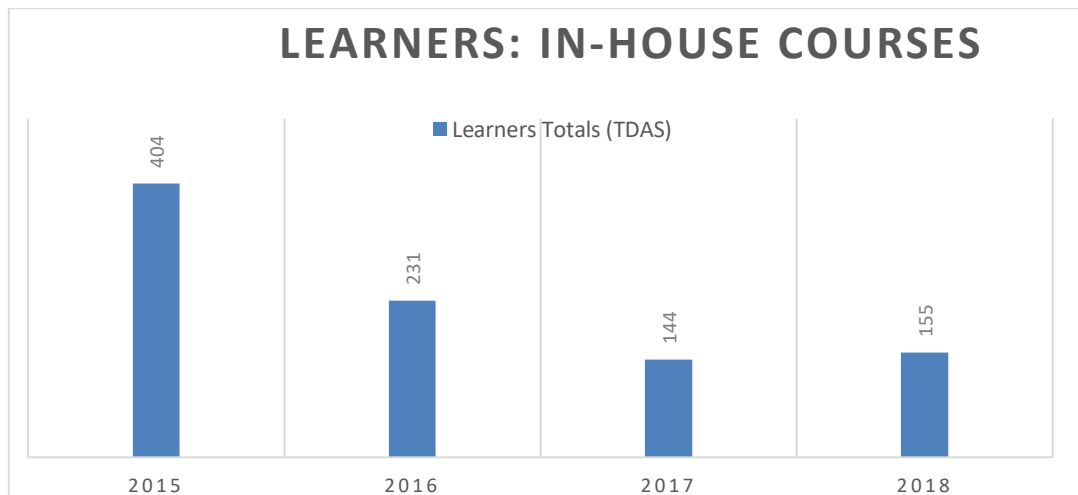


Figure 42: Learners: In-house courses

(Adapted from Source: CEM (NWU))

Average learners per year: 2015 was an exceptional year, with 50% more learners than in comparison to other years. In general, however, the number of attendees declined.

The data received from the organisation were analysed using a triangulation approach. The researcher used three integrated points of analysis, namely quality facts about the organisation as shown by the literature review; the quality standards found in the ISO9001 standard and, lastly, the data gathered from the company surrounding these areas. Data were analysed systematically and sequentially.

Sets of data were analysed separately by matching ISO principles with empirical results. The matching is summarised in the next section.

4.6 MATCHING ISO PRINCIPLES TO EMPIRICAL RESULTS

4.6.1 ISO standard principle 1: Customer focus

Table 35: Customer focus

ISO Data	Literature Review	CEM Data
• Demonstrate the standard's capability to reliably supply a product that meets customer and relevant constitutional and regulatory requirements. • Intent to increase customer contentment. • It is enhancing customer satisfaction. • Clause 7 provides guidelines for quality plans for the products and services. It includes customer-related processes. • Training can be used to change organisational culture and therefore, the perception towards change. This change can influence the focus on TQM, as well as customer relations.	• Focus on customer satisfaction: Leads to customer needs to be met, increased quality and satisfaction, leading to more sales and returning customers. • The definition of quality can only be defined in the context of the term, as it connected to the detailed set of necessities to which quality is used. The concept of quality, therefore, has many descriptions; however, several of them have one central theme: customer expectations. • The ISO defines quality as the ability of a product to fulfil the needs of a customer, by explicitly focusing on the product/service characteristics. The level of quality which an organisation offers to a client may determine the success of the organisation. • Quality can be defined as the perceived expectations from the view of a client. A product or service, therefore, is only as good as the customer experience. • 1980's to present customer-driven quality.	• To realise the mission and vision of the CEM and to continually satisfy and exceed customer expectations. • Plan and implement all processes and realise all products and services to sustain customer satisfaction whilst exceeding expectations and needs. • Consistently and reliably meet all requirements that may apply to the CEM's activities, products and services, such as customer requirements. • Continually improve the CEM's QMS and performance using customer satisfaction surveys • The CEM developed, implemented and maintains a QMS to ensure that knowledge generation and dissemination processes as well as the processes supporting these exceed customer satisfaction and assure sustained conformance to requirements by all.

ISO Data	Literature Review	CEM Data
	• The ISO defines quality as the ability of a product to fulfil the needs of a customer, by explicitly focusing on the product/service characteristics. The level of quality which an organisation offers to a client. • The importance of customers is the foundation of the theory of QM. In fact, without a strong customer focus, QM cannot exist. Customer service refers to the effort of a company to recognise customers' criteria, needs and desires and to satisfy them. • To define and turn customer needs into the proper operational functions, systems and processes that must be in place. Customer satisfaction is the primary measure of an organisation's success. It is critical that customers are always happy, to ensure that the company stays in operation. • TQM - The secret to a robust QM program is customer satisfaction and feedback. • TQM protocols help organisations use customer responses correctly to build better goods for more significant benefit. • The procedure model emphasises the importance of product design in terms of the customer	• CEM keeps records of individual learners and each course offering, including analysis of statistics. • It is CEM's policy to render training services that exceed the expectations of clients. • Customer satisfaction shall also be actively measured and assessed, and records kept. Customer dissatisfaction is a key improvement indicator. • Establish and maintain a procedure for ensuring that reports and letters delivered to the CEM's customers meet quality requirements and ensuring customer satisfaction. • Customer confidence - by meeting customer needs.

ISO Data	Literature Review	CEM Data
	• An ISO9001 certified organisation, which applied an active QMS should achieve maximum customer fulfilment, increased and sustained profit, employee motivation and improvements within the organisation. • Organisations should seek to continually deliver products and services for their customers by conforming to a pre-determined high level of organisational standards. • The level of quality which an organisation offers to a client may determine the success of the organisation	

4.6.2 ISO standard principle 2: Engagement with people

Table 36: Engagement with people

ISO Data	Literature Review	CEM Data
• Implementation benefits, such as improved internal communication, better understanding and control of the organisation's processes. • This system develops a tool where training development needs can be identified. It also assists the organisation within human resource development.	• Quality is a culture; which people should aim for, as well as be motivated to follow. • The success of change is based on the efficiency of leadership, as well as the involvement of role players at every level of the change. • The theory of QM promotes changes in the following areas of an organisation: leadership and	• Plan and realise all of its processes by involving process owners, managers and relevant role-players to ensure the achievement of the desired outcomes and adherence to this quality policy. • Continually improve the CEM's QMS and performance by employing monthly business meetings, self-evaluation, internal and external

ISO Data	Literature Review	CEM Data
• Although ISO9001 is generic and should be able to be implemented in any sector, all individuals in the process must comprehend the standard. • Staff should be involved in every level of the organisation, as they are vital to the organisation. Their attitudes are valued, and skills should be utilised to the max within the organisation. • Studies have shown that content staff are committed and reach their objectives within the organisation in an innovative manner. They are less resistant to change and implementation of improvement. They are also more involved in the organisation. • A proper QMS allows successful internal communication and leadership within an organisation. It allows clear communication to customers, which may act as a motivation of trust for them towards the organisation. • It allows teams to understand processes and milestones and also allows managers to determine likely risks, problems and limitations • Factors that support the sustainability of a QMS include how the management of an organisation is	management, strategic quality planning, total continuous learning and company culture. It also influences the management of employees, customers and suppliers. Quality also influences the processes of resource, knowledge and process management. • In terms of steps to continue long-standing strategies for improving performance, top management must be fully committed to QM. The recognition by workers in QM relies on management attitudes towards quality. • A dedication to management will lead to higher engagement on the part of workers to improving quality. When management commitment at any level is missing, companies have a low level of involvement and interest in their QM programmes. • QM requires a commitment to learning by concentrating on continuous development. Education and training are essential components of a QMS and play an essential role in the development of a shared standard vocabulary and the dedication to consistent improvement in quality and behaviour. Learning improves the skills, coordination and teamwork associated with	audits, customer satisfaction surveys, supplier and management reviews, the monitoring and measurement of key process parameters and the management of non-conformity. • Extend the CEM's QM arrangements to suppliers and sub-contractors to ensure the delivery of quality service and sustaining mutually beneficial relationships. • Roles and responsibilities – defined roles with regards to the management system and the provision of training. • Provision of training-related infrastructure and work environment. • The selection of and on-going training programs for facilitators, including evaluation annually. • Operational planning, review and progress tracking are conducted at pre-scheduled monthly meetings. • The actions identified in terms of the annual strategic and management review meetings are operationalised as agenda items of the various operational meetings. These agendas are allocated to CEM staff members for execution and are referenced in their annual performance plans. All

ISO Data	Literature Review	CEM Data
involved, how well everybody understands the standard, as well as the holistic understanding and culture related to quality in an organisation. Therefore, training within the area of quality is essential for organisations • Staff should be skilled at various levels. Personnel needs to adapt and learn to adjust to these changing environments continually. • Culture is essential to the quality of an organisation. A constant improving culture allows staff to be mindful. Staff is committed to procedures and teamwork • Training can be used to change organisational culture and therefore, the perception towards change. This change can influence the focus on TQM, as well as customer relations. • The ISO QMS is only successful if managers are committed to the standard. Managers need to empower employees who are the biggest asset of the organisation. By evaluating employees, organisations can reach a certain level of quality. Staff needs to be acknowledged. They need to understand the vital role they play in the process.	workers, who contribute to resolving resistance to change in QM. • Managers should build their employees ' technical skills and allow them to improve the quality of services consistently. Education and training provide staff with the necessary knowledge, expertise and abilities for productive work. • An essential framework for the execution of QA systems is an organisational culture that stresses transparency, honesty, trust, respect, constructive communication, empowerment, teaching, co-ordination, risk-taking, innovation, research, customer attention and continual development • Partnership and teamwork play a significant role in the institutionalisation of QC activities. The disposition and perception of QM by teams were correlated with the successful application of QM. • The quality culture in the enterprise must be assisted by HR programs such as procedures for the recruitment of workers, training and development, evaluation of results and incentives and bonuses. This also requires the confidence and willingness of staff to adjust. Jobs need to be	meetings have minutes made, and records are kept. • Tier 3 Training Material used to train CEM staff, suppliers and contractors on matters related to the QMS. • Tier 4 Instructions are generated, documented, approved and implemented as an interim ad hoc arrangement until new procedures may be generated or existing procedures amended. • Annual business objectives, long-, medium- and short-term work plans, management system requirements and achievements are communicated to all staff. • Inclusion of staff in work processes - effectiveness of QMS Review. • Non-conformity, corrective and preventive action, complaints and appeals, MOC and CAR.

ISO Data	Literature Review	CEM Data
Quality needs to form part of their personal and not only organisational goals. - Organisations should support the unique talents of staff; enhancing these skills could contribute to quality. Staff should be encouraged to make decisions. They should not only follow instructions. - Process application is vital to operations within an organisation. Goals are reached more often when procedures and assets are managed through processes. Organisations should include staff in the recording process. The participation of staff in processes improves the result and level of accomplishment. Defining processes also allows an organisation to lower costs. Standardised processes allow predictability and consistency, not only in the workflow but in outcomes, which in return, lower organisational risks. - Management of processes is emphasised in this standard, as this allows the achievement of objectives. Management of an organisation should realise that all processes are linked together and by seeing, “the bigger picture” they can determine which areas need improvement. It also allows	refurbished to offer more versatility, individuality and innovation to staff. Performance evaluation and recognition mechanisms need to be updated and concentrate more on recognising teamwork and long-term accomplishment - Active involvement of workers in QM practices leads to building an organisational quality culture by reinforcing the behaviour, mentality and capability of employees, as well as cultivating an awareness, engagement and active participation in the resolution of problems at work. - Within the guidelines of ISO9001, organisations are encouraged to train staff related to the following aspects of HR: define the competency level, which is required by staff to understand the concepts presented and prepare staff in these aspects, in the form of training.	

ISO Data	Literature Review	CEM Data
management to focus on the main procedures within the organisation.		

4.6.3 ISO standard principle 3: Evidence-based decision-making

Table 37: Evidence-based decision-making

ISO Data	Literature Review	CEM Data
• The inspiration of the ISO9001 standard springs from problems that occurred in many British explosive industries during World War II. Due to the lack of QM, bombs exploded due to procedures not being followed. The first standard, BS5750, was designed to address problems within the manufacturing processes. • Clause 7 Product Realisation: This provides guidelines for quality plans for the products and services. It includes the following focus: Product planning and monitoring and assessing tools. • Evidence-based decision-making. • The organisation should approach decision-making factually and systematically. Decisions should be expertly made based on data evidence. By	• This ISO9001 standard defines QM as “coordinated activities to direct and control an organisation concerning quality” contained in the brochure, “ISO 19001: How to used it” (provided by the ISO). This brochure indicates that an organisation may benefit in the following areas: The process can be reactive, which aims to rectify a quality problem or proactive, which aims to prevent quality problems before they occur. • Build quality into the process. Identify and correct the causes of quality problems. • Organisations, however, realised that quality does not automatically follow if a set of rules are applied. Quality is an ongoing process, which includes improvisation, as well as maintenance.	• Continually improve the CEM's QMS and performance through monthly business meetings, self-evaluation, internal and external audits, customer satisfaction surveys, supplier and management reviews, the monitoring and measurement of key process parameters and the management of non-conformity. • Ensure that all planning and improvement processes, as well as all decisions and the realisation of the CEM's products and services, are informed by the analysis of data and recorded factual information. • Management review informs the strategic and operational planning process. • The objective is to have at least one strategic and macro operational planning meeting that is

ISO Data	Literature Review	CEM Data
implementing this principle, decisions are made clear and transparent to the decision-makers. • This allows results to be reviewed of decisions made previously; therefore assists in adjusting future decisions to accomplish the desired outcome. • This standard introduces new concepts to an organisation, for example, HLS, as well as the application of risk-based thinking and the notion of change. • It also allows the organisation to address preventive action formally through risk identification and mitigation. A QMS has a structured approach to activities.	• Before changes can be made, the impact of these changes must be considered. • The concept of how to address change within processes is also addressed within the ISO9001 standard. Changes must be made to improve the system (Harding, 2005). Within the standard, the concepts of corrective and preventive actions are introduced. • Changes can be implemented in a way where the goals and the objectives of an organisation can be met by considering if the change is resulting in the desired outcome. An integrated approach, therefore, is needed to manage these changes. • Evaluation of procedures anticipates guaranteeing that quality requirements are achieved before products or services are delivered. • This helps organisations set clear targets as well as to develop and distribute resources to achieve long-term strategic goals. • The structural, contextual and procedural changes are three interrelated classifications of organisational change. QM focusses on procedural changes within an organisation. It is essential to	supported by management review, at the end of every year. • Progress made against strategic and business objectives and targets, as well as other management review indicators such as non-conformity, corrective and preventive management, are reviewed. Progress is tracked, reported and recorded. • Operational planning, review and progress tracking are conducted at pre-scheduled monthly meetings. Meetings with four different scopes are being held. • The actions identified in terms of the annual strategic and management review meetings are operationalised as agenda items of the various operational meetings. These agendas are allocated to CEM staff members for execution and are referenced in their annual performance plans. All meetings have minutes, and records are kept. The CEM quality objectives are included in the annual strategic and operational plan. • Progress made with operational targets are tracked, reported and recorded monthly.

ISO Data	Literature Review	CEM Data
	change the organisational structure and culture to improve the quality of products and services. • Change is a characteristic of today's business environment. The activity should be anticipatory, flexible and based on a shorter knowledge-building process. The critical success of management efficiency is quality knowledge and quality information. Accurate, timely and relevant information needs to be collected, analysed and used to promote decision-making at all levels of the organisation. Enhanced collaboration and cooperation between different stakeholders result in successful knowledge sharing among suppliers, partners, employees and customers. • Tools for the statistical process management allow process operations and performance to be consistent and help control processes. • The creation of protocols and reports is essential for tracking and progress in the application of QM. Instructions and procedures that are precisely defined and recorded minimise the risk of operator error. • Teams for quality improvement are essential to the continuous improvement of quality. To continuously	• Detailed arrangements are made in terms of documented procedures to manage these processes consistently and reliably. • Other elements that contribute to continual improvement of the CEM's arrangements, activities, products and services include external audits by SAATCA; external ICAS audits; external HEQC audits and NWU audits. • They have detailed customer satisfaction surveys of both the products and presenters used. • Review of suppliers and contractors, including technical service providers. • Management of data analysis, statistics and trending: The CEM generates a series of data that may be transformed into visual information for consideration at both the monthly operational and the annual strategic meetings. • Care is taken to ensure the accuracy of both data and information to ensure that management information is fit for purpose and trending required. To manage data analysis, statistics processes and the data and information needs of the CEM is recorded in a register, where roles, responsibilities

ISO Data	Literature Review	CEM Data
	track improvements to the application of QC and achieve maximum institutionalisation in the organisation, the objective needs to be assessed and evaluated. - Organisations that base their QMS on both TQM and ISO9001 perform better in terms of quality procedures, quality culture as well as quality execution. By streamlining procedure details, organisations can produce quality products/services. Organisations also produce a lower level of rejects or returns. - Organisations should seek the aptitude to continually deliver products and services for their customers by conforming to a pre-determined high level of organisational standards.	and authorities, as well as the required frequency and timing of information, are addressed. - To make arrangements to manage identified risk exposures in terms of objectives, targets and management plans and other control measures. - Non-conformity, corrective and preventive action, complaints and appeals, MOC and CAR. - Decision-making processes - based on calculated risks in operational and strategic planning.

4.6.4 ISO standard principle 4: Improvement

Table 38: Improvement

ISO Data	Literature Review	CEM Data
- As mentioned, the first standard, BS5750, was designed to address problems within the manufacturing processes. - Contribute to the service provider's success in the aspect of ISO9001. The reliability of ISO9001 is determined strongly and significantly by the quality of product/service and accessibility of service companies. Nonetheless, financial performance is explicitly affected by operational performance, and the effect of ISO9001 is indirectly related to operational performance. - In defining ISO9001 productivity based on its goals, management will be informed of how to enhance its operations, thus directly enhancing the success of the service company in terms of consistency, productive outputs and financial results. Originality/value - this empirical study establishes its digital framework based on core ISO9001 effectiveness and defines the contribution made by ISO9001 to the particular aspects of service providers' performance.	- The ISO offers guidelines to achieve, as well as manage quality within an organisation for standardisation in the form of ISO9001. During the ISO survey (ISO, 2007), organisations indicated that various benefits are achieved by adopting this standard. Benefits include well-organised processes, customer fulfilment, enhanced financial performance and gratification of shareholders, sustainability, continuous development and global acknowledgement. - This ISO9001 standard defines QM as "coordinated activities to direct and control an organisation concerning quality" (ISO) contained in the brochure, "ISO 19001: How to used it" (provided by ISO). This brochure indicates that an organisation may benefit in identifying operational procedures, to function more productively and effectively. - Organisations, however, realised that quality does not automatically follow if a set of rules are applied. Quality is an ongoing process, which includes improvisation, as well as maintenance.	- Customer satisfaction shall also be actively measured and assessed, and records kept. Customer dissatisfaction is a key improvement indicator. - To realise the mission and vision of the CEM and to continually satisfy and exceed customer expectations, the CEM will: - maintain and regularly improve QMS in line with the plan, do, check and act management principles; - continually improve the CEM's QMS and performance through monthly business meetings, self-evaluation, internal and external audits, customer satisfaction surveys, supplier and management reviews, the monitoring and measurement of key process parameters and the management of non-conformity. - As far as is reasonably practicable, ensure that all planning and improvement processes, as well as all decisions and the realisation of the CEM's products and services, are informed by

ISO Data	Literature Review	CEM Data
• Furthermore, the uncertified service companies will be inspired to adopt the ISO9001 standard and to boost their results and be more efficient in comparison to the already accredited service companies of ISO9001 by their efficiency. • The scope of this standard focusses on assurances that are managed via formal procedures, for example, preventive actions. Quality is not seen as only a PDCA cycle but also as a documented procedure. The focus of this standard is on improvement. • Continual improvement should be implemented within every level of the organisation. It assists the organisation to react to opportunities and threats flexibly. Continual improvement progresses the competences, as well as the achievement of an organisation. • Continual improvement, which includes monitoring, measuring and analysis, is also supported by this standard. • The ISO QMS is only successful if managers are committed to the standard. Managers need to empower employees who are the biggest asset of the organisation. By evaluating employees,	• Changes must be made to improve the system. • Within the standard, the concepts of corrective and preventive actions are introduced. Changes can be implemented in a way where the goals and the objectives of an organisation can be met by considering if the change results in the desired outcome. An integrated approach, therefore, is necessary to manage these changes. • The Japanese believe that every individual component within the system contributes to the overall success of the system. If changes are made to a single component within the system, this impacts the rest of the system • The QMS allows all departments within an organisation to integrate processes within the organisational system and in return, to operate as a synchronised system, both effectively and efficiently. • QC is an element within the QM process which enables an organisation to review the output of quality in terms of production. • The principles should also be included in the organisation's policies and action plans to promote ongoing quality improvement.	the analysis of data and recorded factual information; internal audits, control of non-conforming training services, corrective action, preventative action, the selection of and on-going training programs for facilitators, including evaluation annually. • Methods, such as statistical techniques, used to measure at least the following: • learner evaluations (for example competent/not-yet-competent rates, including re-write statistics) • facilitators performance • overall course performance • submission of significant changes to the course(s) to SAATCA for review and acceptance before implementation • complaints and appeals. • The objective is to have at least one strategic and macro operational planning meeting that is supported by management review, at the end of every year.

ISO Data	Literature Review	CEM Data
organisations can reach a certain level of quality. Staff need to be acknowledged. They need to understand the vital role they play in the process. Quality needs to form part of their personal and not only organisational goals.	• The extent of QM performance involves QM concepts of corporate goals, practices, tactics and action plans. The Quality Strategy guarantees the provision of QM tools. This helps to identify the needs of clients and other parties involved and to develop strategies and action plans to achieve priorities and targets. • Managers should build their employees' technical skills and allow them to improve the quality of services consistently. Education and training provide staff with the necessary knowledge, expertise and abilities for productive work. Improved vocational training leads to better procedures that enhance the quality of goods. • The quality culture in the enterprise must be assisted by HR programs such as procedures for the recruitment of workers, training and development, evaluation of results and incentives and bonuses. This also requires the confidence and willingness of staff to adjust. Jobs need to be refurbished to offer more versatility, individuality and innovation to staff. • Performance evaluation and recognition mechanisms need to be updated and concentrate more on recognising teamwork and long-term accomplishment.	• Operational planning, review and progress tracking are conducted at pre-scheduled monthly meetings. Meetings with four different scopes are being held. • The actions identified in terms of the annual strategic and management review meetings are operationalised as agenda items of the various operational meetings. These agendas are allocated to CEM staff members for execution and are referenced in their annual performance plans. All meetings shall have minutes and records are kept. The CEM quality objectives are included in the annual strategic and operational plan. • Progress made with operational targets are tracked, reported and recorded monthly. • Management of continual improvement processes • Detailed arrangements are made in terms of documented procedures to manage these processes consistently and reliably. • Other elements that contribute to continual improvement of the CEM's arrangements, activities, products and services include external audits by SAATCA; external ICAS audits; external HEQC audits and NWU audits.

ISO Data	Literature Review	CEM Data
		• Detailed customers satisfaction surveys of both the products and presenters used. • Review of suppliers and contractors, including technical service providers. • Tier 3 Training Material used to train CEM staff, suppliers and contractors on matters related to the QMS. • MOC. • Annual business objectives, long-, medium- and short-term work plans, management system requirements and achievements are communicated to all staff.

4.6.5 ISO standard principle 5: Leadership

Table 39: Leadership

ISO Data	Literature Review	CEM Data
• Organisations used this standard to develop the competence of the quality system to withstand pressures from competitors.	• The most significant challenges of change within an organisation are on both a technical as well as structural level. The success of change is based on	• As far as is reasonably practicable, the CEM ensures that all planning and improvement processes, as well as all decisions and the realisation of the CEM's products and services, are informed by the analysis

ISO Data	Literature Review	CEM Data
• Good leadership leads an organisation in a specific direction. Organisations should allow staff to contribute to achieving the organisation's objectives. Good leadership encourages organisational commitment and motivation among staff. • Leadership complements actions in the organisation and reduces miscommunication between the various departments of the organisation • Research indicated that matters such as the lack of leadership and management support, the lack of training, staff's' insufficient insight of quality, resource restrictions and staff resistance to change are critical obstacles to the effective implementation of ISO9001. • Leadership seeks to create a sense of mission and leadership in an organisation. It also involves the creation and maintenance of an environment in which people can participate fully in the achievement of the organisation. That is why citizens will launch that cycle, take the initiative, prepare the business concept, plan and execute it.	the efficiency of leadership, as well as the involvement of role players at every level of change. • The concept of how to address change within processes is also addressed within the ISO9001 standard. Changes must be made to improve the system. Before changes can be made, the impact of these changes must be considered. Within the standard, the concepts of corrective and preventive actions are introduced. Changes can be implemented in a way where the goals and the objectives of an organisation can be met by considering if the change results in the desired outcome. An integrated approach, therefore, is needed to manage these changes. • The QMS allows all departments within an organisation to integrate processes within the organisational system and in return, to operate as a synchronised system, both effectively and efficiently. • The theory of QM promotes changes in the following areas of an organisation: leadership and management, strategic quality planning, total continuous learning and company culture. • QM, management and administration were among the critical enablers towards the positive	of data and recorded factual information and management reviews. The strategic and operational planning process supported by management review is the foundation of CEM's success. • The objective is to have at least one strategic and macro operational planning meeting that is supported by management review, at the end of every year. • Progress made against strategic and business objectives and targets, as well as other management review indicators such as non-conformity, corrective and preventive management, are reviewed. Progress is tracked, reported and recorded. • The actions identified in terms of the annual strategic and management review meetings are operationalised as agenda items of the various operational meetings. These agendas are allocated to CEM staff members for execution and are referenced in their annual performance plans. • Management of continual improvement processes. • Tier 2 Management System Procedures. The second-tier documents are detailed descriptions of how processes are to be managed.

ISO Data	Literature Review	CEM Data
• Leadership is essential in success improvement as leaders are thoughtful and results-oriented. They are targeted at achieving the required goals in the given sector. • Leaders at various levels and roles in the organisation are required to maintain organisational efficiency. • Good leadership is essential to influence and encourage employees in areas of uncertainty. What this means is that change is a critical leadership role. • The management role is defined in Clause 5 "management responsibility," as a management responsibility under the requirements of the ISO9001. • The standard requires senior management to demonstrate their commitment to the development, implementation and continuous improvement of the QMS. • A good leader has a passion for the organisation's goals. In ISO 5.3 "quality policy," this requirement is stated. Top Management is responsible for	enforcement of quality within an organisation. The position of senior management, role model actions and a strong commitment to QM, building a supportive environment and strategically handling changes are essential to the success of QM. Managers should build a vision, share principles, set clear targets and objectives, as well as inspire and encourage workers to participate actively within the QM process. • A dedication to management will lead to higher engagement on the part of workers to improving quality. When management commitment at any level is missing, companies have a low level of involvement and interest in their QM programmes. • Leadership to play a vital role in QM performance programs. Efficient leadership creates a competitive atmosphere which helps workers through the advancement of knowledge and self-design, elimination of barriers and anxiety. Further impacts on QM have been shown by the use of constructive and participating leadership. • The extent of QM performance involves QM concepts of corporate goals, practices, tactics and action plans. The Quality Strategy guarantees the	• Tier 4 Instructions are generated, documented, approved and implemented as an interim ad hoc arrangement until new procedures may be generated or existing procedures amended. • The CEM makes arrangements to manage identified risk exposures in terms of objectives, targets and management plans and other control measures. • The CEM monitors the effectiveness and timeliness of management and control arrangements. • Annual business objectives, long-, medium- and short-term work plans, management system requirements and achievements are communicated to all staff. • Leadership communication - knowing role in organisation QMS procedures. • Non-conformity, corrective and preventive action, complaints and appeals, MOC and CAR. • Decision-making processes - based on calculated risks in operational and strategic planning.

ISO Data	Literature Review	CEM Data
establishing, documenting and communicating to all employees and other parties involved. • The quality policy of the company is a tool to express the intent of top management to achieve QM. • QC criteria are as follows: the organisation's objective, engagement to meet the requirements of ISO9001, continuous control program development and the guidance framework defined as quality targets for the establishment and review of the organisation's performance. • All workers can relate to the organisation's QMS. Clear evidence of the involvement of top management is the success and improvement in the QC program by performing management assessments at scheduled intervals. The management assessment ISO9001 rule 5.6 explicitly outlines what the management analysis criteria are, including a summary of current policies and goals as well as management appraisal. • The management evaluation leadership roles are defined in ISO9001	provision of QM tools. This helps to identify the needs of clients and other parties involved; to develop strategies and action plans to achieve priorities and targets. • Managers should build their employees' technical skills and allow them to improve the quality of services consistently. Education and training provide staff with the necessary knowledge, expertise and abilities for productive work. Improved vocational training leads to better procedures that enhance the quality of goods. • The corporate culture is a collection of dominant beliefs and principles that direct the attitudes of the company and that are used to teach new members the right way of seeing, thinking and feeling. • The advantages of QM must be apparent to staff. A formal system of reward and acknowledgement that promotes cooperation blends productivity and better performance with compensation; enabling and motivating workers to achieve. • Managers recognise and appreciate workers' engagement in QM and their contribution to the enhancement of quality. Recognition also strengthens the desired attitudes, builds self-	

ISO Data	Literature Review	CEM Data
	esteem, fosters confidence and respect and reinforces enthusiasm. • The success of QM derives from top-level management efforts to create enabling mechanisms and operational processes to control the quality direction of the enterprise and promote the adoption of a department-wide QM plan. • It is often management's failure to commit that leads to poor implementation of QMS in organisations.	

4.6.6 ISO standard principle 6: Process application

Table 40: Process application

ISO Data	Literature Review	CEM Data
• As stated, the first standard, BS5750, was designed to address problems within the manufacturing processes. • Implementation can also be expected to bring other organisational benefits, such as improved internal communication, better understanding and control of the organisation's processes.	• ISO9001 assists organisations by identifying operational procedures to function more productively and effectively. The process used to be reactive, which aimed to rectify a quality problem now it is proactive, which aims to prevent quality problems before they occur. • Build quality into the process. Identify and correct the causes of quality problems.	• The CEM QMS plans and realises all of its processes by involving process owners, managers and relevant role-players to ensure the achievement of the desired outcomes and adherence to this quality policy. • Records are managed in terms of the document and record procedure, which is a document control system for maintaining the

ISO Data	Literature Review	CEM Data
• The scope of this standard focusses on assurances that are managed via formal procedures, for example, preventive actions. Quality is not seen as only a PDCA cycle but also as a documented procedure. • Management of processes is emphasised in this standard, as this allows the achievement of objectives. Management of an organisation should realise that all processes are linked together and by seeing, “the bigger picture” they can determine which areas need improvement. It also allows management to focus on the main procedures within the organisation. • Process application is vital to operations within an organisation. Goals are reached more often when procedures and assets are managed through processes. Organisations should include staff in the recording process. The participation of staff in processes improves the results and level of accomplishment. Defining processes also allows an organisation to lower costs. Standardised processes allow predictability and consistency, not	• Organisations, however, realised that quality does not automatically follow if a set of rules are applied. Quality is an ongoing process, which includes improvisation, as well as maintenance. • The ISO standard encourages that quality principles need to be implemented on all levels of the organisation. It must ultimately form part of the culture within an organisation. • The Japanese believe that every individual component within the system contributes to the overall success of the system. If changes are made to a single component within the system, it impacts the rest of the system. • The QMS allows all departments within an organisation to integrate processes within the organisational system and in return, to operate as a synchronised system, both effectively and efficiently. • QC is an element within the QM process which enables an organisation to review the output of quality in terms of the production. This evaluation anticipates that quality requirements are achieved before products or services are delivered. The	up-to-date nature of procedures and course notes; • The strategic and operational planning process is supported by management review. • Detailed arrangements are made in terms of documented procedures to manage these processes consistently and reliably. • A useful way to structure the formal documentation system is as a tiered pyramid with five different levels of documentation. • Tier 2 Management System Procedures. The second-tier documents are detailed descriptions of how processes are to be managed. • Tier 4 Instructions are generated, documented, approved and implemented as an interim ad hoc arrangement until new procedures may be generated or existing procedures amended. • To monitor the effectiveness and timeliness of management and control arrangements.

ISO Data	Literature Review	CEM Data
only in the workflow but in outcomes, which in return, lowers organisational risks.	process of QA allows an organisation to gain the confidence to assure quality. • A QMS is a process implemented by an organisation which enables organisations to manage quality-related processes. This system allows organisations to design their processes to achieve optimal quality. It assists managers to do the planning, assurance, improvement of the organisation's QMS. This is often also a legal requirement within specific industries (ISO). • By implementing the principles as included in the ISO9001 standard, the principle of proactive management as an assurance to supporting the review of an organisation's internal and external system is introduced. • The theory of QM promotes changes in the following areas of an organisation: leadership and management, strategic quality planning, total continuous learning and company culture. It also influences the management of employees, customers and suppliers. Quality also influences the processes of resource, knowledge and process management.	• Non-conformity, corrective and preventive action, complaints and appeals, MOC and CAR.

ISO Data	Literature Review	CEM Data
	• To order to fulfil functional specifications and customer expectations, systems should be identified and planned. To ensure the reliability of results, organisational operations should be standardised. • Process management controls stable and consistent production procedures. Tools for statistical process management allow process operations and performance to be consistent. The creation of protocols and reports is essential for tracking and progress in the application of QM. Procedures and instructions and procedures that are precisely defined and recorded minimise the risk of operator error. • Organisations focus on the practical procedures and the interrelation thereof. The standard allows them to integrate a QMS within these procedures as well as the continuous improvement of their processes. It also provides guidelines for leadership for sustainable success.	

4.6.7 ISO standard principle 7: Relationship management

Table 41: Relationship management

ISO Data	Literature Review	CEM Data
• Implementation can also be expected to bring other organisational benefits, such as improved internal communication and better understanding and control of the organisation's processes. • This system develops a tool where training development needs can be identified. It also assists the organisation within HR development. • Clause 7 Product Realisation: This provides guidelines for quality plans for the products and services. It includes the following focus: 7.1 – Customer-related processes. 7.2 – Client relations. • Organisations should strive to nurture supplier relationships. Both parties should benefit from the relationship. Organisations and suppliers are interdependent, and therefore, the needs of both should be considered. Strong supplier relationships allow an organisation to respond quickly to change. By optimising communication between parties, it may assist the organisation in	• Theory of QM promote changes in the following areas of an organisation: leadership and management, strategic quality planning, total continuous learning and company culture. It also influences the management of employees, customers and suppliers. Quality also influences the processes of resource, knowledge and process management. • Organisations rely on the resources and services required to produce products and services delivered by their manufacturers. Supplier's high-quality and defect-free goods will make an essential contribution to grade achievement. When choosing vendors, it is essential to emphasise price. Therefore managers have to find ways to improve vendors' efficiency. • They will allow their vendors to provide educational services to improve absolute efficiency. The selection of suppliers depends on efficiency rather than costs, dependency on supplier management and a strong relationship between manufacturer	• CEM's QM arrangements with suppliers and sub-contractors ensure the delivery of quality service and sustain mutually beneficial relationships. • Management of CEM staff, interns and other tutors. • Supplier relationships. • Supplier feedback.

ISO Data	Literature Review	CEM Data
improving the cost of goods and assets within an organisation.	and supplier interdependence. Reasonable vendor control eliminates supply chain procurement and loss. • A critical QM practice in cooperation with suppliers. A long-term partnership with suppliers should be developed between organisations. Long-term customer relationships allow both sides to solve problems of consistency. Daily supplier reviews support information sharing and mutual understanding among organisations. • Measurement and reviews on product efficiency improve the performance of suppliers.	

The summaries above must be compared and assessed regarding the main concepts related to the theory of quality. The sections below will perform that analysis.

4.7 RELATION TO THE THEORY OF QUALITY

To provide high-quality services, QC seeks to enhance current procedures as well as reinvent structures. The principle of proactive management as a guarantee to support the review of its external and internal system is introduced through the implementation of the principles as outlined in the ISO9001 standard. This was incorporated within the CEM's QMS. These principles assisted the CEM to set clear objectives in order to achieve strategic goals over the long-term and to develop and distribute resources. To further improve continuous quality, these principles were embodied in their policies, as well as the action plan of this organisation.

CEM focused on procedural changes and QM within their organisation. They sought to improve the quality of products and services and made significant changes within their organisational structure and culture. QM theory promoted a change in the following areas of the organisation: management and leadership, quality strategic planning, continuous learning and company culture. The supervision of staff, customers and vendors are often affected. The processes of resource management, knowledge and process management also depend on quality. As such, the findings of the CEM data relate to the theoretical concepts of QM as follows:

4.7.1 Theoretical concept 1: Leadership and management

Critical considerations in the effective implementation of quality in an organisation involved QA, marketing and administration. For QM to thrive, the function of senior management, role model behaviour, a deep dedication to QM, creating a positive atmosphere and handling strategic adjustments are essential. Managers will create a vision, express values, establish specific priorities and objectives and empower and motivate staff to be involved in the QC cycle.

Top management must be fully committed to QM as regards steps to continue long-standing strategies for improvement of performance. CEM's attitude towards productivity formed the foundation of workplace appreciation in QC. Management's engagement contributes to improved workplace dedication.

Leadership is also essential to QC systems. Efficient leadership provides a competitive environment that helps employees advance knowledge and self-design, remove barriers and prevent fear.

4.7.2 Theoretical concept 2: Strategic quality planning

Quality is a comprehensive strategy. To ensure the optimum performance of effective QM, a long-term strategic plan is needed, based on maximum consistency. The success of the quality improvement within the CEM covers organisational priorities, implementation, strategies and action measures for QM principles. Their Quality Plan ensures that QC resources are issued. This can help identify needs and develop strategies and action plans which meet the priorities and goals of the customers and other stakeholders.

4.7.3 Theoretical concept 3: Total continuous learning

A dedication to education and emphasising sustainable growth needs QC. Education and training are critical components of a system of QM and play an essential role in developing a common standard vocabulary in the pledge to improve quality and conduct consistently. The skills, coordination and teamwork associated with the employees improve learning, which helps resolve resistance to changes in QM.

Education and training within the CEM are key components of their QM system. This is seen in the development of their process flow diagrams, which allow staff members to understand their role and change management tools, such as the NCR and MOC systems.

CEM managers take the time to develop their employees' technical skills which enables them to improve the quality of services consistently. As such, training and education gave staff the knowledge, expertise and skills required for productive work and better teaching contributed to enhancing product efficiency practices.

4.7.4 Theoretical concept 4: Corporate quality culture

A company's culture is a set of prevailing beliefs which direct the company's attitudes and teach new members the correct way of seeing, thinking and feeling. An organisation's community defines how it works and therefore affects the operations. Organisational culture thus promotes changes in QM.

CEM's QMS and QC include the creation of a quality community as a whole. They implemented an authentic culture of continuity and support in QM and quality effectiveness. An organisational culture which emphasises openness, integrity, trust, loyalty, positive engagement, leadership, coaching, co-ordination, risk-taking, creativity, testing, customer interest and ongoing growth is a critical foundation for the application of QA programs. In the institutionalisation of qualitative

management practices, collaboration and coordination play an essential function. Therefore, the QC structure and understanding of the staff are related to the practical application of QC.

4.7.5 Theoretical concept 5: Employee management

People are the base of every business transaction. The success of an organisation depends on the level of results and the evolution of the objectives within an organisation. Therefore, the effective handling of HR is a key component of the effectiveness of QM.

HR programs, such as employee recruitment procedures, training and development, assessment of results and incentives and bonuses, must support a culture of quality within the CEM. The confidence and willingness of CEM staff to respond to productivity are essential to the success of their QMS. Positions are restructured to provide employees with more versatility, individuality and innovation. Performance evaluation and processes for identification are revised annually, providing them with more focussed acknowledgement and long-term results.

Active engagement by workers in the QM processes contributes to creating a quality culture of enterprise by improving employee conduct, attitudes and potential and by increasing consciousness, motivation and active involvement in organisational problem-solving. Employee representation is an essential QM principle for the CEM. Empowerment encourages its employees to take responsibility and to increase their efficiency; it also allows workers to monitor their job operation and promotes career and personal growth.

4.7.6 Theoretical concept 6: Customer management

Clients are the most critical cornerstone of QM theory. QM cannot exist without a strong customer focus. Customer service refers to a company's effort in recognising and satisfying customer criteria, needs and wishes.

The CEM QMS defines and transforms customer needs into an acceptable operating function. They make use of questionnaires to determine clients' perceptions. Their customer loyalty and satisfaction measure the leading indicator of their performance. They further adjust processes and procedures to accommodate the needs of their customers.

4.7.7 Theoretical concept 7: Supplier management

Organisations depend on the tools and facilities available for using their suppliers' goods and services. A significant contributor to grade performance is high-quality and non-defect products from the manufacturer. It is essential to emphasise price and quality provided when selecting

vendors. The choice of suppliers will depend on efficiency rather than costs, the management of the supplier and a strong relationship between manufacturers and suppliers.

For the CEM, the long-term partnership with suppliers is significant to the level of quality regarding their services. They analyse the performance of their supplier by assessing internal data (as collected internally). They address and follow up on issues if needed.

4.7.8 Theoretical concept 8: Resource management

Managers require ample capital to enforce QC effectively. Proper utilisation of resources has a significant influence on the success of QA systems. Proper resource management improves effectiveness, improves safety and decreases mistakes. The CEM QM is a success, derived from top management efforts to create mechanisms and operating processes to monitor the direction of quality in the company and promote the adoption of the QM plan in all departments.

4.7.9 Theoretical concept 9: Knowledge management

Quality information is an essential accomplishment in management performance. To promote decision-making at all levels of the organisation, the CEM collects information which is accurate, timely and relevant. They analyse and utilise this information to provide managers with insights to improve and make informed decisions based on concrete facts. The effective exchange of this knowledge among vendors, collaborators, employees and customers enhances coordination and cooperation among various stakeholders, ensuring that the improvement is continuously endorsed.

4.7.10 Theoretical concept 10: Process management

The CEM uses various approaches for preparing, tracking and improving systems. Systems are defined and designed to satisfy technical specifications and customer preferences. To guarantee the efficiency of performance, operational processes are systematic. By way of standardisation activities, the CEM can control its structures and procedures.

Management of these standardised processes ensures stable and consistent service delivery. Statistical process management systems provide transparent insights of processes and efficiency as well as assist in the process of monitoring. For tracking and progress which applies to QM, protocols and reports are established. Additionally, accurately defined and recorded procedures and instructions minimise the risk of errors.

The fundamental mechanisms for QA within the CEM include the recognition of success metrics, management reviews, compliance measures and disciplinary acts. More comments will contribute

to improved interactions and more development. Therefore, the annual evaluation of the CEM's processes and results according to a quality standard offers an analysis of its potential and growth opportunities.

4.8. CONCLUSION TO CHAPTER FOUR

Within this chapter, the QM process at the CEM was covered. This included their quality procedures as well as the quality guidelines. Forms such as the NCR are addressed, as well as procedures to regulate and mitigate quality-related aspects within their QMS.

The CEMS QMS values were matched and tested in compliance with the ISO9001 standard principles and quality-related concepts. Conclusions were made and argued within each relative field. A further discussion of these conclusions will be addressed in the last chapter of this study.

Chapter Four focused on the presentation, interpretation and discussion of the findings. It described the CEM approach towards quality, the nature of their quality policies, as well as the details contained in their QM manual. The findings discussed were solely based on the data that was collected. The findings were assessed in line with the standard, as well as the literature review.

In the last chapter, the final findings of this research problem will be concluded in areas of leadership and management, strategic quality planning, total continuous learning, corporate quality culture, as well as employee management. Further conclusions will be made on the customer, resource, supplier, process and knowledge management. Finally, the implications, limitations and recommendations will be addressed alongside the value of this study.

CHAPTER FIVE FINDINGS AND RECOMMENDATIONS



This chapter summarises the findings of the study, the implications of these findings as well as their relevance to previous studies and principles of the ISO9001 standard.

Conclusion of the research problem

- This section will contain the main conclusions of the research.

Relation to the theory

- Final conclusions will be made in the following areas:

- Theoretical Concept 1: Leadership and management
- Theoretical Concept 2: Strategic quality planning
- Theoretical Concept 3: Total continuous learning
- Theoretical Concept 4: Corporate quality culture
- Theoretical Concept 5: Employee management
- Theoretical Concept 6: Customer management
- Theoretical Concept 7: Supplier management
- Theoretical Concept 8: Resource management
- Theoretical Concept 9: Knowledge management
- Theoretical Concept 10: Process management

Implication, Limitations and direction for future research

- Within this section the implications, limitations and direction for future research related to this specific research will be stated.

Value of this study

- This section will indicate the value of the study within the larger body of knowledge available.

Recommendations for the future

- Recommendations will be presented based on the findings. Limitations to the research will be addressed. The theory presented will be re-assessed and expanded upon based on the framework of the ISO9001 standard.

(Image: Authors own)

5.1 INTRODUCTION

It has often been found that service organisations struggle to manage quality due to their failure to understand or manage the duties of staff members. Quality can only be achieved once an organisation knows what quality is and how it can be achieved. The principles of ISO9001 can resolve these problems. The issue has, therefore, been examined by assessing how ISO9001 guidelines were implemented in an organisation to improve quality. Hence, within this section, the conclusion to the primary research problem: *Can an active QMS, based on the ISO9001 principles, address quality and allow a service department to increase the quality of service and customer satisfaction continuously?* will be provided.

5.2 CHAPTER OVERVIEW

This chapter summarises the findings of the study, the implications of these findings as well as their relevance to previous studies and the principles of the ISO9001 standard. The implications of this study are described and discussed using the CEM as an example of a service industry that implemented the ISO9001 principles within the organisation. The limitations of the study are identified and recommendations for future studies, based on the findings of the study, will be provided.

5.3 FINDINGS OF MATCHING ISO PRINCIPLES WITH EMPIRICAL RESULTS

The data, as indicated in Section 4.5 of Chapter Four, were summarised by using a triangulation technique. It incorporated three points into the analysis; firstly, the influence of quality on the organisation as seen in literature study; secondly, the quality requirements found in the ISO9001 standard and, lastly the data obtained from the organisation in these areas. Final findings relating to the sub-problems within this study are discussed below.

5.3.1 ISO Standard principle 1: Customer focus

This section answers the sub-question: *“Can ISO9001 principles assist an organisation to retain customer confidence by meeting customer needs?”* As well as the questions: *“Can a QMS improve the efficiency of an organisation? Also, can it, in return, lead to improved customer satisfaction?”*

QM influences how customer service changes organisations. The ISO standard (specifically clause 7) contains guidelines on how organisations can adjust their QMS to focus on clients.

Literature indicates that focusing on customer loyalty allows an organisation to understand the importance of customer engagement. This insight, in return, allows an organisation to adjust its quality approach based on the needs of the customer. Customer feedback is seen as an organisational performance indicator. The quality level offered by an organisation to a customer determines the organisation's success. A product or service is, therefore, only as good as the customer's experience.

Customer care relates to a company's attempt to recognise the desires and expectations of customers. As in the CEM, an implemented QMS provides guidelines which allow an organisation to make effective use of user responses to create quality products. Customer satisfaction and feedback are the secrets to a robust QM programme. The CEM has created, applied and now manages QC to ensure procedures and the distribution of information, to guarantee that both reliability and the satisfaction of customer expectations are assured.

Organisations can use ISO9001 guidelines effectively to create quality services based on the needs of customers. Therefore, a product's service standard is based on the performance of the business. CEM delivers service based on the needs of its customers by incorporating feedback from clients to improve their QMS. By reacting to a customer's needs, the ISO9001 assists an organisation in maintaining confidence. These guidelines also increase the organisation's efficiency and lead to higher customer service in return.

5.3.2 ISO Standard principle 2: Engagement with people

This section answers the sub-questions *“Can ISO9001 principles assist an organisation leads to the inclusion of staff in processes, which leads to motivation at work and return lead to effectiveness within the work process?”* and *“Can ISO9001 principles assist an organisation in understanding work processes, which lead to consistency and results achieved?”*

The ISO standard indicates that adequate QMS facilitates efficient organisational coordination and leadership in an organisation. Employees at all stages of the organisation should be actively involved, as a QMS allows teams to understand the processes and milestones of the organisation.

Furthermore, it should enable managers to identify potential risks, issues and constraints. Administrators should be accountable for the performance of the QMS. Praise can encourage staff members to reach specific output standards, and organisations should analyse staff member's abilities and apply them to optimise productivity. Staff should not only follow instructions but should be encouraged to adopt decision-making responsibilities. The participation of workers in procedures, therefore increases performance and accomplishment rates.

Studies indicate that quality is a philosophy to be embraced and promoted. If management's engagement is lacking at some point, businesses have a low level of participation related to QM. The dedication to learning and improving systems is necessary for QM to succeed. Organisations are, therefore, encouraged to train staff on ISO9001 guidelines.

The CEM's goal is to organise and execute all the systems with the participation of process stakeholders, administrators and related participants. The quality and performance systems of CEM are monitored through monthly business meetings, self-assessments, internal and external audits, customer satisfaction surveys and provider reviews. All CEM employees are also trained on QMS matters.

Employees do not only follow orders but make decisions, too, as partnership and cooperation play a significant part in institutionalising QA practices. According to a QMS specialist, QC requires a commitment to learning through continuous development. The standard is uniform and should be used in all sectors. Teams like the CEM's understand processes and milestones and managers can identify potential risks, challenges and limitations. This QMS values the unique expertise of employees and improves their efficiency accordingly.

It can, therefore, be concluded that if the ISO9001 standards are applied to an organisation, namely involving workers in processes, productivity at the organisation as well as quality within this environment would increase. It also assists the organisation to understand work processes that result in incoherence and better results related to quality.

5.3.3 ISO Standard principle 3: Evidence-based decision-making

This section answers the sub-question *"Can ISO9001 principles assist an organisation in making calculated decisions by analysing evidence in the form of data?"*

This protocol covers the principles of product planning and tools for evaluation. The literature review indicated that the ISO9001 standard describes QM as the coordinated efforts that lead and monitor a professional organisation. This mechanism is reactive, aiming to rectify issues, as well as to avoid recurring quality issues. Thus, performance is a continual cycle requiring improvisation and upkeep.

To manage these changes, an integrated approach is necessary. To increase the consistency of goods and services, improvements in corporate structure and culture are essential. This practice must be reactive, scalable and focused on a shorter cycle of awareness creation, whilst enhancing cooperation among stakeholders. Therefore, accurately specified and reported procedures and

directions mitigate error risk, and professional management departments are critical for ongoing quality growth.

The CEM aims to enhance the management and efficiency of QC. Monthly business meetings, self-assessments, internal and external audits, surveys of customer satisfaction, supplier and management reviews are used. The analysis encourages changes in strategic and economic targets, as well as other measures, for example, to manage conformity to guidelines. The specific success strategies of the CEM are listed in the strategic programs.

Ongoing evaluations are also factors leading to the continual development of the CEM's internal systems, operations and services. Information and knowledge specifications of the CEM procedure are recorded in databases or procedures, where the appropriate scheduling of the details, functions, duties and authorities are discussed. The integrity of all details and knowledge is also assured.

In summary, ISO9001's QC is defined as the coordinated actions that guide a company. Improvements in the organisational framework and culture are essential to increase the quality of products and services. CEM improves its QC program and efficiency continually. The ISO9001 principles, therefore, help the organisation make calculated decisions by evaluating data evidence.

5.3.4 ISO Standard principle 4: Improvement

This section answers the sub-question *“Can ISO9001 principles assist an organisation in solving problems by continually improving processes, then until desired outcomes achieved?”*

ISO9001 has an impact on organisational efficiency. The analysis describes the efficiency the standard brings to service providers. The model of this standard relies on protective steps that are handled by structured procedures. Quality is not only seen as a PDCA cycle but as a documented procedure. The norm promotes quality change through reporting, assessment and review.

The accomplishments of the ISO QMS are only possible due to good administrators. Performance is a continual cycle requiring improvisation and upkeep. By implementing the principles of the ISO9001 standard, an organisation will benefit as it will work more effectively. A well-implemented QMS guarantees that QC services are established. This helps recognise the customer and other stakeholder concerns whilst establishing goals and action measures to meet targets and objectives. Managers can develop technological skills for their workers and empower them to increase service quality.

CEM's QMS is assessed continuously and analysed; databases with the results are kept. Analysis of evidence and accurately reported knowledge guide all actions and the application of CEM's goods and services. Their goal is to conduct at least one strategic and macro organisational preparation meeting, accompanied by management analysis at the end of each year.

In preparation for meetings, daily preparation, assessment and development reporting are carried out. The steps defined in the regular strategic and management analysis meetings are introduced as agenda points for the specific organisational meetings. All employees are informed about the annual business goals of CEM, long-, medium- and short-term work plans, management system needs and performance. All of these are based on calculated decisions based on reactive data within the QMS.

In summary, ISO901001 has an impact on organisational efficiency. The model relies on guarantees, such as protective steps, that are handled by structured procedures. A QMS enables all divisions inside an organisation to incorporate processes within an organisational structure efficiently and effectively.

The QMS guarantees that QC services are established, and in return, improvement is achieved. The ISO9001 principles, therefore, enable an organisation to overcome problems through continuous process improvement, to ensure the desired results are achieved.

5.3.5 ISO Standard principle 5: Leadership

This section answers the sub-question *“Can ISO9001 principles assist an organisation in improving leadership and leadership communication which lead to staff to know what their role is within an organisation?”*

The ISO standard indicates that strong governance guides an organisation on a specific path. Organisations should allow staff to contribute to meeting the objectives of the organisation, as lack of management assistance, lack of preparation, poor QC by employees and employee aversion to reform are barriers to the successful deployment of ISO9001.

Leadership has been shown to play a vital function in a quality system. Effective leadership provides a favourable atmosphere that allows workers to improve themselves and their expertise. Training and education provide staff with the knowledge, expertise and skills necessary for productive work.

Organisational performance is expected of members within various positions of the organisation. Under Clause 5 (management responsibility) of the ISO9001 standard, the role of management

is specified. A good leader should have a passion for the goals and desired objectives of the organisation. Therefore, the QMS is a method to convey top management's goal to pursue QC.

The QMS programs enable the alignment of procedures within the organisational structure for all divisions within the organisation. Managers will cultivate a vision, communicate values, create specific priorities and expectations and enable staff to engage in the QC cycle actively. Senior management roles, role-model behaviour and exemplary QM dedication, are thus necessary for QM to thrive.

Corporate culture is a set of prevailing values that control the company's attitudes. An attitude of acknowledgement strengthens positive behaviours, enhances self-esteem, promotes confidence and loyalty and improves passion within employees. Also, the achievement of QM is focused on high-level management initiatives which establish structures and organisational procedures for the QC of the organisation.

In summary, the QMS of an organisation, as in the case of the CEM, is a way to express the intent of top management to track output. For QM to succeed, management engagement is required. The ISO9001 principles, therefore, help an organisation improve leadership and leadership communication. This will lead to staff who know what their role is within an organisation.

5.3.6 ISO Standard principle 6: Process application

This section answers the sub-question: *"Can the understanding and implementing of QMS guidelines lead to improved quality within an organisation?"*

Management within a company should recognise that all systems are related and need to be assessed by viewing the "larger picture". The participation of staff members in the development and execution of the development of procedures increases productivity and accomplishment. This also allows managers to concentrate on essential operational processes.

Studies in the literature indicated that organisations aim to avoid quality issues before they occur and that performance is a continual cycle requiring improvisation. A QMS is a mechanism that allows organisations to control quality-related activities. Thus, QMS programs allow the incorporation of all processes inside an organisation, across all divisions.

The ISO9001 standard encourages improvement in the following areas: leadership and administration, proactive QA, professional education and the community of organisations. It also concerns staff, customer and manufacturer management. By standardising procedures, an organisation can control its programs and processes, which would ensure secure and reliable

output procedures. Statistical process management tools enable consistent process operations and performance, which help organisations incorporate both QMS and quality enhancements into their procedures.

CEM QMS manages and executes all systems with the involvement of project operators, administrators and teams. As there are five distinct stages of reporting, this QMS provides a convenient way in which the hierarchical reporting framework is organised. Detailed institutional procedures for the consistent and effective control of these systems are provided. Instructions are provided, reported, authorised and applied as an ad-hoc provisional scheme. Tools to monitor management and control measures, efficiency and timeliness are also provided.

In summary, quality is an evolving process that requires improvisation and improvement. A QMS requires procedures to be integrated into all departments of an organisation. Through the participation of project managers, supervisors and staff, CEM QMS controls and maintains their processes, and they can therefore manage their systems and processes through standardisation procedures. Thus, it can be concluded that QMS guidelines must be understood and applied to enhance the quality and processes of an organisation.

5.3.7 ISO Standard principle 7: Relationship management

This section answers the sub-question *“Can ISO9001 principles assist an organisation in nurturing supplier relationships, so organisations can rely on them when it comes to unique production needs to be met?”*

The ISO standard indicates that organisations should strive to foster relations between suppliers as transparent partnerships with suppliers enable a company to adapt to changes rapidly. Also, this standard provides a method for defining teaching requirements. Studies indicate that organisations depend on the required tools, strong relationships, strong relationships with suppliers, physical tools and infrastructure to deliver their goods and services. As an added advantage to these positive relationships, long-term connections between customers and organisations enable both parties to solve continuity issues.

CEM's QMS aims to expand the QM arrangements of the CEM to providers and sub-contractors so that quality courses can be delivered. The CEM strives to nurture supplier relationships; by continually analysing their services and providing feedback and engagement, both parties benefit. The CEM and its suppliers are interdependent, and therefore the needs of both must be considered. A strong supplier relationship allows the CEM to respond quickly to change; by

optimising communication between parties, the CEM can improve its courses, for example, food served at their courses or the quality of their presenters.

In summary, successful relationships among staff members and other stakeholders encourage mutual understanding and information sharing, and long-term customer relationships enable all parties to address issues of continuity. Therefore, ISO9001 guidelines assist an organisation in cultivating ties with suppliers so that organisations can change rapidly in a competitive environment.

5.4 VALUE OF THIS STUDY

This study has contributed to existing knowledge on the use of the ISO standard principles by focusing on the service industry and not the manufacturing industry. This study has confirmed that if an organisation in the service industry follows the principles proposed in the standard, it would indeed have better quality outputs. Service industries will, therefore, benefit from the outcome of this study.

5.5 IMPLICATION, LIMITATIONS AND DIRECTION FOR FUTURE RESEARCH

This study recommends that the principles of the ISO9001 standard should be used as a guideline for the QMS of a service organisation. Implementing these guidelines will lead to a better level of quality, as well as QM, within an organisation.

This study was conducted in one service department, CEM, which is part of NWU, in Potchefstroom. It, therefore, cannot be generalised given the sample size but it can be replicated elsewhere to find different results or to make comparisons. Future research should investigate a larger sample and make use of technical analysis, using qualitative document analysis. Thus the study could compare the quality and principles of QM in service organisations of a different nature, in other areas.

5.6 RECOMMENDATIONS FOR THE SERVICE INDUSTRY

Recommendations for this study include the following:

- It is found that, often, service organisations neglect to manage quality, partly because many people working in service organisations do not understand nor manage their processes. Practical guidelines need to be developed to assist organisations in the service industry to understand what quality is and how to implement it in their processes. ISO9001

principles assist an organisation to retain customer confidence by meeting customer needs. However, organisations need to understand how to meet the needs of the customer on a service level, as this differs from how a manufacturing organisation determines the product needs of a customer.

- The ISO9001 standard has been introduced to satisfy customers and improve efficiency within the business. More work will be carried out to determine ISO9001's long-term effects on the business and how it affects performance. Most companies conduct their business in compliance with these standards by adopting the ISO9001 principles, so that they can reap the full benefits from them. Therefore, it is crucial to evaluate what the effects of the organisation's external performance are according to the ISO9001 standard.
- More work should be conducted on what the most efficient way is to explain the ISO9001 standard to employees so that they can understand it better. Employees should be able to take control of the QMS by properly interacting with it. ISO9001 impacts employees' everyday work so they must engage in all facets of ISO9001 implementation and begin to learn how to use it effectively.
- Leadership plays a vital role in quality within an organisation. Leaders need to be taught how to communicate the role of quality to their staff members, as well as how to implement it within the day-to-day tasks of an organisation. The CEMs Director has much knowledge of this area, and it contributed to the success of the QMS. If an organisation fails to provide this type of leadership, it may fatally hinder the process.
- This study was conducted in one department of service, the CEM, which is part of the Potchefstroom-based NWU. Consequently, given the sample size, it cannot be generalised, but it can be replicated elsewhere to find different results or to make comparisons. The recommendation, therefore, is to have a similar study conducted in other service organisations.

5.7 CONCLUSION OF THIS STUDY

This chapter summarises the findings of the study, the implications of these findings as well as their relevance to previous studies and the principles of the ISO9001 standard. The implications of this study are described and discussed using the CEM as an example of a service industry that implemented the ISO9001 principles within the organisation. The limitations of the study are identified and recommendations for future studies, based on the findings of the study, have been provided.

It has been found that service organisations struggle to manage quality due to their failure to understand or manage the duties of staff members. Quality can only be ensured once an organisation knows what quality is and how it can be achieved. These problems can be resolved by using the principles of ISO9001. The sub-research questions, therefore, were answered as follows:

- ISO9001 principles assist an organisation to retain customer confidence by meeting customer needs.
- ISO9001 principles assist an organisation in improving leadership and leadership communication which lead to staff in knowing what their role is within an organisation.
- ISO9001 principles lead to effectiveness within the work process.
- ISO9001 principles assist an organisation in understanding work processes, which leads to consistency and results achieved.
- ISO9001 principles assist an organisation in solving problems by continually improving processes until desired outcomes are achieved.
- ISO9001 principles assist an organisation in making calculated decisions by analysing evidence in the form of data.
- ISO9001 principles assist an organisation in nurturing supplier relationships so that organisations can rely on them regarding unique production needs.
- QMS improves the efficiency of an organisation. It can also lead to improved customer satisfaction.
- The understanding and implementation of QMS guidelines lead to improved quality within an organisation.

This thesis evaluated the value of ISO9001 principles within a service sector by analysing data obtained for the years 2012-2018 from the CEM NWU ISO9001 principle-based QMS. The research question within this study is concluded by proving that an ISO9001-based active QMS does allow a service organisation such as the CEM to improve quality within the organisation.

As the late Steve Jobs said: "Everything is based on a simple rule: Quality is the best business plan, period."

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ANNEXURES

APPENDIX A: PERMISSION LETTER



Private Bag X6001, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Web: <http://www.nwu.ac.za>

Centre for Environmental Management
Internal box 150, Private Bag X6001, Potchefstroom,
South Africa, 2520
Tel: 018 299 2724
Fax: 018 299 2726
Email: Annatjie.Jordaan@nwu.ac.za
Web: <http://www.nwu.ac.za/cem>

To whom it may concern,

18 November 2019

Use of CEM data for research purposes by Theresa Bowen (21631123)

We hereby give permission to the abovementioned student to use the following data as provided by the CEM for her research proposal.

- CEM_Management of data analysis and statistics 2019-00 Rev 04
- Course Feedback Inhouse 2014
- Course Feedback Public 2014-02
- Document_ Record Mangement 2019 Rev 09
- Management of Change 2019-00 Rev 09
- Management of Customer Owned Property 2019-05
- Management of Delegate Assessment and Certification Rev 2019-11
- Management of Delegates Rev 2019-12
- Management of Finances and Quotations_Rev 2019-10
- Management of Internal Audits 2019-09
- Management of Projects_2019-07
- Management of Tutors & Staff 2019-00 Rev 13
- MOC Register
- Management_Course Content Material Rev 2019-14
- MOC Register
- Nonconformity, Corrective and Preventive Action 2014-05 Rev 12
- Operational Planning 2017 Rev 2017-07
- Operational Planning 2018 Rev 2018-07 CR
- Operational planning 2019 Rev 2019-06_Final
- Overview Management of Courses Rev 2019-02
- Procedure for Asset Management Rev 2019-16
- Procedure for Marketing and Publicity 2019 Rev 09
- Procedure Gen Risk Iden_Ass_Man Rev 2019-14
- Quality Assurance 2019-04
- Strategic planning 2017 Rev 2017-06
- Strategic planning 2018 Rev 2018-14
- Strategic planning 2019 Rev 2019-10
- Strategic Planning_Man_Review Procedure 2019-00 Rev 09
- Summary Course Feedback Inhouse 2015-01
- Summary Course Feedback Inhouse 2016-01
- Summary Course Feedback Inhouse 2017-00
- Summary Course Feedback Public 2015-00
- Summary Course Feedback Public 2016-02

Should you have any questions in this regard, please do not hesitate to contact me.

Yours Sincerely


Mrs AC Jordaan
Head Training Support



CEM
Centre for
Environmental Management

APPENDIX B: QUESTION PRO-SURVEY

Survey: Course Feedback CEM-03.2.1 OHSms September 2019

Course Name: Occupational health and safety management systems (OHSms)
Course Number: CEM-03.2.1

Course date: 2-6 September 2019
Venue: Ground Floor Lecture Room
Technical co-ordinator: Theunis Meyer
Admin co-ordinator: Nonzuzo Seleka

A. The course

1. How do you rate the course?



Good

☐

Adequate

☐

Poor

☐

2. How do you rate the material?



Good

☐

Adequate

☐

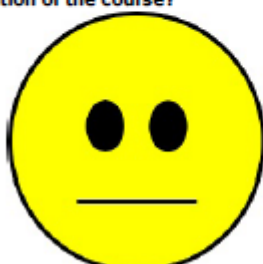
Poor

☐

3. How do you rate the duration of the course?



Good

☐

Adequate

☐

Poor

☐

B. Administration

1. How do you rate the enrollment process?



Good

☐

Adequate

☐

Poor

☐

2. How do you rate the admin staff?



Good

☐

Adequate

☐

Poor

☐

3. How do you rate the course-related communications received?



Good

☐

Adequate

☐

Poor

☐

C. Venue and meals

1. How do you rate the venue?



Good

☐

Adequate

☐

Poor

☐

2. How do you rate the meals and snacks provided?



Good

☐

Adequate

☐

Poor

☐

D. General

1. Has the course addressed your needs or expectations?



Good

☐

Adequate

☐

Poor

☐

2. Are you likely to attend another training session offered by the CEM?



Good

☐

Adequate

☐

Poor

☐

3. Are you likely to recommend CEM courses to another person?



Good

☐

Adequate

☐

Poor

☐

E. Comments: Please provide any comments or suggestions that may help improve this course in the future.

APPENDIX C: QUESTION PRO-SURVEY

Survey: Presenter - Theunis Meyer (OHSms September 2019)

Presenter Name: Theunis Meyer

Course Name: Occupational health and safety management systems (OHSms)

Course Number: CEM-03.2.1

Course date: 2-6 September 2019

Venue: Ground Floor Lecture Room

Technical co-ordinator: Theunis Meyer

Admin co-ordinator: Nonzuzo Seleka

Please rate the following by marking the appropriate icon.

1. The presenter's knowledge and experience of the subject discussed



Good

☐

Adequate

☐

Poor

☐

2. The relevance of the presentation content to the subject specified on the programme



Good

☐

Adequate

☐

Poor

☐

3. The quality of the presenter's course material



Good



Adequate



Poor

☐ ☐ ☐

4. The presenter's ability to engage with the delegates and keep the sessions alive and interesting



Good

☐

Adequate

☐

Poor

☐

5. The way in which the presenter encouraged and allowed sufficient time for discussions



Good

☐

Adequate

☐

Poor

☐

6. The presenter's adherence to the time scheduled



Good

☐

Adequate

☐

Poor

☐

7. The presenter's overall performance



Good



Adequate



Poor



Comments: Please provide any comments or suggestions that may help improve this course in the future.

APPENDIX D: E-MAIL RE SPESIALE VERSOEK

From: Johan Nel

To: Theresa Bowen; Wanda Hofmeyr; Annatjie Jordaan

Date: 2019/08/21 13:35

Subject: Re: Spesiale versoek

Hello Theresa

Dit gaan goed dankie en met jou?

Jy is welkom om Wanda en Annatjie te kontak om toegang te kry tot watter inligting jy ookal nodig het.

Theresa stel asb 'n dokument op wat alle inligting wat jy kry, lys, en onderteken dan 'n onderneming om die inligting slegs aan te wend vir jou studies en dat jy dit sal vernietig nadat jou studies afgehandel is.

Uiteraard wil die CEM graag erkenning geniet vir die beskikbaarstelling en dan sal ons graag 'n kopie van jou werk wil ontvang nadat dit finaal ingedien is.

Baie sterkte met studie

Groetnis

Johan

Prof Johan Nel

Director

North-West University

Centre for Environmental Management

Tel: 27 (0)18 299 1581

Fax: 27 (0)18 299 4266

Cell: 27 (0)83 627 0636

E-mail: johan.nel@nwu.ac.za

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(<http://www.nwu.ac.za/it/gov-man/disclaimer.html>) >>> Theresa Bowen 2019/08/19 11:26 >>>

Goeie more, Prof Johan

Hoe gaan dit? Ek hoop dit gaan baie goed aan julle kant.

Ons is tans in die beplannings-Fase van my studies. Ek beoog om te bewys dat indien jy die riglyne van die ISO standaard volg, dat dit wel na beter kwaliteit binne in n organisasie lei.

Ek beoog om die data (van die laaste 5 jaar) en prosesse wat in plek te vergelyk en dan te dien as evidence.

Is dit moontlik dat ek dalk access kan kry tot die QMS stesels en die Jaarlikse verslae van die laaste 5 jaar?

Ek kan Prof ook kom sien ek my doel te bespreek, indien prof sou wou. Ek sal ook n declaration afle om aan te dui dat ek die data en dokumente wat ek sal beskou as confidential sal hanteer.

Op die stadium is my doel nie om die data te analiseer nie, maar net my planne in plek te kry om die data op die korrekte manier te proseseer (my studieleier- Sal my help met dit)

Groete

Theresa

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>>> Johan Nel 2019/02/27 16:02 >>>

Jy is welkom dankie en sterkte met jou studie

Mooi dag

J

Prof Johan Nel

Director

North-West University

Centre for Environmental Management

Tel: 27 (0)18 299 1581

Fax: 27 (0)18 299 4266

Cell: 27 (0)83 627 0636

E-mail: johan.nel@nwu.ac.za

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>>> Theresa Bowen 2019/02/27 11:05 >>>

Goeie more, Johan

Baie baie dankie vir die vergunning. Dit beteken regtig baie vir my

Ek sal die rondom die beperkings werk en nie aandui dat dele uitgesluit is nie en dat julle nie migreer het nie.

Ons is die jaar besig met die teoretiese gedeelte- die navorsing gedeelte gaan tegnies eers volgende jaar plaasvind- So ek sal my huiswerk goed voor die tyd kan doen.

Dit gaan goed met ons dankie. Kan jy glo Ava is nou in Graad 1? Sy geniet skool baie en dit gaan goed met haar.

Stuur asb groete vir Ouma, Dr en Prof Willemien

Groete

Theresa

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>>> Johan Nel 2019/02/26 11:03 >>>

Hallo Theresa

Dit gaan baie goed met ons almal dankie en dankie ook vir die komplimente. Hoe gaan dit met jou en Eva?

Jy is welkom om die CEM se QMS as gevallestudie te gebruik en jy kan via Anna toegang kry tot al ons dokumente, asook rekords en hersienings en beplanningsdokumente.

Jy moet egter onthou dat ons 'n beperkte QMS het. Die beperking is soos volg:

1. SAATCA gee specs vir TCPs uit 9001 wat ons in plek moet he - ons voldoen net aan daai specs 2. Daar was geen vereiste om te transition vanaf die vorige 9001 weergawe tot die 2015 weergawe nie, dus het ons dit nie

gedoen nie 3. Ons QMS is nie sertifiseerbaar nie, aangesien ons slegs die kernelemente volgens SAATCA se specs gedoen het.

Indien jy met die beperkings kan werk is jy welkom, ek wil net nie in jou verslag sien dat ons net ten dele werk en nie migreer het nie.

Ons QMS is die minimum elemente wat 'n short course provider nodig het en dit het ons, niks meer nie. Met min hulbronne het ons net die fundamentals

Mooi bly en sterkte met jou studies.

Johan

Prof Johan Nel

Director

North-West University

Centre for Environmental Management

Tel: 27 (0)18 299 1581

Fax: 27 (0)18 299 4266

Cell: 27 (0)83 627 0636

E-mail: johan.nel@nwu.ac.za

Vrywaringsklousule / Disclaimer: <http://www.nwu.ac.za/it/gov-man/disclaimer.html>

>>> Theresa Bowen 2019/02/26 09:00 >>>

Goeie more, Prof Johan

Hoop dit gaan goed met julle almal.

Ons is tans besig om te werk in ons navorsings vak om voorbereiding te doen vir ons Projek volgende jaar.

My belangstelling dreig baie sterk in die rigting van kwaliteit en hoe kwaliteit geïmplementeer word.

Ons het geleer van ISO 19001 en die riglyne wat daarin omvat word. Ek het weer opreg waardeering gekry vir Prof se QMS stelsel.

Ek het wonder of ek moontlik die CEM mag gebruik in vorm van n "case studie". Met die gedagte dat ek dit sou vergelyk met die standaard en uitlig wat n department (spesifiek gefokus on universiteite) kan bereik in terme van kwaliteit, deur kwaliteit stelsels in plek te sit- (wat regtig deur min ander departemente toegepas word - ek moet erken ek kry partykeer

skaam, party mense week nie eens van dokument control nie). Ek dink regtig CEM is n uitskekende voorbeeld, en sou dit baie graag wil gebruik as voorbeeld.

Groete

Theresa

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APPENDIX E: LETTER OF CONFIDENTIALITY



Private Bag X6001, Potchefstroom
South Africa 2520

Theresa Bowen
Student number 21631123
Tel: +27 (0)18 285 2580
Email: Theresa.Bowen@nwu.ac.za

10 September 2019

Letter of Confidentiality

For the Master's thesis of:

Theresa Bowen, Student number 21631123 (orcid.org/0000-0001-7310-408)

For the fulfillment of the research proposal for the Masters of Business Administration

Title:

The impact of the application of ISO9001. Quality Management System (QMS)
based principles within a service organization

The undersigned agrees to commit all information, data or pictures are absolutely confidential which result from the insights during these studies. I will be bound by all the terms and conditions of the confidentiality undertaking signed by the duly designated representative of my research entity and will use the dataset indicated in the research proposal in accordance with the terms of use attached to the confidentiality undertaking.

I will:

- (a) use the dataset only for the purposes specified in the research proposal;
- (b) safeguard the dataset and any usernames and passwords associated with it;
- (c) ensure that any results of analyses will not be disclosive or potentially disclosive in conjunction with other publicly available information;
- (d) provide the Centre for Environmental Management (CEM, NWU) with references to publications and other research reports based on this dataset;
- (e) preserve the confidentiality of information pertaining to identifiable individuals and/or organizations that are recorded in the dataset
- (f) submit the final complete output of my work for the record to the Centre for Environmental Management (CEM, NWU)
- (g) destroy the dataset and any data or variables derived from it at the end of the research period specified in the research proposal and sign a declaration to the effect that it has been ensured that all data have been destroyed

I will not:

- (a) use the data outside the premises of my research entity ;
- (b) allow non-authorised users to access the dataset.
- (c) remove the data or any part of it;
- (d) release or publish any information or results which identify any individual record or may lead to the identification of any individual record.

I certify that I have read all of the above clauses that I understand that I am accountable for correct and responsible use of the data and data access system and that I understand that if I fail to comply with these clauses, my access to the dataset will be withdrawn.

Name: Theresa Raven Signature: [Signature] Date: 10/9/19

Witnesses

Witness 1 [Signature] Date: 10/09/19

Witness 2 [Signature] Date: 10/09/2019

Addendum A: List of Sources received

- CEM_Management of data analysis and statistics 2019-00 Rev 04
- Course Feedback Inhouse 2014
- Course Feedback Public 2014-02
- Document_ Record Mangement 2019 Rev 09
- Management of Change 2019-00 Rev 09
- Management of Customer Owned Property 2019-05
- Management of Delegate Assessment and Certification Rev 2019-11
- Management of Delegates Rev 2019-12
- Management of Finances and Quotations_Rev 2019-10
- Management of Internal Audits 2019-09
- Management of Projects_2019-07
- Management of Tutors & Staff 2019-00 Rev 13
- MOC Register
- Management_Course Content Material Rev 2019-14
- MOC Register
- Nonconformity, Corrective and Preventive Action 2014-05 Rev 12
- Operational Planning 2017 Rev 2017-07
- Operational Planning 2018 Rev 2018-07 CR
- Operational planning 2019 Rev 2019-06_Final
- Overview Management of Courses Rev 2019-02
- Procedure for Asset Management Rev 2019-16
- Procedure for Marketing and Publicity 2019 Rev 09
- Procedure Gen Risk Iden_Ass_Man Rev 2019-14
- Quality Assurance 2019-04
- Strategic planning 2017 Rev 2017-06
- Strategic planning 2018 Rev 2018-14
- Strategic planning 2019 Rev 2019-10
- Strategic Planning_Man_Review Procedure 2019-00 Rev 09
- Summary Course Feedback Inhouse 2015-01
- Summary Course Feedback Inhouse 2016-01
- Summary Course Feedback Inhouse 2017-00
- Summary Course Feedback Public 2015-00
- Summary Course Feedback Public 2016-02

APPENDIX F: EDITORIAL LETTER

Marielle Tappan
Wapadrand, Pretoria
Tel 072 474 1158
Email mteditorialinfo@gmail.com



Date of Edit: 14 October 2020

Edit: Theresa Bowen

To whom it may concern,

I, Marielle Tappan, trading under the name MT Editorial, hereby confirm that I am a language editor.

I have extensive experience in the field of language and publishing and received my Bachelors of Information Science in Publishing from the University of Pretoria. I am also a registered member of the Southern African Freelancer's Association.

I hereby declare that the editing done for any client is done with the utmost diligence and the full appreciation of the English language and all of its intricacies, as was done for edited sections of this document.

If there are any other queries, please do not hesitate to contact me.

Kindest Regards,

Marielle Tappan
Owner, MT Editorial
(BIS) Publishing
SAF03058, SAFREA

Marielle Tappan