Cape Peninsula
University of Technology

# THE IMPACT OF ISO9001 ON SERVICE DELIVERY AT THE LOGISTICS DEPARTMENT OF A BREWERY IN GABON

**By**

**Axel Henrick Nze Ayong**

**Dissertation (course-based degree with 50% dissertation) submitted in partial fulfilment of the requirements for the degree**

**Master of Technology: Business Administration**

**in the Faculty of Business and Management Sciences**

**at the Cape Peninsula University of Technology**

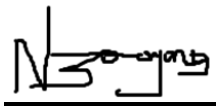
**Supervisor: Dr. Bingwen Yan**

**District Six, Cape Town**

**Date submitted: 13 October 2020**

## DECLARATION

I, **Axel Henrick Nze Ayong** , hereby declare that the contents of this dissertation represent my own unaided work, and that this dissertation has not been submitted previously for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

**Signed:**  **Date:** **13 October 2020**

## ABSTRACT

Over the past decade, under the increasingly competitive business environment, many sub-Saharan African ISO9001 certified firms are struggling continuously to improve their business processes. Adversely, the lack of continuous improvement after implementating ISO9001 in many services-oriented organizations in Gabon has contributed to the erosion of quality in service delivery. Thus, this study investigates the impact of ISO9001 on service delivery at the logistics department of a brewery in Gabon. The study also identifies the key factors affecting ISO9001 implementation in organizations and exploring standard measurements of ISO9001 on service delivery.

A mixed-methods approach, which includes both qualitative and quantitative methods were used in this study. The researcher used qualitative techniques to collect data from interviews, site observations, and document analysis. A questionnaire (n=135) was distributed in the company to obtain an understanding of the views of the respondents. Data were analyzed through the Statistical Package for Social Science (SPSS) version 24. The Cronbach's Alpha value was used to measure the internal consistency of the dataset, and the Spearman‘s rank correlation tests was used to assess on the sets of questions/ statements posed to the logistics department employees. Ethical issues were well-considered during the research process.

The research findings indicate that managers should ensure that employees are regularly trained, and, organizational culture is well established and understood by everyone in the organization.



**Key words:** ISO9001 standards, service delivery, quality management, customer satisfaction, and logistics department

## ACKNOWLEDGMENTS

Everything that I have done in my life was done by the grace of God. Without Him nothing could have been possible. I thank the Almighty for giving me all the necessary resources that were needed during this long journey of research. I thank Him again for making my life full of successes and happiness.

To my supervisor, Dr Bingwen Yan, thank you for supporting me in improving my academic knowledge. You have helped me to see how important research is. Through your knowledge, skills and experience.

This research could not have been completed successfully without the collaboration of the employees of the of the logistics department of Sobraga (LBV) who have been opened and very kind. I truly appreciated your commitment and involvement shown toward the completion of this study.

To my mother, Abore Nze Evelyne Pauline and my daughter Nze Ayong Laccruche Roselyn-Aubrey, for always supported me and inspired me through this academic journey. Thank you for your intention, your love and mostly your patience and dedication.

## GLOSSARY OF TERMS

| | |
|---|---|
| **Quality:** | The characteristics of an entity that bears on its ability to satisfy its stated and implied needs (Yang, 2001). |
| **Quality Management:** | Coordinated activities to direct and control an organization with regard to quality (ISO9000, 2005). |
| **Service:** | A combination of functionalities, which can perform a defined task, and provides corresponding information (Li & Wang, 2016). |
| **Service Delivery** | Involves the provision of expected or unexpected service or product, offered by one or more providers (entities or individuals) to customers /consumers in a specific context (Crous, 2004) referenced (Rierk, 2001). |
| **Continuous Improvement** | An integrative philosophy of management for continuously improving the quality of products or services and processes to achieve customer satisfaction" (Singh *et al*., 2015). |
| **Non-Conformity** | Non-fulfilment of specified requirements. See also defect, and imperfection (business dictionary, 2017). |
| **Customer Satisfaction** | The degree to which a customer perceives that an individual, firm or organization has effectively provided a product or service that meets the customer's needs in the context in which the customer is aware of and / or using the product or service (Reed *et al*., 1997). |

# TABLE OF CONTENTS

## LIST OF FIGURES

## LIST OF TABLES

## ABBREVIATIONS

| | |
|---|---|
| **BN** | Billion |
| **CI:** | Continuous Improvement |
| **CPUT** | Cape Peninsula University of Technology |
| **CS** | Customer Satisfaction |
| **HR** | Human resource |
| **JA** | Achievement |
| **KPIs** | Key Performance Indicator |
| **MMR** | Mxed method research |
| **QMS:** | Quality Management System |
| **PDCA** | Plan/Do/Check/Act |
| **PNC** | Prevention of Non-Conformance |
| **ROI** | Return on investment |
| **SMEs** | Small and Medium Enterprises |
| **SPSS** | Statistical Package Social Science |

# CHAPTER 1: SCOPE OF THE STUDY

## 1.1 INTRODUCTION

Over the past decades, service delivery has increasingly become an important factor in various industries. ISO 9001 Quality Management System (QMS) standard has been widely adopted by many food manufacturing companies (Sumaedi, Sik, and Yarmen, 2015) to achieve a higher quality of service delivery and to ensure that they maintain their competitiveness. The use of ISO9001 has also affected the development of international trade and economic growth worldwide. This exponential growth affected over one million organizations worldwide, which were certified independently in 2016 (Zuo, Wu & Xu, 2017: 354-366). The standard is set to meet the needs and compliances with any company (large or small, the entrant or existent business) engaged in any activity (Sivaram *et al*., 2012). ISO9001 serves as an essential procedure to establish quality criteria and improves use of the QMS (Saraiva, Rodrigues & Sampaio, 2011). Most companies implemented ISO9001 to set a framework for the realization of predetermined goals (Evangelos & Psomas, 2013; Sivaram *et al*., 2012; Spiegel; Sumaedi *et al*., 2015).

Nonetheless, the efficiency of the ISO9001standard is also overwhelmed with uncertainties and issues, as some of the findings on ISO9001 efficacy are often unreliable and imprecise (To & Tang, 2014). This research study engaged the extant litearure to debate ISO9001:2008's influence on service delivery at the logistics department within Sobraga brewery in Gabon. Sobraga is a brewery that located in Libreville in Gabon, West Africa. The company produces beer, alcohol-mix, cold drinks, and other beverages. Since ISO9001 has been implemented in many organizations worldwide, Sobraga also adopted ISO9001 standards in 2009 for its service delivery and quality improvements. However, the effectiveness ISO 9001 implementation is still questioned (Sumaedi *et al*., 2015). Therefore, this study looked into the impact of ISO9001 on service delivery at the logistics department of Sobraga brewery to explore the effectiveness of ISO9001:2008 implementation. This study hopes to provide insights concerning quality improvements so that the brewery can benefit from this study.

## 1.2 BACKGROUND TO THE RESEARCH PROBLEM

Several researchers have studied the ISO9001 standard implementation on organizational performance. Studies indicated that ISO 9001 standard impacts companies' return on assets (ROA), thereby, affecting their performance (Ochieng, Muturi & Njihia, 2015). The authors further illustrated that there was no distinction between ISO9001 certified companies and non-certified firms in terms of organizational profit and revenue (Ochieng *et al*., 2015). This implies that the ISO9001 standard has no direct influence on the profitability and productivity of companies. Although the standard has a positive impact on the net assets of organizations (Ochieng *et al*., 2015).

However, academics proposed an instrument to measure the effectiveness of ISO9001 implementation (Sumaedi *et al*., 2015). This instrument counts has eight dimensions, which are customer focus, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision making, and mutually beneficial supplier relationship are leading dimensions. The dimensions represent eight quality management principles that underline ISO9001 requirements (Sumaedi *et al*., 2015). An assumption is, therefore, that the ISO9001 standard has more impact on the quality of products or service delivery.

Scholars recommended that assessing the degree to which the pre-established objectives of ISO9001 certification are met should provide an evaluation of ISO9001performance (Aba, Badar & Hayden, 2015).

Since,there have been no studies, and no reports have been made available to determine the effectiveness of ISO9001 in the brewery since 2009. This research is to verify whether the brewery promotes continuous improvement.

## 1.3 STATEMENT OF THE RESEARCH PROBLEM

Continuous improvement (CI) consists of sustaining improvements to eradicate losses in the organization (Singh & Singh, 2015: 75-119). Others believe that an internal audit is a better approach when it comes to solving problems in organization systems with the use of business reportings, ethical behaviors and then, internal control (Shamsuddin & Johari, 2014:303). Furthermore, continuous auditing helps in automating the evaluation of trends and patterns in organizations (Anyanwu, 2018). Thus, the lack of constant improvement after implementating ISO9001 in many

services-oriented organizations in Gabon has contributed to the erosion of quality in service delivery.

## 1.4 RESEARCH AIM AND OBJECTIVES

Given the problem statement, the study aimed to explore ISO9001 effectiveness in service delivery at the logistics department of a brewery in Gabon. As such, the main research objective was to identify the elements that impact the CI of the ISO9001 standard to improve service delivery in the organization. Thus, the following sub-objectives were highlighted to deal with the primary objective:

- To determine the common measurements of ISO9001
- To investigate the assessment criteria of service delivery
- To determine the components affecting ISO9001 Implementation
- To investigate how the brewery evaluates ISO9001 effectiveness
- To determine the causes of organizational changes that came out after implementing ISO9001

## 1.5 THE RESEARCH QUESTIONS

The research questions used to address the objectives were:

- What are the common measurements of ISO9001?
- How can service delivery be measured?
- What are the key factors affecting ISO9001 implementation within organizations?
- How does the brewery company measure ISO9001 implementation on service delivery within a particular department?
- What are the potential organizational changes that take place after implementing ISO9001?

## 1.6 OVERVIEW OF LITERATURE REVIEW

This section first deals with the definition of service delivery; the second section deals with the key concepts of ISO9001, and the third section, the discussion, explains the benefits of ISO900.

### 1.6.1 ISO9001 Concepts and service delivery

Service is described as a set of functionalities, which can perform a defined task, and provide corresponding information (Li, Wang & Liu, 2016). According to Tseros (2015), ISO9001 focuses on the following key concepts as the force drivers: the context of an organization (the context will influence the type of management required within an organization), leadership, planning, support, and then, performance evaluation. Marija (2016:264) asserts that the implementation of ISO9001 enhances service delivery by bringing new customers, building customer loyalty, customer satisfaction, developing the understanding of customer's requirements and confidence, and improving the service quality, etc.

### 1.6.2 Factors affecting ISO9001 Standard

The factors affecting ISO9001 are essential elements that require inspection and classification to establish adequate management and successful implementation of a system within an organization regarding its sector of activity or industry. Based on the relevant literature, the key factors that affect ISO9001 are the followings: Absence of management engagement, resistance to innovation (change), absence of sufficient training for management and employees, high implementation and maintenance costs, lack of technical expertise and skills and poor-quality system design (Keng & Kamal, 2016; Willis *et al*., 2016).

#### 1.6.2.1 LACK OF MANAGEMENT COMMITMENT

The literature defines organizational commitment as the active involvement of an individual within an organization (Kleine & Weienberger, 2014). Some studies support that a relationship exists between organization commitment and the delivery of a service in organizations (e.g., Dhar, 2015; Shim, 2016; Kumasey, Bawole & Hossain, 2017). While, researchers assert that, management commitment is imperative to service delivery in organizations. Thus, academics argue that a lack of management responsibility also affects ISO9001 implementation (Keng & Kamal, 2016:23; Mehfooz & Saeed, 2015).

#### 1.6.2.2 RESISTANCE TO CHANGE

Organization changes affect the relationship among employees in an organization. Fear, and anxiety of losing job security, job satisfaction and individual control over

workplace change may lead to resistance (Willis *et al*., 2016; Yılmaz & Kılıçoğlu, 2013). Employees' resistance to change could impact negatively on work performances, and further causes severe damages to work relationships between management and employees. By contributing to the change process, top management must improve internal support to reduce resistance to change (Fernandez & Rainey, 2017). Therefore, employees' resistance is a critical issue to consider when implementing ISO9001 since employees must enforce and apply every change (Keng & Kamal, 2016:1-23; Mehfooz & Saeed, 2015:2319-7668).

#### 1.6.2.3 LACK OF TRAINING FOR MANAGEMENT AND EMPLOYEES

Practice is crucial for the organizational level of management to understand and to familiarize themselves with the quality management concepts (Keng *et al*., 2016; Psomas, Pantouvakis & Kafetzopoulos, 2013; Mehfooz *et al*., 2015:66-67). Indeed, training practices, qualify the top management, or executives to build a better working environment that improves employees' performance (Elnaga & Imran, 2013). Although, researchers assert that training impacts positively on employee's commitment, providing training to employees and top management alone is not enough (Brum, 2007).

#### 1.6.2.4 HIGH IMPLEMENTATION COST AND MAINTENANCE COST

An effective implementation of a QMS demands a high operational cost (Keng at al., 2016:23). High costs may contribute to unwillingness to implement ISO9001 QMS as an organization needs to ensure that the revenue covers all related expenses (Keng *et al*., 2016; Psomas *et al*., 2013; Mehfooz *et al*., 2015:66-67). Furthermore, researchers affirm that one of the negative aspects of implementing ISO9001 is that, there is a high cost of certification, implementation, and sustaining the system (Zimon, Gajewska & Bednárová, 2016).

#### 1.6.2.5 LACK OF TECHNICAL EXPERTISE AND SKILLS

Academicians define skills as the abilities of people for which there is an interest within a free market (Mbumbo, 2015). Green *et al*. (2012:187) share that such skills are obtained through training, education, and experience. Along these lines, Mangula *et al*. (2013:14-19) stresses that ISO9001 implementation can be caused by poor practices. While, Keng *et al*. (2016:23) note that an interruption could occur if there is no expertise or quality consultant when implementing ISO9001. Many other academics

also claim that a lack of involvement of quality consultants could lead to rejection by employee's, frustration or a total refutation by external (Ntuli & Allopi, 2013).

#### 1.6.2.6 POOR QUALITY SYSTEM DESIGN

An unfavorable quality policy contributes to the limitation of the implementation of ISO9001 Standard initiatives (Wesonga, 2014:32). Likewise, Mangula *et al*. (2013:14-19) asserts that the organization may fail to identify essential requirements of quality management. The lack of an adequate mechanism for making decisions can also become an obstacle to implement QMS (Kontogeorgos & Semos, 2006; Juran, 1993; Karipidis *et al*., 2009).

The selection of the wrong components, innovative designs, approving inadequate products, consumer selected products, and quality of design workers (Sawczuk, 1996) also lead to poor quality design. The factors affecting the implementation of ISO9001 Standard were short-sighted as plenty of factors exist based on the organization level of development and industry.

### 1.6.3 Common measurements of ISO9001 on service delivery

ISO9001 can be very beneficial regarding the industry and organizations mainly in West African countries. Studies addresse that ISO9001 has excellent benefits to service delivery in organizations (Psomas *et al*., 2013; Njenga, 2013; Ismyrlis *et al*., 2015). Tseros (2015), argues that ISO9001 provides national and international procedures and criteria to companies for satisfying customers' needs with quality products or services. The British Standards Institution (BSI) (2015:4), in its guide, defines ISO9001 as a set of requirements uses to operate a QMS, and it is the international best practice when managing quality.

The study discusses some of the benefits of the ISO9001 QMS on service delivery, in respect of continuous improvement (CI), non-conformities, customer satisfaction, process improvement, employees' motivation, communication, and finally, job design at the breweries in Gabon.

#### 1.6.3.1 CONTINUOUS IMPROVEMENT

Singh (2015: 75-119) believes that CI is a practice of sustained improvements purposing the eradication of losses in organizations. The CI concept centres on

improving processes to enable firms to provide stockholders what they want at any time. Some other sources clarify that CI is principally a small step-by-step incremental improvement approach. A recent study shows CI, allows an organization with strong capabilities to adapt to changes and to be sustainable within its industry (Alolayan, 2014). CI is a never-ending sequence of minor changes through the PDCA cycle in an organization (see Figure 1.1). Firms continuously improve their systems to avoid wastes or non-conformities. Thus, the following subtopic deals with non-conformities.

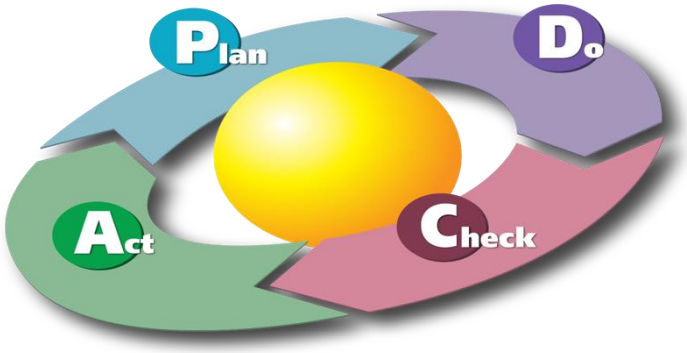



Figure 1. 1: Continuous Improvement Process
(Source: Abhijit, 2016)

#### 1.6.3.2 NON-CONFORMITIES

A “non-conformance” is described as an unplanned situation, unfamiliar inconsistency, or a deviation from an accepted instruction (i.e., batch record, specification, test process, policy, protocol, and defection; Fochios (2013:1-12). Non-conformities refer to the actions taken by a firm or service supplier in response to a service disappointment. Service defection can occur when customers stop buying from a firm, or when they ask for restitution (Honore, Marimo & Casadeuss, 2013). Thus, ISO can benefit operations by reducing wastage of materials, increasing efficiency, improving the quality of product or service, better control of sub-contractors, reducing operational costs, and boosting production (Keng *et al*., 2016).

#### 1.6.3.3 CUSTOMER SATISFACTION

Researches support that customer satisfaction is one of the most important stimuli for the adoption of the ISO9000 standards on quality (Alolayan, 2014). Several articles published indicate that ISO9001 increases clients’ confidence and also increases client satisfaction on quality (Okwiri & Owino, 2013; Keng *et al*., 2016). Moreover, implementation of IS0 9001 helps organizations to improve sales through new

customers and build better relationships with subcontractors (Sumaedi & Yarmen, 2014:436-444). Customer satisfaction is more or less achieved if organizations understand their customers' needs and expectations. However, Customers' satisfaction depends upon the quality of services provided (Subashini & Gopalsamy, 2016).

#### 1.6.3.4 EMPLOYEES MOTIVATION

Kamalian (2010: 165-171) advocates that employees who are motivated have their goals and objectives aligned with those of the company and guide their efforts in that direction. Furthermore, these firms are more effective, as their staff continuously seek ways to improve their tasks (Dobre & Ovidiu-Iliuta, 2013). A motivated and skilled employee is important for any organization that seeks to enhance productivity and satisfy its customers. In this case, motivation is perceived as the willingness of people to perform and take action towards company goals (Dobre & Ovidiu-Iliuta, 2013). The task for managers is to find out ways to develop and preserve employee's motivation. On the one hand, executives should consider minimizing job displeasure, for instance, conditions of work, wage, inspection, communication with colleagues. On the other hand factors such as work achievement, job recognition, shared responsibility, and the work itself should be used to motivate employees.

#### 1.6.3.5 COMMUNICATION

Psychologists define communication as the human language that transmits information (Beattie & Ellis, 2014). While Fussell and Kreuz (2014:6) share that efficient communication is indispensable to success in an organization. On top of that, communication is a vital tool for attaining organisational goals (Miller, 2014). Furthermore, Valmohammad & Kalantari (2015:503-518) point out that ISO9001 increases and improves organizational communication. Lui (2015:741-751) agrees, using the case of travel agencies in Kenya, that the implementation of the ISO9001 enhances the effectiveness of internal communication (internally and externally). The implementation of ISO has led to an increased relationship between employees and management through the improvement of internal communication channels (Valmohammad & Kalantari, 2015:503-518).

#### 1.6.3.6 ORGANIZATIONAL CHANGES

Change is about transforming organizations' processes from the present state to the desired expectation state (Fritzenschaft, 2014 extracted from Kumar, 2014:9). Change

management is argued to be steps of guidance and improvements, which are aimed at accomplishing the objectives for change (Mgquba, 2017). Others shared that change occurs when companies want employees to be more involved in the organization's activities (Mgquba, 2017). Adeniji, Osibanjo, and Abiodum (2013:20) stress that change occurs when many companies are motivated to actively seek for ways to improve their products and services to compete in their industry.

Therefore, this requires the cautious assessment of some changes as they will directly impact the organization's processes, people, and procedures, while others can be safely overlooked (Willis *et al*., 2016).

## 1.7 OVERVIEW OF RESEARCH DESIGN AND METHODOLOGY

This section explained the research design, the research methods, and techniques for data collection. The purpose of this study was to analyse ISO9001 impact in a selected department at the brewery of Gabon. The study included the inputs of respondents from the company as well as three interviews with a quality manager, human resource (HR) assistant, and the logistics department manager.

The review of the extant literature informed the construction of the research questions and questionnaire items. Primary data were collected from random employees relevant to different services within the company.

This research investigation questionnaire consists of three separate sections, and a total of 135 research questionnaires were administered to employees. The questionnaire was used as a data collection tool and consisted of structured and open-ended items.

### 1.7. 1 Research Design

A research plan is a guideline and a framework that was consulted during the research journey to collect data, accurately and objectively as possible, Kumar (2014:35-38). It claims that the research method is a strategy for data collection or facts that helped the study to answer the research problem (Merriam *et al*., 2015; Dreyfus *et al*., 2015). The study used an exploratory sequential mixed method, which consisted of both quantitative and qualitative approaches in this case study research (Berman, 2017).

Sobraga is a brewery company based in Gabon, which produces and sells beers, water, and other beverages. The company consists of several departments that run its entire supply chain. These departments work employ with several people in each area. From the production line to the commercialization of the products there are several activities, data, documents that help the company to make its sales. The firm offers facilities that help employees from any function to share their work experience. Thus, based on the way the company is structured, the case study methodology was adopted.

The case study research approach refers to a study that emphasizes a single individual, event, organization, or process (Rudestam & Newton, 2015:55). It focuses on the study of a phenomenon within its real-world context. Furthermore, it also presents a choice regarding anonymity of respondents (Edmonds & Kennedy, 2017).

Several case study methodologies use questionnaires and descriptive research techniques such as interviews and observations. In general, a case study frequently asks the type of questions such as “what,” “How,” and “Why” (Neuman, 2014). This study looks into the “impact of ISO9001 on service delivery within the logistics department at the brewery in Gabon”. Thus, the case study approach is more appropriate for the study.

The case study research approach was the principal methodology used in this study. Because the research strategy was to investigate a particular area of the company in its natural context activities included supporting sources of data. The data were collected through interviews, observations, documents, talking to employees, collecting data from them and observing their activities, gathering information from the minutes of meetings and then, collecting data with the questionnaires. Thus, exploration was facilitated by the use of the case study. The following section detailed how the data were collected.

### 1.7.2 Research methodology

An exploratory mixed-method approach was adopted in this study, exploring both qualitative and quantitative research methods. The mixed methods research is frequently pointed out as the “third methodological orientation” that carries both methods (quantitative and qualitative) in researches studies.

McMillan and Schumacher (2014:33) assert that the qualitative approach and quantitative research method helps the researcher to deliver a complete or holistic investigation. The central assumption of this form of study is that the mixture of qualitative and quantitative methods gives more depth of knowledge than either one method alone (Creswell, 2013-2015; Kerrigan, 2014; Plano Clark *et al*., 2013; Merriam *et al*., 2015). Other researchers have entitled them strategies of inquiry (Denzin & Lincoln, 2011:12). Although several design approaches exist in the mixed methods ground such as:

- Descriptive mixed methods,
- Explanatory sequential mixed methods, and,
- Exploratory sequential mixed methods.

For the sake of this study, the exploratory sequential mixed method research (MMR) was used to widely explore and interpret QMS practices and choices of the brewery of Gabon. Burns and Grove (2001:374) assert that exploratory research is used to collect new views and opinions of a phenomenon. In an exploratory design, qualitative data is primarily gathered and study, and questions are used to guide the development of a quantitative approach to further examine the research problem (Creswell & Clark, 2011; Teddlie & Tashakkori, 2008; Onwuegbuzie *et al*., 2010). This explains the reason for exploratory research to find out how the brewery contributes to poor QMS practices. **Figure 1.2** shows: exploratory sequential mixed method steps.

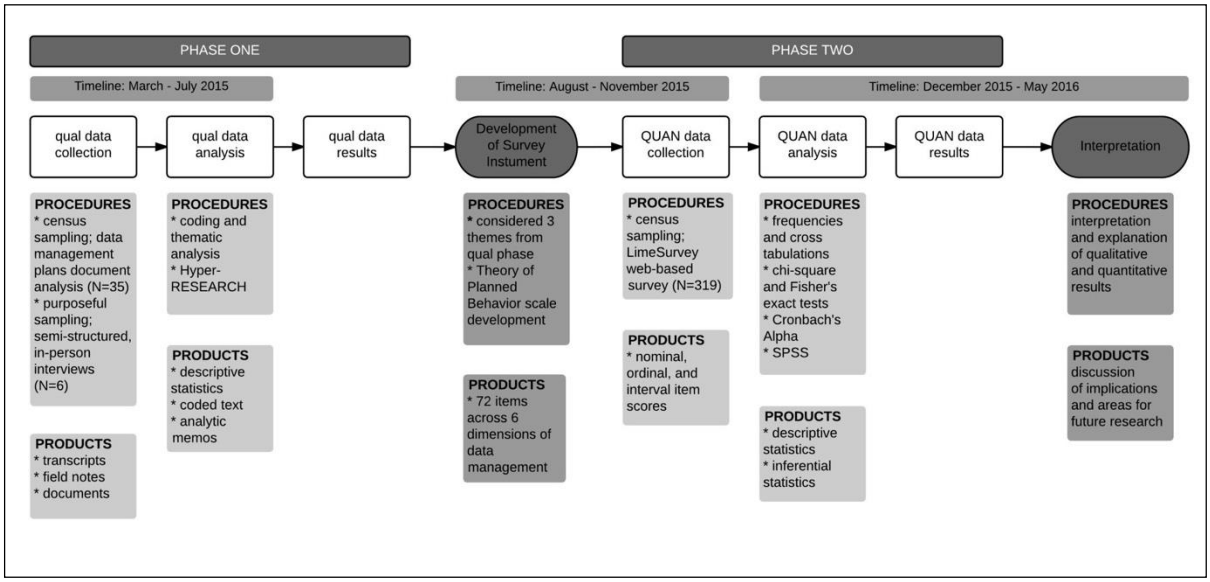



Figure 1. 2: Exploratory sequential mixed methods steps

(Source: Elizabeth, 2017)

The qualitative research method commonly has no numbers or figures but utilizes words, descriptions, and citations to investigate the phenomenon (Shields & Twycross, 2003:23). According to Yin (2011:7), the following five essential aspects need to be considered when dealing with qualitative research:

- Studying people's living standards in real-time,
- describing people views,
- defining people's living conditions,
- Seeking to take advantage of many sources or facts instead of a single source.

Information provided from the qualitative data collection method helped the investigator to understand the participants' perceptions and experiences regardless of the factors that contributed to the lack of continuous improvement after implementing the ISO9001 standard.

The quantitative research approach, also known as the positivist, traditional, or experimental method (Leedy & Ormrod, 2001:101), was the second approach used for this research study. This methodology consisted of analysing research objectives while assessing the correlation among variables. Thus, numerical data were treated using computable methods (Creswell, 2013). This approach relies on numbers and statistical analyses (Lutz & Knox, 2014).

The use of quantitative research was to explore and understand a central concern that has been investigated. Thus, the following steps have been followed for the quantitative research methodology in **Figure 1.3**.

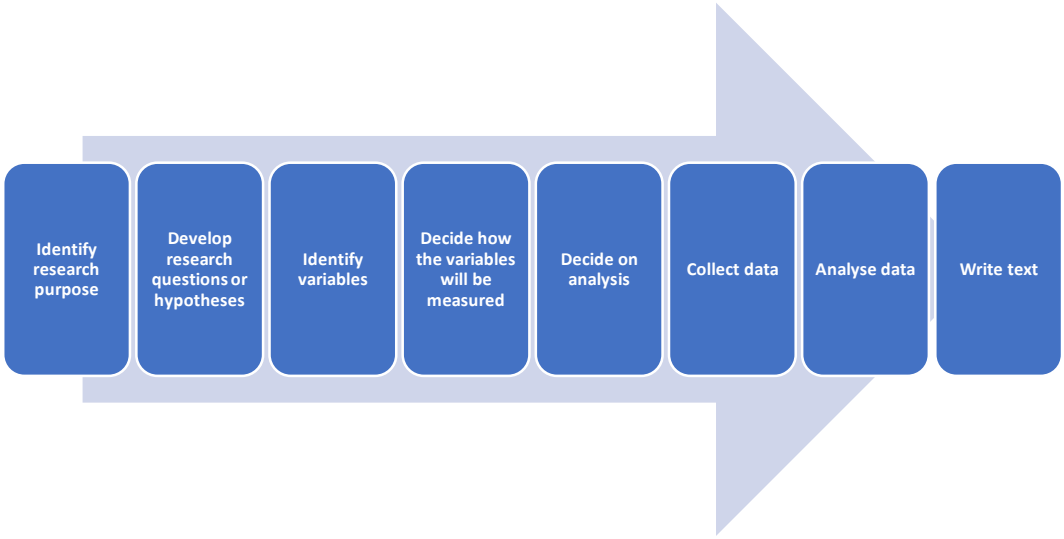



Figure 1.3: The Quantitative Research Process

(Source: Woodrow, 2014)

Quantitative researchers employ several approaches for data collection. The purpose of the qualitative research method used in this research was to pursue an in-depth investigation of the matters that arose from the quantitative data (McMillan & Schumacher, 2014:431).

### 1.7.3 Research population and sampling

#### 1.7.3.1 POPULATION

The logistics department selected for this study is one of the breweries of Gabon departments with a workforce of more than two hundred people. A population is defined as a group of people or events from which a sample is taken and to which outcomes can be most relevant (McMillan & Schumacher, 2014:5). Among those employees, one of them is directly responsible for the logistics department activities and operations.

As a result, the perception and opinions of managers and employees at the different sections of the department may vary. All employees from the logistics department, the human resource department and the quality department were asked to participate in the study. The reason for including all employees and managers in the study was to give an unbiased examination of the opinions of employees and managers concerning ISO9001 implementation.

#### 1.7.3.2 SAMPLING

One hundred and ninety-two people were working in the logistics department by the time the questionnaires were distributed, and one hundred and thirty five questionnaires were issued. In fact, questionaires been distributed based on people who were available for answering the questionaire. This is why hundred and thirty five questionnaires where distributed. Amongst the questionnaires that have been issued, only One hundred and twenty-seven completed questionnaires were received back by the researcher. The sample, therefore, is a group of subjects' representative of a specific population, from whom data are collected. The sample size represents a group of individuals' representative of a given population where the research data is gathered and collected. A purposive sampling method was applied to the qualitative part of the study. The interpretation of data gathered from surveys helped to construct the best questions to be asked to an employee of the logistics department during face to face interviews.

The researcher used cluster sampling for the quantitative stage, and the different groups of workers were selected randomly to complete the questionnaire. The cluster sampling method helps to reduce and clarify the process and make it dynamic (Leedy & Ormrod, 2010:209-210).

The logistics department was selected to enable the researcher to understand the barriers that influence the lack of continuous improvement in the department. The quality department that supervises employees on quality matters was intentionally chosen as a key informant and as a rich source of information. The reason for selecting the quality deparment was to explain how the QMS was implemented and supported by the quality department. The HR department was selected as a reliable source of information, and was able to elaborate on the different forms and factors leading to the erosion of the QMS. Another reason for selecting this department is that this department is in charge of planning employees' training and skills development.

### 1.7.4 Data collection

Ravitch and Carl (2015:438) define data collection as a "series of related, iterative processes". Furthermore, data collection is a function of identifying documents or facts, studying their authenticity, chronologically classifying them, and then identifying value or impact on the research effort (Gupta & Awasthy, 2015:29). Thus, "In this regard, data are generated and co-constructed rather than simply collected" (Roulston, 2013). The case study research employs many data collection approaches to develop a detailed description of the case (Saracho, 2015). Thus, this section detailed the data collection methodologies that were used in this study.

A mix of both qualitative research methodology and quantitative research approach was employed. An in-depth interview with the manager of the department and a questionnaire was administered to 135 internal and external employees. Content analysis was conducted for qualitative data, and the descriptive outcomes were achieved by using the SPSS software package.

### 1.7.5 Qualitative data collection design

For the qualitative research purpose, the following methods were applied for data collection.

#### 1.7.5.1.1 PARTICIPANT OBSERVATION

Participant observation consists of participating in the activities of the sample being observed, in the same way as a normal customer, and this with or without exposing what he or she is witnessing (Kumar, 2014; Willig, 2014; Green & Thorogood, 2014:152-156). This method requires that the investigator instantaneously observes and be involved as much as possible in the social experience he/ she is trying to document (Hume, Lynne & Jane, 2004). Reviews define participant observation as the primary approach used by anthropologists conducting research on the ground (Kawulich, 2005). Fieldwork implies, actively looking, enhancing memory, unstructured interviewing, writing notes, and perhaps most significantly, patience (Dewalt & Dewalt, 1998).

The reason for this method is that, by being on the ground and actively being included in the exchange at hand, the investigator came closer to understanding and experiencing the insider's perspective.

#### 1.7.5.1.2 INTERVIEW

An interview is defined as a face-to-face conversation in which the interviewer questions the participants using a set of questions to gather and collect data. It also allows the researcher or the interviewer to learn about the perception or the opinion of the participants (Yin, 2013; Franzel & Bezuidenhout, 2014:7).

An open-ended interview is more or less a normal conversation in which the intention is to analyze the ideas or views of the participants about the phenomena (Creswell *et al*., 2017:93; Green & Thorogood, 2014). It is an interview with no predefined structured questions, and the interview is much needed for exploration (Merriam *et al*., 2015:111).

The semi-structured interview was used in this research study. It is based on a line of inquiry predefined by the researcher (Creswell *et al*., 2017:93). Lichtman (2013:208) says that in this interview, the moderator develops a set of questions and has a preconceived strategy to proceed. The questions can be modified if needed. Moreover, in the semi-structured interview, the investigator will have to ask each participant to describe their understanding of the phenomenon (Anfara & Mertz, 2014).

A face-to-face interview with three different people from the logistics department, the quality department , and the HR department was conducted during the course of this research.

#### 1.7.5.1.3 DOCUMENT ANALYSIS

According to Bowen (2009:32) content analysis is a form of qualitative data collection which consists of first-pass document review giving the investigator a means of determining significant and pertinent passages. The objective of this method is to methodically convert a large amount of transcript into a highly structured and organised summary of key outcomes (Erlingsson & Brysiewicz, 2017). Academics acknowledge three primary categories of documents (O'Leary, 2014):

- Public Records: include ( student transcripts, mission statements, annual reports, policy manuals, student handbooks, strategic plans, and syllabi),
- Personal Documents: include (calendars, e-mails, scrapbooks, blogs, Facebook posts, duty logs, incident reports, reflections/journals, and newspapers), and,
- Physical Evidence: include (flyers, posters, agendas, handbooks, and training).

The researcher selected this qualitative approach and was careful to avoid bias or errors during analysis and results (Erlingsson *et al.*, 2017).

### 1.7.6 Quantitative data collection design

The quantitative data collection method can be characterised by primary data collection and secondary data collection.

#### 1.7.6.1 PRIMARY DATA COLLECTION

The primary data collected implied directly gathering feedback from the employees. In this data collection method, investigators collect data from surveys, experimental, and observational approaches. Questionnaires, observations, and interviews were the primary data collection tools used for this case study. Neelankavil (2015:161) defines a questionnaire as a group of structured questions based on a particular research objective. Additionally, Uwe (2015:134) states that questionnaire studies consist of receiving an equivalent answer from all respondents. This approach consists of a variety of written questions used by participants to record their views. It is an

appropriate data collection tool for the researcher to find out what is needed and how to measure the variability of interest (Sekaran & Bougie, 2016:236).

Based on the nature of this research, the questionnaire, interviews, observations, and document analysis were used as the primary data collection methods in this research.

#### 1.7.6.2 SECONDARY DATA COLLECTION

Emerging researchers emphasized that data can be collected from previous research studies that have been elaborated on in wide-scale databases, enabling a productive base for testing forecasts (Merianne *et al*., 2016; Neuman, 2014; Edmonds & Kennedy, 2017). This defines what is meant by secondary data collection.

In this research study (case study), the researcher himself collected data at the brewery, hence this is primary data collection.

### 1.7.7 Data analysis

#### 1.7.7.1 DATA VALIDITY AND RELIABILITY

Two principal concepts that speak to the quality of the research are, validity and reliability. Validity refers to accuracy and reliability to the issue of consistency. These concepts are especially important when establishing the research design and planning methods.

##### 1.7.7.1.1 DATA VALIDITY

"In qualitative research, the choice and sequencing of methods are vital to the validity of a study" (Ravitch *et al*., 2015:402). Validity consisted of determining to what extent an empirical measure adequately attests to the real significance of the theory under investigation (Green & Thorogood, 2014:227; Stopczynski, 2014:310; Saracho, 2015). Moreover, the validity of elucidation is the "veracity" of that elucidation. Given these facts, qualitative research helps the study to provide facts from the data for each elucidation that will be made.

##### 1.7.7.1.2 DATA RELIABILITY

Reliability indicates the "repeatability" of survey analysis. It is the likelihood that a similar piece of investigation would produce related kinds of themes (Green & Thorogood, 2014:152-229; Creswell, 2015:182). Furthermore, the trustworthiness of

an assessment is gleaned by examining its consistency and stability (Sekaran & Bourgie, 2013). Thus, Cronbach's alpha reliability coefficient was used to indicate how well the outcomes correlate with one another.

## 1.8 ETHICS

Academics define ethics as the fact of doing what is good and right relative to oneself, the company and stakeholders, and abiding by the firm's values and applicable codes governing the way the service should be delivered (Kumar, 2014:35-38). Furthermore, ethics is a requirement of research studies so that the researcher acts in a manner that is ethical and that considers the rights of people who are involved in the research (Olson & Izabela, 2016). It is also a formal practice, necessitating approval from an ethics committee before any investigation can commence. It has two principle guidelines, namely, informed consent and confidentiality (Franzel & Bezuidenhout, 2014:275).

The research participants were all notified in advance about the objectives of the investigation before consenting to participate. The HR department has informed all employees about the investigation via a note that was shared amongs them. Respondents were able to voluntarily opt-in to participate in the study and withdraw from it if they no longer wished to participate.

## 1.9 RESEARCH ASSUMPTIONS

Leedy and Ormrod (2001:62-63), share that assumptions are what the investigator takes for granted. In the meantime, assumptions are beliefs and ideas that are considered truthful (Patidar, 2013). Thus,the following assumptions are upheld with respect to the research in this research study:

- A well established and implemented QMS is indispensable to drive and increase business performance,
- It is assumed that the findings would help the brewery to effectively manage and make comprehensive decision to improve their processes.

## 1.10 RESEARCH CONSTRAINTS

Constraints are the limits on the research study that are out of the researcher's control, for instance, time and access to information, financial resources and so on. Qualitative research limits include the limits of theoretical sampling, limits of interviewing, limits of

participating observation, limits of quality content analysis, limits of qualitative analyses of documents, and limits of qualitative research conclusion (Franzel & Bezuidenhout, 2014:275; Uwe, 2015:94). The limitations of this research were the time, distance (because data were collected in Gabon), access to information (there were misunderstandings because some participants did not understand the purpose of the research), the budget (since the researcher had to travel for data collecting in Gabon). Furthermore, the investigation was also limited due to the lack of reports or data that showed any defect related to service delivery.

## 1.11 SIGNIFICANCE OF THE RESEARCH

Should the Gabon brewery decide to value the findings and integrate the recommendations of this research, (i.e., used the suggested effective quality management tools for improving service delivery within the logistics department), such a decision will lead to the improvement in Sobraga's process, including both service delivery and customer satisfaction. Furthermore, the academic society will benefit from significant knowledge that is exclusive to the relationship between effective service delivery and ISO901 implementation.

## 1.12 RESEARCH CHAPTER AND CONTENT ANALYSIS

Chapters and content analysis used in this research are the following:

- **Chapter 1:** Scope of the research: The research structure; the scope of the research was entirely highlighted with the introduction and orientation as it pertained to the organization, which formed the research site for the research investigation. Additionally, the research background and all the other sections of the research study were debated; for instance, the problem statement, research questions, research objectives, research design, and methodology.
- **Chapter 2** – Literature review: Presented the theoretical framework of the research. This section broadly reviewed the findings of other authors worldwide on the subjects of the effect of ISO9001 on service delivery.
- **Chapter 3** – Research design and methodology: The research design and methodology were discussed in detail. The results of other study designs and data collection approaches were also discussed.
- **Chapter 4** – Background to the research environment: Presented holistic views of the research environment (i.e., ISO9001 within a service company), which included the implementation of ISO9001 QMS in the private sector or industry.

- **Chapter 5–** Data analysis and discussion: This chapter interpreted the findings of the study and provided a detailed discussion of the study results. These were based on Cronbach's alpha outcomes.
- **Chapter 6 –** Conclusions and recommendations: provided the conclusions determined from the research objectives and offered invaluable recommendations derived from the outcomes of the research.

## 1.13 SUMMARY

This chapter highlighted the orientation of this research study, an introduction to the research background, the problem statement of the research, research question, and objectives. Furthermore, Chapter 1 highlighted the scope of the research. While Chapter 2 shows the literature reviews of the research. Chapter 3 involved an outline of the research design and methodology. Chapter 4 presented an overview of the research case – Sobraga producer Castel Group. Chapter 5 pointed out the research data analysis and discussions, and ethics, subjects which are debated broadly in Chapter 3. Finally, Chapter 6 provided research assumptions, research constraints, and the significance of this research project.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 INTRODUCTION

The tertiary industry has grown considerably these pass decades with the implementation of new sets of organizational standards such as ISO9001 quality management Standard that plays a huge role in a competing environment. Research studies ha mostly focused on the manufacturing industry when conducting the literature on quality management and operation management (Lee, To & Yu, 2009). Nevertheless, some literature stressed that the service industry is important to the economic world (Machuca, Gonzalez-Zamora & Aguilar-Escobar, 2007). A quality management system (QMS) is defined as a combination of rules and procedures aiming to ensure that a product, service, or process meets a pre-determined set of requirements or standards (Vloeberghs & Bellens, 1996).

It is of the importance that government departments, statutory bodies, and organizations have to undergo incremental change if they want to be more efficient, effective, competitive, and sustainable (Piana & Torres, 2003; Saner, 2002). The ISO9001: 2008 standard is a universal standard used by many organizations from all sectors private or public, large and small within any industry such as the service industry (Walker & Johnson, 2009; To, Lee & Yu, 2011). ISO9001 Standard was implemented in many organizations for years in several countries worldwide and the literature debated on the applicability and effectiveness of ISO9001 in the service industry (Heras-saizarbitoria, Iñaki & Boiral, 2013)

Other literature reviews focused on ISO9001 implementation in the production industry, for instance, the study on Effect of Quality Management Systems (ISO9001) Certification on Organizational Performance in Tanzania: A Case of Manufacturing Industries in Morogoro (Mangula & Karugira, 2013) reported that there was a dearth of reviews on ISO9001 implementation aspect within a specific department in the manufacturing company.

This chapter highlighted the reviews from preceding research studies that helped the researcher to understand the concepts and theories of ISO9001 and the impact on service delivery in a service department. This assisted in producing the conceptual framework of the research study. The chapter is organized as follows: the first part

consists of the documentation review to define ISO9001 effectiveness. The second part deals with the concept of ISO9001 and service delivery and factors influencing ISO9001, followed by the common measurements on service delivery, and then the impact of organizational change on the implementation of the QMS.

## 2.2 EFFECTIVENESS OF ISO9001

ISO9001 is a part of international standards that define regulatory principles of the control of quality. It highlights certification requirements and provides directions on how to establish them for managing and monitoring procedures, processes, and product or service quality (Lee *et al*., 2011). They further added that ISO9001 aims to facilitate international trading and improves organizational effectiveness.

According to Walker and Johnson (2009: 85-105), ISO9001 standard is not used to increase performance only, it is also used to determine the ways by which the QMS standards may be achieved, and by which the level of efficiency of the QMS may be reinforced. “Effectiveness” is determined by the extent to which the intended implementation is achieved (Neely & Platts, 1995; Dumond, 1994).

Academics assert that assessing the degree by which the QMS’s planned intentions are achieved one would need to evaluate ISO9001 implementation (Van der Spiegel, de Boer, Luning, Ziggers & Jongen, 2007). Carrying on with this argument, the same researchers furthermore, point out that the standard aims to prevent nonconformities, customer satisfaction focus and continuous improvement which are also determined by the standard itself and many academics (Chiarini & Vagnoni, 2015; Honore *et al*., 2013; Chinman & Ebener, 2012) confirmed the three primary ISO9001 objectives that define ISO9001 effectiveness.

Additionally, other authors think that effectiveness is linked to outcomes, consequences, and results (Gounaris, Panigyrakis & Chatzipanagiotou, 2007). Unlike, these authors Kam and Tang (1997:909-28) state that there is effectiveness if the QMS meets the prescribed quality requirement and objectives. Thus, from the effectiveness of ISO9001, the literature review will guide the study through the concept of ISO9001 and service delivery.

### 2.2.1 Quality Management System Definition and role (QMS)

Solomon, Bester, and Moll (2017 extracting from Sousa and Voss, 2002:91) define QMS as “the execution of quality philosophies such as service and product quality, customer focus and continual improvement.” The (QMS) standard, ISO 9000 (2000:1), indicates that the QMS helps companies in improving customer satisfaction. The QMS system encourages firms to inspect customer exigencies. The QMS defines the mechanism that contributes to the successful completion of a product to the satisfaction of the customer and holds these mechanisms under control (Smith, 2013). It provides certainty to the company and its customers that it can provide products that always fulfil the requirement (ISO9000, 2000:1).

## 2.3 THE CONCEPT OF IS09001 AND SERVICE DELIVERY

### 2.3.1 ISO9001

Among the quality standards ISO series, ISO9001 is the most popular and the most used. It has already been upgraded from the fourth revision of the 9001 standards of 2008, which was more customer-focused than older versions of the ISO9001:2015 (Tseros, 2015). Unlike the fourth version, the fifth version focuses on organizations, leadership, and planning, support, and achievement evaluation (ISO9001:2015). The ISO9000 family series meets several features of QMS and covers a couple of ISO’s most well-known principles.

The ISO9000 standards deliver planning and instruments to firms to ensure that products and services achieve customers’ needs and that quality is frequently enhanced (ISO9001:2015). Academics stress that ISO9000 Standards are placed alongside TQM in the effort towards continual improvement and customer satisfaction (Coleman & Douglas, 2003; Gotzamani, 2005). The ISO9001 QMS could be implemented in any organization, large or small, based on the business sector (ISO 9001:2015). Researchers also add that the ISO series applies to all firms, large or small, service, or the manufacturing industry (Heuvel *et al*., 2005).

Since the establishment of the ISO9001 series, more than one million firms and organizations in more than 170 economies are ISO9001 certified (ISO 9001, 2015). Past studies have revealed that the sector with the most growth was the services sector

(Heras-Saizarbitoria *et al*., 2011), which has been a signal for the expansion of the standard across all industries of the economy (Vasileios, Moschidis & Tsiotras, 2015). Gabon is no longer the exception in this trend of companies to implement the QMS.

### 2.3.2 Service Delivery

The extant literature abounds with discussions about the definition of the word "Service". In the study conducted on the Service Intelligence Oriented Distributed Data Stream Integration, service is described as a combination of functionalities, which can perform a defined task, and provides corresponding information (Li, Wang & Liu, 2016). Vargo and Lusch (2004:324-35) define service as the implementation of specialized capabilities and skills through actions, processes, and performance for the advantage of the entity itself or another one. Evaderdson *et al*. (2005:107-121) comment that the essence of service is the experience generated for customers while in contact with a service provider (a firm, team, or individual). In this case, this experience has the following two components: core quality and delivery quality.

Thus, service delivery involves the provision of expected or unexpected services or products, provided by one or more providers (entities or individuals) to customers /consumers in a specific context (Crous, 2004 extracted from Rierk, 2001).

Since the implementation of the ISO 9000 series, many companies have faced glitches before and after the ISO 9001 implementation (Chow-Chua, Goh & Wan, 2003). Multiple factors have been mentioned in the literature that might hamper the applicability of the ISO9001 Standard (Boiral & Roy, 2007).

The following are critical barriers that impact ISO9001 implementation standard: the lack of leadership or management commitment, organizational change, and the lack of training, high implementation and maintenance costs, absence of technical skills and expertise, and poor-quality system design.

After this short commentary on the definitions of these two concepts, the next topic deals with the factors that influence ISO9001 implementation in service organizations.

## 2.4 BARRIERS TO ISO9001 IMPLEMENTATION

### 2.4.1 Lack of Management Commitments

In research conducted in Hong Kong service industries, Yeung, Lee & Chan (2003: 545-569) revealed that the cause of the QMS standard's ineffectiveness was the misunderstanding of the standard by the top management executives. Others noted that lack of management involvement is one of the issues encountered when implementing ISO's quality management systems due to the lack of awareness of the gains of QMS (Mohammad, 2000; Keng & Kamal, 2016; Abdul Rahim *et al*; Chow-Chua *et al*., 2003; Francois, Peylin & Toubal, 2003; Njenga, 2013).

Likewise, Bhuiyan and Alam (2005:199-213) mentioned an absence of management help as one of the limiting factors for ISO9001 implementation. Singh, and Mansour-Nahra, (2006: 131-42) add that a lack of leadership is also an important pitfall to the achievement of the applicability of ISO9001. Alongside this, Tan (2011: 48-68) observes that quality is not seen by much top management as the priority compared to factors such as time and cost. Moreover, leadership involvement was one of the leading causes influencing the potential achievement of a QMS in the organization. Crosby (1996) and Juran (1989) similarly commented that the successful implementation of the ISO9001 depends on management commitment and management involvement (Al-Najjar, Jawad & Maha, 2011, Wahid & Corner, 2009).

Again, the absence of commitment from the leaders, absence of leadership in the organization, failure of continuous management audits, the lack of participation, the lack of executive decision making for collecting information, impacts the implementation of ISO9001 (Mehfooz & Saeed, 2015; Sampaio, Saraiva & Rodrigues, 2009).

Many others share that the challenge and obstacle identified when implementing ISO9001 certification, is the lack of management involvement (Simedi, 2010; Francois *et al*., 2003).

The executives should ensure that quality management policies are well established and that objectives are communicated and understood in the entire organization (ISO 9001:2000). Leadership's responsibility to maintain commitments administration authority and provides the appropriate platform for the technical and human processes

are significant factors in QM execution (Sharif, 2005; Martinez-Lorente, Dewhurst & Dale, 1998). The absence of leadership commitment is a determinant of the unsuccessful implementation of the QMS (Sharif, 2005).

Thus, leaders should take direction and unity of determination for all organizations. They should be able to create and maintain a healthy and secure internal environment in which employees are fully involved in achieving the organization's objective (Tricker, 2006; Singhal & Singhal, 2012; Mehfooz & Saeed, 2015).

A research study conducted in industrial companies in Egypt reveals that senior management involvement is crucial for the successful implementation of ISO9001. However, the study indicates that the need to change existing structures to fit ISO9001 and employees' opposition to establish the QMS are seen as major problems encountered by Egyptian firms (Hesham & Magd, 2007).The following subsection deals with change management as an engine that can severely impact organizations when implementing the QMS.

### 2.4.2 Resistance to Change

The old literature define resistance to change as a human response. Resistance may come from interest, misapprehension, and different appreciation of the need or convenience of the change and in some cases, caused by low acceptance for change in the individual (Mohammed, 2016). This is the way people act when the culture of an organization is facing change (Sharif, 2005). Meanwhile, others stress that change comes when executives attempt to make people think and act differently (Kreitner & Kinicki, 2010).

A study conducted by Hesham and Magd (2007: 173-200) on a sample of companies in Egypt to evaluate ISO9001: 2000 implementation in Egypt, found that resistance to change was one of the critical factors affecting the success of the QMS. Moreover, the same authors declare that the need to change the existing system to fit ISO9001 and workers' resistance to implement the standards represents the most critical challenges facing Egyptian companies.

Another empirical study conducted by Boiral (2003: 720-73 cited by Al-Najjar *et al*., 2011), interviewed 50 top executives of ISO9001 certified companies. It describes conflict among employees when it came to the implementation of the QMS

requirements. The study reveals that the protesters expressed their concerns about ISO standards and their hostility to implementing them in their companies. It is expected that people resist change in the current system of an organization (Al-Najjar *et al*., 2011). In a study investigating the problems related to the most recent version of ISO9000, the results show that employees resist change and implementation of the standard (Bhuiyan *et al*., 2005:199-213). Employees' resistance is a significant issue for the QMS standard implementation in some firms (Wahid & Corner, 2009). "Effect of implementing quality management systems on surgical patient care," a study conducted by (Njenga, 2013) supports this argument.

Another study in the health care industry "The Willingness of Professionals to Contribute to their Organization Certification" confirms that the health care system consists of health professionals who value their power and liberty to carry out their duties (Van Kemenade, Everard, Hardjono, Teun , De vries & Henk , 2011). This makes the initiation of transformation in health care, especially predisposed, to resistance and potential refusal (Van Kamenade *et al*., 2011). This is confirmed in other studies such as the study on "ISO9000 performance among the Malaysian companies" where resistance to change stops the progression of the standard implementation in many companies worldwide (Gader, Ismail & Al Khalifa, 2009). A Study on "Critical factors for effective implementation of ISO 9001 in SME service companies" also shows that organizational resistance can break the relevancy of the QMS in service organizations or functions (Psomas *et al*., 2010:440-457).

As shown above, studies demonstrated that the absence of management involvement and obstruction to change or resistance to change could be the key drivers that hamper the evolution of ISO9001 QMS in service firms worldwide. Authors believe that these two respective factors cannot be the only ones that can disrupt the application of the standard requirement in enterprises. The following subsection respectively highlighted the lack of training for management and employees, high implementation and maintenance costs, and poor-quality system design as the other potential factors that halt the integration of the ISO9001 standard in service organizations.

### 2.4.3 Lack of training for management and employees

Several authors identified inadequate technical knowledge of quality management when it comes to the implementation of the ISO standards (Sousa-Poza, Altinkilinc & Searcy, 2009). In the same fashion, most of these academics grant that peoples' low

educational and training levels in the organization, and the lack of training programmes for quality management or inadequate training complicate the materialization of the standards (Mehfooz & Saeed, 2015; Angelogiannopoulos, Drossinos & Athanasopoulos, 2007; Chow-Chua *et al*., 2003; Amar & Zain, 2002).

In the same way, the lack of training for employees causes the wrong perceptions; therefore, implementation of the quality standard in organizations becomes very limited (Magd, 2006). Together with other researchers, Sharif (2005) agrees that poor education and training are without any doubt challenges to improvement and implementation of the QMS. The same authors think senior management and employee training should be assessed frequently and consistently after the approval of the certification.

A research-based study: “Factors affecting the implementation of accreditation programs and the impact of the accreditation process on quality improvement in hospitals” shows, based on the SWOT analysis conducted in this study, that inadequate employee training and assistance for continuous improvement in quality was a weakness for hospitals (Ng, Johnston & Cowling, 2013). An article based on “Improving maintenance and reducing building defects through ISO 9000” asserts that the lack of training skills and development disturbs the entire organization's operation, such as workmanship, and this reduces the quality and raises the level of construction errors and defects. Authors note that this could be worse by increasing the complexity of constructions (Siu Pheng & Wee, 2001).

### 2.4.4 High implementation and maintenance cost

Magd (2005:132-147) agrees in the investigation conducted on ISO9001 accredited firms in Saudi Arabia that a critical factor conflicting ISO9001 implementation was its high registration costs. Similar articles share this view, in the empirical study of “ISO9001 Implementation, Barriers and Misconception” authors believe that companies struggle to implement their QMS because of the high cost of the registration and implementation processes (Al-Najjar *et al*., 2011).

The literature abounds with studies emphasising the high implementation and maintenance cost as the most critical elements to obstruct the application of the standard in organizations (Simedi, 2010; Francois *et al*., 2003; Boiral, 2003). For in-service organizations such as Health care services, the main challenge for using the

QMS is related to the implementation cost of the procedure (Buciuniene *et al*., 2006; Wahid & Corner, 2009).

Sharif (2005) disputes that high costs such as the registration fee, training costs, and consultant fees are huge complications to obtain the certification. The author adds that consultancy fees alone to facilitate the registration procedures are a nightmare to many firms (Sharif, 2005).

Likewise, the authors claim that the cost of consultation for the implementation is very high for many companies in Russia. Additionally, the cost of infrastructure to respond to the international standard requirements and the basic and improvement expenses of the accreditation is a crucial issue to be able to use the QMS (Sharif, 2005 quoting Dickenson, Campbell & Azarov, 2000).

Of course, insufficient financial resources to afford ISO9001 implementation pricing and to sustain the QMS expenses are also issues that Spanish organizations face (Sharif, 2005 citing Fuentes *et al*., 2000).

Generally speaking, it is crucial to admit that ISO9000 series implementation has high costs attached to it. Debates make the ISO9001 implementation quite selective or even more complicated to handle for the certified organizations that want to fulfil requirements (Al-Najjar *et al*., 2011; Simedi, 2010; Francois *et al*., 2003; Boiral, 2003). The upcoming subsection debates the lack of technical expertise and skills as a barrier for implementing the ISO9001 standard in organizations.

### 2.4.5 Lack of technical skills and expertise

The proceeding studies acknowledged that in the implementation of the QMS in organizations there is a lack of cross-functional participation between the organizational departments and a lack of attention in the Plan, Do, Check and Act (PDCA) cycle for continuous improvement (Mehfooz & Saeed, 2015).

Additionally, lack of ISO9001 experience and limited knowledge have been named as obstacles for implementing the QMS in organizations (Angelogiannopoulos, Drossinos & Athanasopoulos, 2007). Notable authors have implicated limited people and leadership actions as quality barriers to implementing the QMS programme (Amar & Zain, 2002). While other researchers suggest that three main causes that affect small

enterprises in adopting the quality standards. Firstly, the small and medium enterprises (SMEs) do not often employ a quality manager that can help them. Secondly, appropriate internal business skills required to use such a system are rare in SMEs. And, thirdly, there is an absence of qualified employees to upgrade the QMS (Rodrìnges-Escobar *et al*., 2006; Karipidis, Athanassiadis, Aggelopoulos & Giompliakis, 2009).

Another argument is that SMEs have flexible processes such as their administration, marketing, and challenges can happen and cause insufficient skills related to total quality management (Karipidis *et al*., 2009). Academic experts identified an absence of trained employees to adequately accommodate the QMS implementation for monitoring processes in organizations, to analyse and compile information, and to address the issues (Al-Zamany, Hoddell & Savage, 2002). Studies indicate that untrained staff is not able to perform the QMS (Sharif, 2005; Ashrafi, 2008; Sampaio *et al*., 2009; Al-Khalifa *et al*., 2000). According to Cagnazzo *et al*. (2010:311-321), many barriers were identified as pitfalls to the implementation of the quality standards notably, the lack of skilled employees and the lack of expertise.

Based on the arguments above, the implementation of the ISO9001 standards is influenced by a lack of leadership engagement, employee resistance, lack of training, high implementation cost, plus, absence of technical expertise, and skills. Thus, the absence of knowledge should be taken seriously among the factors that impede the implementation of ISO9001 in the service industry. The next topic that is a threat to implementation, is the issue of poor quality system design.

### 2.4.6 Poor quality system design

Over recent studies conducted by Karipidis *et al*. (2009), the absence of adequate technical material for making pertinent decisions is considered to be an obstruction to the progression of the QMS philosophy. Mehfooz and Saeed (2015: 2319–7668) perceive that the lack of a proper agenda to allocate money whereas the authority and accountability to the people should be counted as a factor of influence on the growth of the ISO9000 standard internally in organizations. Al-Najjar *et al*., (2011:121-131) dispute that organizations face some challenges in their effort to see the QMS effective and efficient in their premises; thus the lack of knowledge of formalized systems should be viewed as a detonator that boycotts ISO9001 implementation. The same authors citing Amar and Zain (2002:367-372) declare that factors such as equipment and methods can contribute to the failure to implement the QMS. Cagnazzo *et al*.

(2010:311-321) share that the lack of necessary regulation for certification, unrealistic requirements, and formalized implementation, quality-related information, and poor adaptation of the previous standard have to be considered as barriers to the application of the QMS.

Singh *et al*., (2006: 131-42 citing Boiral, 2003:720-73) state that organizations use very pragmatic methods to implement the standard and make decisions that range from a "minimalist" way, on the one hand. On the other hand, is to vigorously illusive conduct designed to bring weakness in the organization's control system. Improper documents, inadequate documents control, challenges of setting up proper quality assurance, or the problem of drafting policies, add even more difficulties (Sharif, 2005).

As it appeared, the first quoted element that hinders the ISO9001 implementation is top management. The report showed that the absence of top management is a hitch to organizations (Yeung *et al*., 2003; Mohammad, 2000; Keng & Kamal, 2016; Simedi, 2010; Njenga, 2013; Al-Najjar *et al*., 2011; Wahid & Corner, 2009). It could be the cause of the following: high leadership rotation, lack of knowledge of the QMS, and poor leadership engagement toward the quality standard (Al-Najjar *et al*., 2011).

ISO9001 implementation can influence the entire organizational structure. An environment for constant improvement can exist if senior managements demonstrate full involvement in quality packages. Executives should first understand the importance of being ISO9000 accredited and encourage their implementation. Then, they have to ensure that the certification empowers the organization's commitment.

The second most important obstruction mentioned by the literature is resistance to change (Psomas *et al*., 2010; Boiral, 2003; Kreitner & Kinicki, 2010; Hesham & Magd, 2007; Gader, Ismail & Al Khalifa, 2009). The assumption is that the fear triggered by poor knowledge about the ISO9001 content develops resistance from staff. The fact that employees accept and support ISO9001implementation is crucial to its successfulness in organizations (Al-Najjar *et al*., 2011).

The other constituents that impeded the application of ISO9001 in organizations mentioned were the lack of training (Sharif, 2005), the high cost of implementation and maintenance (Magd, 2005) the lack of technical expertise and skills (Atteri, Rajesh, Grover, Sandeep, Nikhil & Deepak, 2012), and a weak quality design system (Karipidis *et al*., 2009).

This study highlighted six factors that hamper the progression of ISO9001 in organizations, but other internal or external barriers exist depending on the type of organizations, departments, or even the country in which organizations operate. An analysis of the Commons Measurement of ISO9001 on Service Delivery is, therefore, of importance.

From the above literature reviews, it is clear that ISO9001's successful implementation is affected by many factors. However, it is compulsory to measure its impact on firms' productivity and profitability.

According to ISO 9001:2008 clause 8.2 (monitoring and measurement), companies should control and assess the features of the product through manufacturing processes, to verify that the product specified requirements are met. The delivery of the product to a customer should not be done unless the organization ensures that the finished product conforms to the customer's needs. The clause stipulates that organizations shall perform some assessments such as continual improvement, customer perception measurement, process, and product measurement, then the system's overall performance to evaluate the degree of their effectiveness (ISO9001:2008).

These approaches should be taken into account to evaluate ISO9001 effectiveness in an organization. Nevertheless, there is a dearth of studies on the measurement of ISO9001 effectiveness in the service sector (Sumaedi, & Yarmen, 2015).

Studies attempted to suggest assessment tools for ISO9001 implementation. The following Table 3.1 demonstrated the evaluation instruments recommended by those authors.

Table 2. 1: ISO9001 Effectiveness Measurements

| Author (s) | Object | Dimensions |
|---|---|---|
| **Psomas *et al*., (2013)** | Food Manufacturing Sector. | Continuous improvement, prevention of nonconformities and customer satisfaction focus. |
| **Van der Spiegel *et al*., (2004)** | Agri-food Production. | quality management, quality performance and contextual |

| | | | |
|---|---|---|---|
| | | | factors (i.e., the complexity of the organization, the production process, and product assortment) |
| | **Lewis *et al*., (2006)** | SMEs | customer focus, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision making, and mutually beneficial supplier relationship |
| | **To *et al*., (2016)** | Public Sector | Customer focus, involvement of people, process approach, system approach to management, factual approach to decision making, and mutually beneficial supplier relationship. |
| | **Prajogo (2011:78-100).** | Manufacturing and non-manufacturing sector | Implementation process |
| | **Singh (2008:40–59)** | Manufacturing sector | Management policies, plans, and actions; focus on customers; capable employees; reliable suppliers; sound communication system; and steady processes. |
| | **ISO 9001:2008** | | …. Customer satisfaction by monitoring and meeting customer requirements, improving the QMS |

| | |
|---|---|
| | continuously and preventing nonconformities in products and services. |
| **Gotzamani (2005); Tsim *et al*., (2002)** | …continuous improvement activities and the prevention of nonconformities and results in increased customer satisfaction |
| **Goetsch & Davis (2005)** | … the establishment of a system that addresses continuous improvement, prevention of nonconformities and customer satisfaction focus |
| **Briscoe *et al*., (2005)** | … continuous improvement and enhancing customer satisfaction. |
| **Luning & Marcelis (2006), Heras *et al*., (2006), van der Spiegel *et al*., (2004) and Tang *et al*. (2004)** | continuous improvement, prevention of nonconformities and customer satisfaction focus |
| **Anh & Matsui (2011), Mady (2009), Das *et al*., (2008), Jayamaha *et al*., (2008), Lam *et al*., (2008), Sharma and Kodali (2008)** | Customer satisfaction surveys are carried out and the complaints are monitored (in order to assure that the customer requirements are met) |

(Source: Sumaedi *et al*., 2015)

Table 2.1 provides a summary of the evaluation instruments used to demonstrate the effectiveness of ISO9001 implementation in manufacturing (Sumaedi *et al*., 2015). Moreover, there is a dearth of research studies about existing assessment methods to test the effectiveness of ISO9001 implementation in the service industry regardless of

all the components for assessment recommended by the certification (clause 8.2 of ISO 9001:2008).

There are many other measurement methods, in fact, more than for the manufacturing sector that are not cited in clause 8.2 that could also be used to determine the effectiveness of ISO9001 implementation in service companies (Sumaedi *et al*., 2015).

## 2.5 ISO9001 MEASUREMENT TOOLS

### 2.5.1 Continuous improvement

"Continuous improvement (CI) is an integrative philosophy for frequently changing existing practices to improve the quality of service, a product, and a process to meet customers' needs (Sanchez, & Blanco, 2014). Others define (CI) as an approach to change Organizations by assessing and improving systems to achieve better results (Colton, 2000; Chinman & Ebener, 2012). Hence the literature agrees that CI presupposes an incremental, ongoing intention to improve processes, products, and services.

CI is portrayed as a process within more broad quality improvement strategies, or even as a management strategy itself (Meiling *et al*., 2012). Moreover, the CI is built on customer requirements, which can either be internal-external, measuring effectiveness, meeting the requirements, and carrying on checking customers' expectations to find issues that can be improved (Chang, 2005; Maletič *et al*., 2012). CI is accepted as grading to achieve high quality and to ensure an outstanding level of competitive advantage (Singh *et al*., 2015). CI can be regarded as a particular set of routines or techniques and tools that can help an organization to measure performance (Maletič *et al*., 2009).

Many studies in health care emphasize this point. For instance, a study conducted in health care shows CI techniques used to measure the effectiveness of an organization‘s strategy. Examples are the Balanced Scorecards (BSC), which is a related matrix developed in healthcare to measure quality and performance, Dashboards, and the popular PDCA cycle developed by Shewhart and reformulated by Deming (2000). The PDCA is an instrument that is used by the Institute of Healthcare Improvement (IHI) to measure its effectiveness (Chinman, 2012). The PDCA cycle is the most common measurement instrument of the continuous

improvement used by firms to evaluate the effectiveness of their strategy of implementing the ISO9001 standards. The PDCA cycle depicted in Figure 2.1 shows how CI actions attain each step of the cycle.

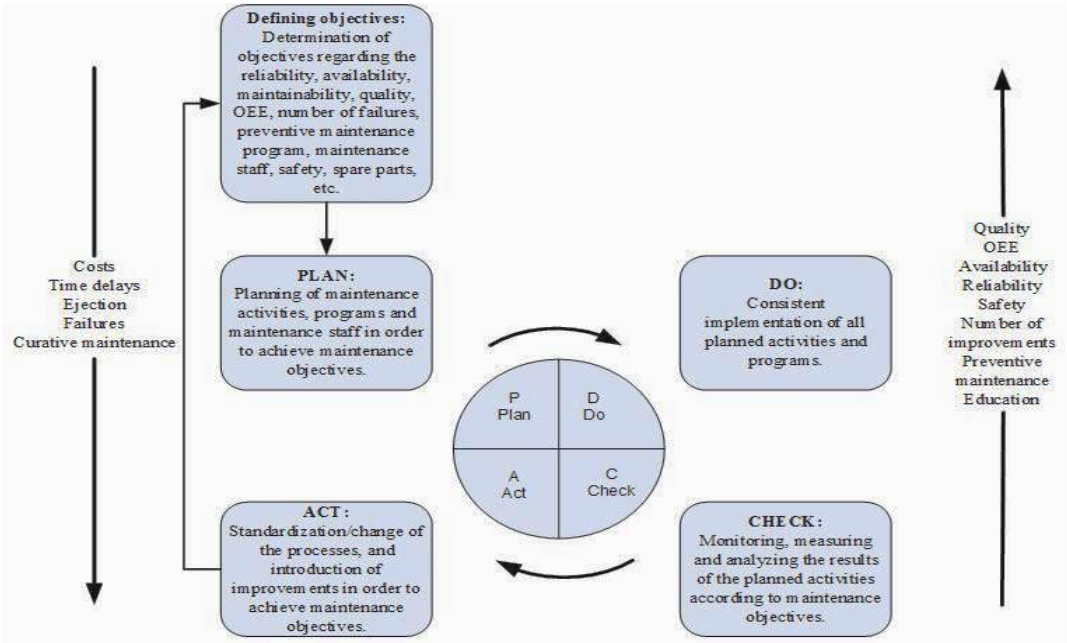



Figure 2. 1 : PDCA Cycle
(Source: Maletič *et al*.,2009)

An organization should practice ongoing improvements for the QMS effectiveness using quality objectives, quality policies, audit data, corrective and extreme measures, data analysis, and administrative review (Hoyle, 2001; Psomas, 2012).

To illuminate this point, Heuvel *et al*., (2005:361-369) demonstrate that data gathered from surveys, accidents, complaints, audits contribute to improve quality, enhance performance, and improvement of the design of a system. As reported by ISO9001:2008 (2008) CI is regarded as one of the purposes of the standards. ISO9001 itself does not only support the standard but experts worldwide support it as well (Psomas, 2013) because of the underlying design of ISO9001. A study conducted in food manufacturing SMEs confirms that CI remains a significant indicator for measuring ISO9001 effectiveness (Psomas *et al*., 2013). As a result, the aim of the CI through the establishment of the ISO9001 is to reinforce a firms' potential to meet the needs of customers (Psomas *et al*., 2013).

Meanwhile, authors bring up that companies go for the application of CI for developing internal structure and culture that encourage its practices instead of just keeping the

focus on tools and techniques for solving problems (Dominguez, Fernando & Martins, 2016).

However, the CI measurement instrument can have many challenges such as; Poor planning, Incapacity to change the culture of an organization, inappropriate structure of an organization and insufficient resources, absence of an authorize plan for change and the use of an off-the-shelf programme that can obstruct its implementation (Singh *et al*., 2015).

CI is considered to be one of the most prominent approaches used to evaluate the effectiveness of ISO9001 standard by many organizations worldwide even though its implementation could be influenced by challenges. Eventually, it is necessary to analyse some other measurements that need to be taken into consideration to evaluate the effectiveness of the ISO9001 standard.

This section highlighted the measurement instruments assessing ISO9001 standard implementation in the logistics department of the brewery of Gabon. That is why the next step to this analysis is “non-conformities,” one of the measurement tools used to assess the applicability of the QMS within the service industry.

### 2.5.2 Non-conformity

Recent studies define conformity testing as the systematic inspection of the degree to which an entity fulfils to a specified standard (Desimoni & Brunetti, 2011). Likewise, Pendrill (2014:51) claims that conformity evaluation is any action undertaken to determine whether a product, process, or service conforms directly or indirectly to relevant requirements or meets specified standards.

Additionally, non-conformity is perceived as an error in a process or any service component which does not conform with the standards and which can result in delay and poor service or product quality. This means that nonconformities influence the implementation of a QMS (Psomas *et al*., 2012). Table 2.2 shows several authors that support “prevention of non-conformities” in their literature reviews.

Table 2. 2: Reviews supporting Non-Conformity

| **Indicators of "prevention of nonconformities."** | **Supporting literature** |
|---|---|
| The products conform to specifications. | van der Spiegel *et al*., (2005), Chi *et al*., (2009), (2010b); Avella & Vazquez-Bustelo (2010) ; Marin and Ruiz-Olalla (2011) |
| Minimising errors through quality processing, storage, packaging and delivery. | Chileshe (2007); Singh (2008); Brad (2008) |
| Efficient product and process design. | Lewis *et al*., (2006); Psomas *et al*., (2011) |
| Continuous control of products and procedures throughout the production steps. | Singh (2008); Chiarini (2011) |

(Source: Evangelos, Psomas, Kafetzopoulos & Fotopoulos, 2012)

Authors agree that conformity assessment or a non-conformity checks should be conducted to evaluate the effectiveness of the ISO9001 standard.

The next step is to examine customer satisfaction as a measurement to assess the establishment of effective ISO9001 strategy implementation.

### 2.5.3 Customer satisfaction

Academics think that customer satisfaction is the extent to which a customer is satisfied with a product or service that was provided to him/ her by an individual or a firm (Reed & Hall, 1997). Assessing customer satisfaction is a complete awareness of the customer pre-and post-purchase attitude. Scholars argue that organizations should identify the actual and future needs of customers through the implementation of the QMS (Conca, Llopis & Tari, 2004). The literature indicates that customer satisfaction is a crucial element to determine whether ISO9001 implementation helps companies to fulfil the needs and expectations of customers (Fernandez-Gonzalez & Prado, 2007). Other academics support these assertions and identified indicators of customer satisfaction that can be used as measurements through an extensive literature review (see Table 2.3).

Table 2. 3: Reviews supporting customer satisfaction

| **Indicators of "customer satisfaction focus"** | **Supporting literatures** |
|---|---|
| Customer satisfaction questionnaires are fulfilled and the criticisms are examined (to ensure that their expectations are achieved). | Das (2008) ; Phusavat & Kanchana (2008), Ooi *et al*., (2008); Mady (2009) ;Anh & Matsui (2011) |
| Identification of and focus on customer needs and requirements. | Chileshe (2007), Sharma & Kodali (2008); Sadikoglu & Zehir (2010), Kumar *et al*., (2011) |
| The measurement of long-term effectiveness and the real value os ISO9001 | De Toni *et al*.,(1995). |

**(Source:** Evangelos, Psomas, Kafetzopoulos & Fotopoulos, 2012)

Many researchers maintain that measuring customer satisfaction requires some conventional approaches. The investigation reveals that the assessment of measuring customer satisfaction could be performed via Telephonic questionnaire, written questionnaire, mail or fax, face to face interviews, a warning from customers, examination of internal indicators (except complaints) and Commercial reports (Fernández-González & Prado, 2007).

The level of customer satisfaction can be assessed in many ways using quantitative and qualitative approaches. Typically, these instruments, the ratios of market share, the percentage of revenues from customers, the percentage of customers, and the percentage of revenues from rework (Bose, 2006) are identified as the quantitative measures and assess customer satisfaction level. As mentioned previously, face-to-face interviews, focus groups, etc., are qualitative methods for evaluating customer satisfaction levels (Bose, 2006)

There are different ways of measuring customer satisfaction in organizations depending on the company and the structure of the organization to determine the effectiveness of a company's strategy of implementation. Still, around these measurement approaches, the next subtopic will deal with the process improvement as one of the ISO90001 effectiveness assessment items.

### 2.5.4 Employees Motivation

Scientists describe motivation as a combination of drivers that stimulate enthusiasm and determination to pursue a particular goal or objective (Daft & Marcic, 2008). Devadass

(2011:566-570) further defines work motivation as internal or external forces that trigger job-related behavior, and define its form, intensity, duration, and direction. Similarly, motivation is a set of goals and objectives towards which guides people's attitude, the way through which those objectives are attained, and the social forces involved (Buchanan & Huczynski, 2010).

Motivation has always been an issue of concern where employers have in mind the enthusiasm to develop an adequate attitude that would increase people's passion for work. Nevertheless, this approach is challenging due to unexpected human behavior. About this, Maslow's theory, Figure 3.2 below, explains the pillars and basics of employees' motivation and provides a comprehensive approach to assess employees' motivation.

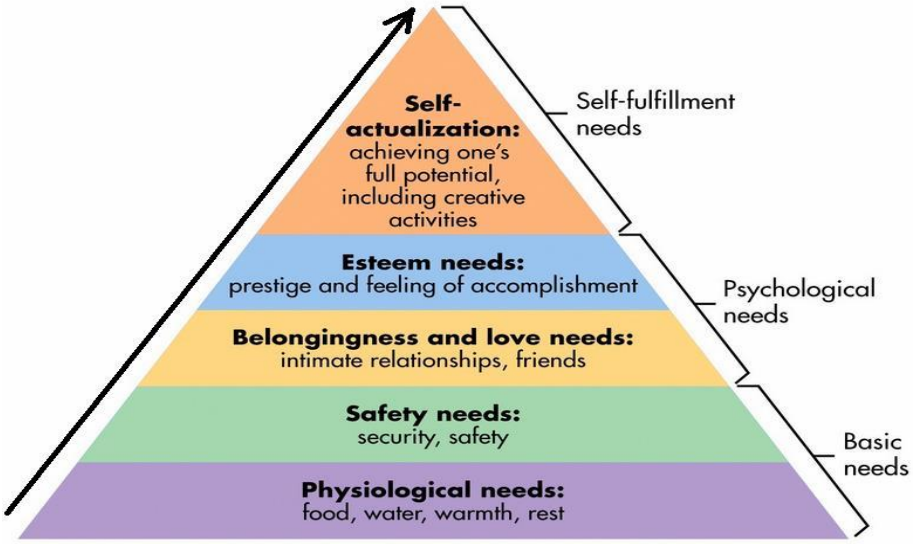



Figure 2. 2: Abraham Maslow Pyramid of needs
(Source: Boeree, 2006)

Briefly, the premise of Maslow's hierarchy of needs is that employees' enthusiasm demands more than a good salary or wage. Even though all employees are not at the same level of the hierarchy, they are motivated by different types of incentives. Studies confirm that managers should determine the needs that are operational for each employee and enhance the forces that help satisfy those needs (Sadri, Golnaz & Bowen, 2011; Mullins, 2007).

It is appropriate to demonstrate the measurement tools that can be used to assess employees' motivation. The empirical literature refers to "assessment on employee motivation system." The literature reveals that the first applied motivation instrument is wages (Matuziene & Gaidamavicien, 2009). There were efforts from the firm to satisfy

employees with the wage earned. Tthe firm supported the conformity to the quality of performance, payment of premium and bonus. Indeed, this point was accommodated with the perceptual biases measure of people's motivation. Undoubtedly, motivation is something as vital as visual perception. Presumably, those from a lower socio-economic background have more enthusiasm to obtain money (Tour-Tillery & Fishbach, 2014; Stefanucci *et al*., 2008; Teachman *et al*., 2008).

The second block of the research indicates that the juridical characters of employees are an important measurement approach to evaluate employees' motivation (Matuziene & Gaidamavicien, 2009; Tour-Tillery & Fishbach, 2014). This argument is based on the fact that employees are motivated for a job; they are instructed to rely on job safety and health instruction permitted on the company premises. Others affirm that they are motivated to work where time is flexible, where they work temporarily or part-time, where they always have a moment for a lunch break, and where they have an annual vacation (Tour-Tillery & Fishbach, 2014).

The third block takes into account psychological motivation. Here, work conditions, career prospects, and training were diagnosed. The result shows that workers are motivated to work in a dynamic environment with adequate implements, workwear, and appliances. Employees are willing to work with standardized equipment, infrastructure with sanitary health conditions, tools etc. (Matuziene & Gaidamavicien, 2009). This point sounds similar to the cognitive and affective measures of motivation highlighted by some researchers (e.g. Fishbach & Ferguson, 2007; Fishbach, Friedman & Kruglanski, 2003).

The last block is the philosophical motivation measures. The applicability of philosophical motivation is related to the employee's participation in the decision-making process in organizations, depending on the relationship between top management and employees (Ina & Gaidamavicien, 2009; Tour-Tillery & Fishbach, 2014). Of course, motivation is also assessed by the degree of interest or enjoyment of people in the company, effort, staff competence, and employee choice while performing a specified activity (Tour-Tillery & Fishbach, 2014).

Additionally, scientists also approve that the level of employees' "speed" can also be seen as an employee motivation measurement approach or the duration measure approach. Employees' motivation can be manifested or determined by the amount of time it takes an employee to perform an activity. In other words, behavioral measures of

speed consists of how fast employees fulfill tasks or how fast they move from one task to the next (Kivetz *et al*., 2006; Nunes & Dreze, 2006; Tour-Tillery & Fishbach, 2014).

Generally, when performance is flexible and essential to the goal, motivation can, therefore, be evaluated by the level of organization performance. The performance measurement instrument can consist of indicators such as accuracy, amount, or quantity of tasks completed, then the highest level of achievement (Tour-Tillery & Fishbach, 2014; Matuziene & Gaidamavicien, 2009).

In short, it is important to admit that many other measurement instruments exist. However, the above is crucial to measure ISO9001 effectiveness implementation in organizations. Given these points, the next criterion is communication as an instrument used to measure the effectiveness of ISO9001.

### 2.5.5 Communication

Communication is the way by which information is diffused and is signified by mutual agreement between people (Keyton, 2011). Furthermore, many other social academics claim that communication is a means to enhance commitment and motivate the employee to attain organizational objectives and goals (Tsai, Chuang & Hsieh, 2009). Similarly, organizational communication is the interaction among organization members (Cutlip, Center & Broom, 2006; Kennan & Hazleton, 2006; Ruck, 2015).

In the center of this debate, communication is an important leading activity in any firm (Nelson & Harris, 2008). Additionally, organizations' processes and capabilities are designed and enacted through effective communication processes or channels (Jones *et al*., 2004). Thus, a line of communication is the way by which information is diffused and received.

Hence, organizations need to measure their effective communication to ensure strategies are well established, communicated, and understood by everyone. Managers reported that the measurement of their organizational communication system is vital to the effectiveness of their organizational philosophy. As a result, scientists suggest that conducting audits, developing surveys, assessing program results, and analysing and reporting data are necessary approaches to determine the effectiveness of communication in the organization (Sinickas, 2005; Williams, 2003). Some measurement approaches include information such as the return on investment (ROI)

including cost savings measures, employee questionnaires, focus groups for specific information, pulse surveys, and the company business results (Gay *et al*., 2005; Berger, 2008).

As shown above, communication is the core of any organization that seeks to improve its system. However, establishing effective internal or external communication requires some measurement metrics to determine its effectiveness. Thus, the measurements shown earlier are likely used to measure the effectiveness of the QMS.

Consistent with the above studies, the point is that the organization or top management can apply numerous types of metrics to evaluate their implementation strategy. This thesis has identified many of these variables, such as Continuous Improvement assessment (the Plan-Do-Check-Act cycles instrument, Balance Scorecard, and Dashboards), Non-conformity, or conformity assessment, Process Improvement, Employees' motivation and Communication. The study reports that more strategic evaluation could exist depending on the organization's design structure, context, philosophy, and environment. The selection and relative importance of each measurement are subject to the strategic priorities (Trkman, 2010). All these arguments mentioned the issue of the "impact of organizational changes" on the ISO9001 implementation.

### 2.5.6 Organizational Change

#### 2.5.7.1 Conceptual Clarifications of Change Management

According to Todnem (2005:369-80), organizational change management refers to planning, organizing, leading, and controlling an organizational change process to improve its performances and achieve its strategic objectives and goals. It includes the implementation of different approaches, instruments, techniques, and mechanisms to manage people and process elements of the intervention.

Burnes (2009:322) stresses that change management is a complex concept without clearly defined and rigid limitations. He further believes that a universal definition of this concept does not exist. However, scholars describe change management as the effective management of a business change such that organization members work in concert to implement the new technologies, processes, or organizational changes successfully (Korir, Mukotive, Loice & Kimeli, 2012). Additionally, Moran and Brighton

(2011:111-118) perceive change as an ongoing process for continually renewing a company structure, capabilities, and direction to respond to the changes needed by customers. Many agree that change is a crucial characteristic of organizational life, at both operational and strategic levels (Burnes, 2005).

Nkomo and Kriek (2011:453-470) say that change consists of shifting the company's strategy or processes, and involving research for new approaches and methods that drive organizations to the transformations that lie ahead. Indeed, change management should support the creation of an environment that encourages change (Kemp & Low, 2008). This explication of change management provides an argument to understand change management practices. Understanding change management implies an imperative to comprehend the forms of change and their effects on the organization.

#### 2.5.7.2 DIFFERENT TYPES OF CHANGES

From the literature, it is noted that managers implement several types of changes that fall into the following groups: evolutionary change, and revolutionary change. The first category of change is continuing, recurrent, gradual, and narrowly-focused (Sundarasaradula, Hasan, Walker & Tobias, 2005). Others explicitly explain that this change helps organizations to continuously improve to fit environmental changes (Frahm & Brown, 2005).

Supporters of incremental change argue that incremental changes are changes that occur daily to ensure that people and processes are well established to reach the organization's goals and objectives (Luecke 2003; Burnes, 2004; Hayes, 2014).

In contrast, revolutionary change is seen as a quick, fast and can be dramatic, and broadly focused. This type of change mostly takes place in a short period when the current organization's strategy is failing to meet the requirements of external stakeholders (George & Jones, 2002; Yang, Zhou & Yu, 2009; Sundarasaradula *et al*., 2005).

In the meantime, advocates of reactive change avow that this change is applicable in reaction to particular external experiences or serious internal issues such as managerial and operational challenges (Hayes, 2014; Todnem, 2005). This change comes as a result of external pressures, and it becomes visible in organizational policies that are a response to a challenge (Bennis & Thomas, 2002).

Alongside, radical change is a change that has an effect on the entire organizational system and generally changes the organization's basic framework (strategy, people, structure, processes, and core values). It is the type of change that is imperative to the organization (Buhanist, 2001; Kitchen & Daly, 2002; Johnson & Scholes, 2007; Tukker, Charter, Vezzoli & Andersen, 2008; McNulty & Ferlie, 2004; Blazejewski & Dorow 2003; Hall, Melin & Nordqvist, 2001).

Thus, it is vital to analyse the impacts of these changes mentioned above in organizational operations.

#### 2.5.7.3 EFFECTS OF CHANGE ON ORGANIZATION STRATEGY

Change management strategies are the methods applied to properly manage change in an ecosystem experiencing change forces in order to accept change. The hope is that a positive impact results on the firm in question (Warrilow, 2010). However, before any strategy is applied, companies have to know their strengths and weaknesses, their customers' requirements, and the nature of the industry in which they operate.

Many factors can have huge impacts on organizations when it comes to the adoption of changes (Suresh, 2001). The author believes that leadership (McColl-Kennedy & Anderson, 2002), and focus and resistance (Maurer, 2006; Wasserman *et al*., 2008; Kirkman & Shapiro, 2001) can considerably affect the successful implementation of ISO9001. Hence changing the way companies operate from their command and control without consistent focus and developing new skills and knowledge is not an easy task for companies. The reason is that these forces can quickly boycott or damage the efforts that have already been made, including the adoption of certification.

Van Tonder (2004:20-23) adds that change engages employees and can lead to emotions, uncertainties, or inconsistencies. The study can, therefore, presume that changes can impact on the effectiveness of the QMS and that change impacts the entire organizational system.

## 2.6 SUMMARY

A company has in place a structure that is related to its vision, and which ensures the applicability of ISO9001 effectiveness in the whole organizational system. However, the researcher has not found a study in the literature that has been conducted within

a firm to measure the effectiveness of ISO9001 on service delivery within a particular department. This is necessary before drawing any conclusion about the effect of the standards within a selected department. Thus, based on the review of the literature, it assumed that many factors could hinder the successful implementation of the quality management system (Ueno & Akiko, 2008). Despite these challenges, organizations can still survive by monitoring and improving the application of the standard. By doing so, an evaluation of the QMS has to be conducted within the whole function. Changes in any organizational environment can lead to significant internal organization transformations, which, in turn, can have an impact on the QMS implementation. They can, therefore, assume that measuring the effectiveness of ISO9001 on service delivery within a selected function is crucial as some dysfunctions of the QMS can be the consequence of the ineffectiveness of a particular function of the organization.

# CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

## 3.1 INTRODUCTION

The design of a study is a roadmap, a plan of action, and a structure that has to be followed during the research journey to find out the origins, causes, and solutions of the problems, as accurately and as objectively as possible (Kumar, 2014:35-38). It is a strategy for accumulating and examining pieces of evidence or facts that support the study to respond to the research question (Merriam *et al*., 2015; Dreyfus, Hershkowitz & Schwarz, 2015). A research design is planning. It is the blueprint of the research that needs to be conducted. The research methodology emphasises the investigation processes and the type of techniques and practices to be applied (Mouton, 2001).

The previous chapter examined the literatures for factors affecting ISO9001 implementation. This chapter explains the choice of research design and methods applied in this study. Significant data were collected using the mixed-method approach which consists of both qualitative and quantitative methodologies. The appropriate sampling and data collection approaches are explained in this chapter. All the steps used for the validity and reliability of the study are highlighted. Ethical considerations are also justified.

## 3.2 RESEARCH TYPES

To measure the effectiveness of ISO9001 standard at the brewery of Gabon in the logistics department, the researcher used the case study approach, which emphasizes a single individual, event, organization, or process (Rudestam & Newton, 2015:55). It focuses on the study of an occurrence within its physical world. Furthermore, it also presents a choice regarding the anonymity of respondents (Edmonds & Kennedy, 2017).

Yin (2003:13) describes the case study research methodology as an observational study that explores a current situation. Furthermore, this type of approach involves an empirical investigation of a particular problem within its environment applying many sources of facts (Robson, 2002). This approach was deemed appropriate for this current study as it involved the study of a particular department within an entity. The researcher hence used a case study approach to gather data and for collecting critical

information in the logistics department. The next section presents the research approaches followed in this study.

## 3.3 RESEARCH APPROACHES

The research used both quantitative and qualitative methods. This was elucidated and analysed in the next section.

### 3.3.1 Mixed Methods Research

The mixed-method approach involves the collection of both qualitative and quantitative data. This approach combines the two methods of data collection by using definite design approaches that include philosophical hypotheses and theoretical underpinnings. The fundamental assumption of this form of study is that qualitative and quantitative methods give a broader understanding and comprehension of the problem under investigation (Creswell, 2013-2015; Kerrigan, 2014; Plano Clark *et al*., 2013; Merriam *et al*., 2015). In order to conduct a proper study, the investigator not only chose a mixed-method approach to guide the investigation process, but the researcher also selected a type of study that corresponds with this method. The research design approaches are the types of investigation methods used in the qualitative, quantitative, and mixed-methods approaches, from which the methodology arises. Other researchers have entitled these strategies of inquiry (Denzin & Lincoln, 2011:12). The following design approaches are associated with the mixed-method approach:

- Descriptive mixed methods,
- Explanatory sequential mixed methods, and,
- Exploratory sequential mixed methods.

An exploratory sequential mixed model was deemed appropriate for this study. The researcher started with the qualitative approach part by exploring the understandings of the population group selected for the investigation. The qualitative part was used to determine a tool that best fits the sample under inquiry, to detect appropriate methods to use in the follow-up quantitative stage or to determine variables that need to be included in a follow-up quantitative analysis (Creswell, 2013).

#### 3.3.3.1 QUALITATIVE APPROACHES

The qualitative methodology is an investigation technique that entails an understanding of the environment in which the investigator develops a complex overall view,

examines words or facts, reports detail pictures of participants, and conducts the study in a normal setting (Creswell, 2015). It is a research approach that uses several methods to generate knowledge that captures and reveals as truthfully as possible a phenomenon that is happening in the real world (Willig, 2013; Bless & Higson-Smith, 2000; Neuman, 2014). Unlike the quantitative research method, there are no measurements or statistics. Words, descriptions, and more often, quotations are presented to investigate the phenomenon. Arts methods such as dance can considered in this type of research methodology (Shields & Twycross, 2003:23).

Henceforth, the researcher interviewed the logistics department , the department of human resource, the quality department during the research study to obtain their opinion about ISO9001 implementation requirements in the organization. It is necessary at this point to define the word "interview" for a better understanding of the aim of using this case study approach.

An interview is defined as a face-to-face conversation in which the interviewer questions the participants using a set of questions to gather and collect data. It also allows the researcher or the interviewer to learn about the perception or the opinion of the participants (Yin, 2013; Franzel & Bezuidenhout, 2014:7). Furthermore, an interview is a commonly applied approach for gathering information from people, in which an interviewer tries to extract information from others (Kumar, 2011:144; Bailey, 2007:95; Kothari, 2004:97). Consequently, the researcher used the interview in this study as one of the methods to collect data and evidence about the impact of the ISO9001 standard within the logistics department. Lichtman (2013:2013) argues that the semi-structured interview is best used to develop a set of questions and a strategy to proceed with interviews. In this type of interview any question can be edited if needed or further probed with the participant.

The semi-structured interview is often conducted in a research project to gather data emerging from other sources of data. This type of interview is mostly based on a line of inquiry predefined by the researcher (Creswell *et al*., 2017:93). Therefore, the researcher asked each participant to describe their understanding of the phenomenon (Anfara & Mertz, 2014).

#### 3.3.3.2 QUANTITATIVE APPROACH

The quantitative methodology is the traditional approach, experimental approach, or positivist approach (Leedy & Ormrod, 2001:101). It was the secondary methodology

for data collection used in this study. This methodology consists of determining objective concepts by examining the correlation amongst variables. Numbered data can be treated using statistical procedures (Creswell, 2013). It relies on numbers and statistical analyses (Lutz & Knox, 2014). Additionally, Struwig and Stead (2001:4) share that the quantitative research methodology implied large descriptive samples and organised data collection processes. This method consists of computing the research problematic by creating numerical data or statistical data which can be converted into applicable statistics." (Wyse, 2011).

Based on the findings of this study, descriptive quantitative research was used to examine the situation. Walliman (2005:304) disputes that quantitative research gives an approach of quantifying the characteristic of the data. Moreover, this approach provides statistical data to offer a general, logical, and open image of a huge amount of data (Struwig & Stead, 2001:158).

An objective of this research study was to evaluate the influence of ISO9001 on service delivery in the logistics department at the brewery in Gabon to advance the company's knowledge about the ISO9001 implementation process. Quantitative research methods are useful tools for achieving the research objectives as they enable the researcher to study the complex relationship between employees, customers, and employers. It allows a comparative study between the perceptions and views of participants who completed the questionnaire.

These methods have also helped the research study to aggregate and integrate findings of the implementation of ISO9001 in a service department.

## 3.4 RESEARCH PROCESS

The research process is the steps undertaken over time. Rudestam and Newton (2015:5) refer to the phases of the research process as the research wheel (see Figure3.1).

Scholars consider that this process helps to ensure that the research study accepted is fit for purpose, and it addresses the problem taken into consideration in a methodical manner (Merriam, Sheran & Tisdell, 2015). The stages as illustrated in Figure 3.2 constitutes a research process.

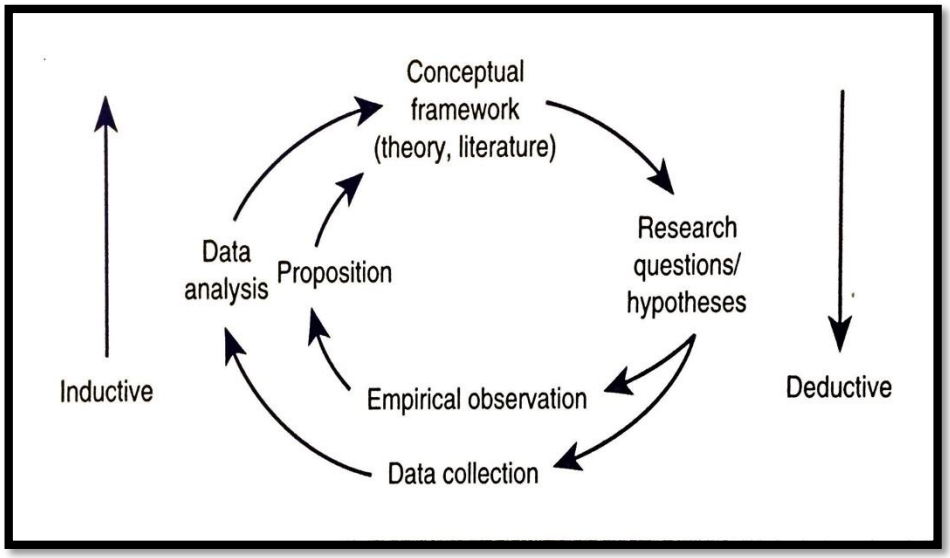



**Figure 3. 1:** The Research Wheel

(Source: Rudestam & Newton, 2015:5)

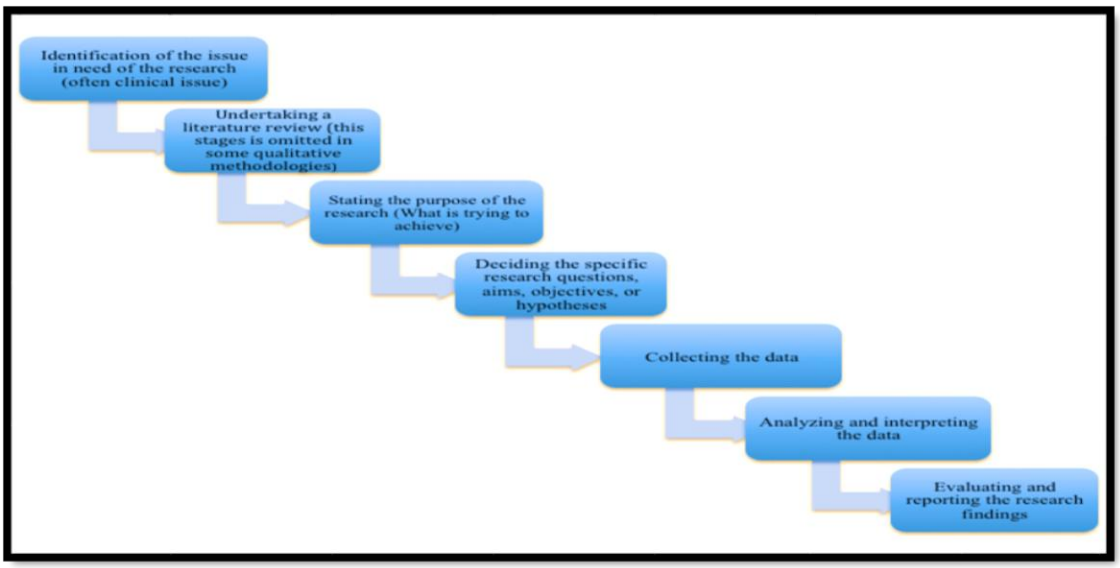



**Figure 3. 2:** The Research Process

(Source: Merriam *et al.*, 2015)

In sum, the research process is how the researcher was able to discover and resolve the research issue.A case study methodology was selected for the research design.

## 3.5 PILOT STUDY

Brink (2006: 166) asserts that a pilot study is used to explore the likelihood of the projected study and to spot potential errors in the data collection tool, for instance, inadequate time limits and unclear instruction or language. The same academician

proclaims that this method consists of determining whether the variables identified by operational descriptions are visible and assessable.

The researcher selected a pilot study to confirm the trustworthiness and validity of the questionnaire. The reason for chosing this approach was that : the pilot study was used to identify errors and misunderstandings in the questionnaire and the data capture sheet.

The quality department where people were able to speak and read English fluently, assessed the question statements (English version) of the questionnaire. The survey was translated into French as the population sample was French speakers. The logistics department and the HR department have also evaluated the questionnaire and its content, and they expressed their suggestions for improvement. Once. authorisation from the managers was received, the administration of the edited questionnaire proceeded.

## 3.6 RESEARCH POPULATION

Statisticians maintain that the term ‘population' embraces the participants of a selected group or population under investigation or from whom data is being collected (Ritchie *et al*., 2013). Still, in this context, the population includes the total of all the individuals or people with specific individualities subjected to an investigation (Salkind, 2012:71).

Sobraga has four plants, including the largest plant located at Owendo in Libreville, Gabon where the research was conducted. The Owendo plant facility conducts many services, and this is especially true of the logistics department, where the researcher focused his studies. This plant has 600 full-time employees, with more than two hundred people working for the logistics department internally. Among those employees, one of them was directly responsible for the logistics department activities and operations. This include: The logistics manager.

Generally speaking, all employees of the brewery of Gabon, especially at Owendo’s plant, were subjects of investigation. Questionnaires were administered to employees in the logistics department, the main focus of the study. However, certain other people from the quality department. and the HR department were also interviewed, and observations where made inside and outside the logistics department.

## 3.7 TARGETED GROUP (Units of analysis)

The logistics department of the brewery was the main focus of the investigation. The logistics department is separated into four subdivisions (stock management department, transport department, material management, and the procurement department), which were part of the logistics department at the time the investigation.

The sample size of the study was determined by focusing on the staff of the logistics department who have direct input into the delivery of the service. Questionnaires were distributed to a sample of 135 people, and a person from the logistics department was interviewed. The interview was recorded as the main interview. One person from the quality department and the HR department were also interviewed.

## 3.8 SAMPLE DESIGN AND METHOD

Researchers assert that the sample constitutes the part of the population of individuals being exposed to observations which we analyse to draw conclusions about the population (Mertens, Pugliese & Recker, 2016). Likewise, Wolverton (2009:373) describes 'sample' as the division of the bigger chosen population, while others define 'sample design' as the way of getting a sample from a selected population (Kothari, 2004:55).

Thus, unanimously, researchers agree that sampling consists of selecting a part of a population (Johnson & Christensen, 2014:273). By doing so, the research sample was compared to the population under investigation. The researcher chose to use purposive sampling also called judgemental sampling. Purposive sampling, a type of non-probability sampling, implies that a sample has been chosen for a specific aim (Leedy & Ormrod, 2001:228). In purposive sampling, the group investigated is determined by the researcher's opinion of who will be suitable or most helpful (Babbie, 2013:207). This form of sampling was applied to specific employees in the department that hold significant evidence about the organizational system or strategies.

Thus, to gather important information, one hundred and thirty-five employees from the logistics department including managers were selected. Three manager assistants from the quality department, from the Human resources department ( named above), and the main interview with an employee of the logistics department have been recorded (see Appendix 4) and highlighted in chapter five.

## 3.9 SURVEY RESEARCH

Survey research has been used in this investigation. The survey was first used to identify the characteristics of the group of people being investigated. This method consists of sequences of question statements used to collect important information (Ary, Jacobs, Razavieh & Sorenson, 2002; Fowler, 2013). The survey method consists of face-to-face interviews, written questionnaires or interviews via telephone, as the objective of this approach is to solve problems based on the interpretation of information that has been obtained (Leedy & Ormrod, 2001).

Thus, questions were formulated to answer investigative research questions. Responses gained were appropriately examined and summarized to show percentages, reveal frequency counts, Cronbach's Alpha-values, and correlations. The investigation report was built on the results of the responses.

## 3.10 DATA COLLECTION AND METHODOLOGY

Ravitch and Carl (2015:438) define data collection as a series of related, iterative processes. Furthermore, data collection is important in gathering useful information for an individual investigation by exploring the raw data from the questionnaires (Aaker *et al*., 2004:432). Data collection is described as a method for gathering data through several pieces of evidence to design a reliable and trustworthy impression of the subjects of study (Creswell, 2013).

Additionally, data collection is a function of identifying documents or artifacts, studying their authenticity, chronologically classifying them, and then identifying value or impact on the research effort (Gupta & Awasthy, 2015:29). A semi-structured interview approach and the self-administrated survey technique were used to respectively collect the primary research data. In terms of research methodology, the researcher used a mixed-method methodology.

### 3.10.1 Manager Semi-Structured Interview

The researcher conducted face-to-face interviews with each manager. However, the main interview with an employee from the logistics department was recorded (interview questions are found in Appendix 4), and consent forms were emailed to the manager before the interview (Appendix 1). The researcher chose to interview an employee from the logistics department who is in charge of supervising the logistics department to find

out his opinion whether strategies are well established and understood in the department. The purpose of the interview consisted of finding out whether the manager understood the applicability of ISO9001 and its requirements.

The researcher used a digital voice recorder and back-up recorder to record responses from the research participants. The main interview took place in the logistics department and others outs departments. The investigator provided a copy of the main interview schedule and his contact details to the interviewees for future inquiries. Similarly, questionnaires were used as part of the quantitative research approach.

### 3.10.2 Questionnaires

The self-administered questionnaire (Appendix 4) (i.e., rating scale) followed the 5-point Likert Scale style, which rated from one (strongly disagree) to five (strongly agree). Reviews confirm that this approach to data collection is in order, mostly when it comes to major inquiries (Kothari, 2004:100). Data were obtained using a standardized questionnaire, a data abstraction form, and a key informant guide. The questionnaire was divided into the following two sections.

**Part 1:** Part 1 requested demographic data and data about the organization under investigation. Respondents needed to select or answer questions based on their options, including gender, age, education, job title within the organization, and work experience.

**Part 2**: Part 2 of the questionnaire used a Likert Scale where research participants were asked to respond to each of the statements by selecting from 1 through 5 on the scale.

This method indicates the level of the respondent's approval with a specific item in a given range. The five-point Likert scale approach was selected to demonstrate the level of knowledge, judgment, opinions, and experience of the participants about the involvement of people (Neuman, 2011:226; Delport & Roestenburg, 2011:211-212). For purposes of this study, the scale was constructed as in Table 3.1.

Table 3. 1: Scale for questionnaire

| Strongly Disagree | Disagree | Unknown | Agree | Strongly Agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

### 3.10.3 PARTICIPANT OBSERVATIONS

This section of the study took into account the following when observing:

- Physical location and surroundings,
- Relevant comments,
- Office' receptions,
- internal communication, and,
- employees and costumer's reaction

The objective of observations was to provide a brief report of the company's environment, to see research participants' working conditions, and to provide a description of the ecosystem where the research took place (Scott & Usher, 2011:106). Observations helped the researcher in gaining better insight in term of how ISO9001 implementation is perceived by workers and managers in the company. Observations started from the first day of the research to the last day of the research in company. As the researcher spent more time in the logistics department, most of the conclusions from observations were based on what he saw in the logistics department. Observation implies studying individuals in their natural environment. The researcher observed workers in practice in their work environment. He kept extensive field notes relating to workers' tasks. He paid specific attention to managers' interactions with the workers.

This practice helped the researcher to maintain enough intellectual distance to assure that he was capable of ensuring a critical analysis of the situation. The researcher was able to see with the eyes of an outsider and the eyes of an insider, even if the two views are, certainly, only ever partial (Hume *et al*., 2004).

In terms of the document analysis method, the researcher used documents from 2009 to 2018 related to the implementation of QMS at the brewery as data sources. These documents included customer satisfaction surveys, complaints and compliments registers, critical incident reports, and ISO audit reports.

### 3.10.4 Document analysis

Lindsay Prior (2008:4) stresses that documents are given marginal attention in social sciences. Document analysis is a method of qualitative research aiming to interpret documents or files that enable the researcher to give an opinion and significance around an evaluation topic (Bowen, 2009). The researcher used document analysis as one of the methods of data collection and analysis in this study. Here, the researcher

treated the material like an informant that provided pertinent information (O'Leary, 2014).

The researcher analysed the quality policy documents, namely the "quality manual" of the firm, and he (the researcher) analysed the "box of complaints" that was perceived at the entrance of the logistics department, the department planning book, and assessment files as well as the safety notebooks. The objective of using document analysis was to explain the input obtained from interviews and observations (Gardener, 2016 extracted from Babbie & Mouton, 2004:146 -147).

## 3.11 STATISTICAL METHODS TO ANALYZE DATA

Experts declare that data is any group of values that measure a variable or the composition of all variables in a study. Sometimes data is collected at several levels (Mertens *et al*., 2016:1). Analysing data implies converting the data into suitable themes, forms, tendencies, and relationships (Mouton, 2001:108). Additionally, analysing data consists of manipulating, deploying, and interpretation of the outcome to extract meaning from them (Mertens *et al*., 2016:1).

### 3.11.1 Reliability

The reliability of a measure determines the extent to which there is no bias (error-free) and, therefore, ensuring consistent measurement through time and by way of items in the instrument. Sekaran & Boughie (2013:203) argues that the reliability of a measure is a proof of the consistency and constancy in which an instrument determines the concept and support to analyze the goodness of a measure. Figure 3.3 shows the goodness of a measure.

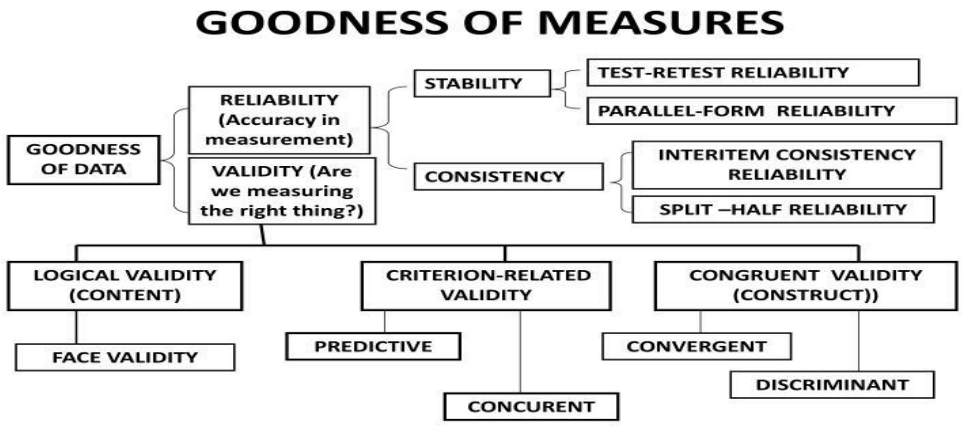



**Figure 3. 3:** Goodness of measures

Source: (Sekaran & Boughie, 2013:204)

Based on Figure 3.1 above, the research has kept its focus on internal consistency reliability. Thus, the internal consistency of measures is revealed by the similarity of the items in the measure that tap the construct (Sekaran & Boughie, 2013:205). The questions were considered together as a group, and the statements were able to determine the same idea. Thus, the respondents assigned the same overall significance for each item. This was observed when analysing if the elements and the subsets of items in the evaluating tool are highly correlated. Sekaran & Boughie (2013:205) agrees that consistency is assessable through the following tests:

- The inter-item consistency reliability and,
- split-half reliability tests.

The first method is an assessment of the consistency of the research participant's answers to all the questions in a measure. To the degree that question statements were independent measures of the same theory, they were linked with each other. Hence, Cronbach's coefficient alpha is one of the most recognized consistency reliability tests of inter-item reliability (Cronbach, 1946). The higher the coefficient, the better the instrument of measure. Cronbach's coefficient alpha was used in this research study to test the reliability of the instruments used. There were guidelines to interpret the Cronbach's alpha coefficient which is widely and generally agreed on by researchers:

- 0.90-high reliability
- 0.80-moderate reliability
- 0.70-low reliability

A statistical method was computed to calculate the Cronbach alpha coefficient (α). However, other methods were used to confirm the reliability as it pertains to the qualitative aspects of the research:

**Credibility:** The researcher used the recording, notes, and transcripts to show the relationship between the data and the analyses. Frequent conversations were held, and changes have been made based on the propositions and recommendations.

**Dependability:** Here, the objective was to demonstrate signs of constancy and consistency in the course of study. The researcher paid attention to confirm that the investigation procedure was reasonable, clear, perceptible, properly recorded.

**Authenticity:** Interview schedules were to ensure reliable, unbiased, and valid data.

**Confirmation**: An assessment or review was done by way of the investigation procedure to certify the data and analyse findings.

The reliability and trustworthiness of this study were confirmed with the use of these standards: credibility, dependability, authenticity and confirming.

### 3.11.2 Validity

Since, the mixed methods research was chosen as the research methodology approach for this study, the questionnaires were used to collect quantitative data. Scholars unanimously agree that numbers or figures show the following:

- what the data looked like,
- where the breakpoint 0 midpoint is,
- how the data can be the range, and,
- the relation between figures (Leedy & Ormrod, 2001:259).

The research has also used descriptive statistics for the interpretation of the data collected during the investigation. These types of data determine a set of data. Their examination involves reporting standard deviation and means for each variable to get primary insights into the data (Mertens *et al*., 2016:39).

Another item that measures through descriptive statistics demonstrates whether there is enough change in the data, such as Spearman's rho rank-order correlation. Therefore, the research study used SPSS to categorize data and validate the collected data. The study used four steps to interpret data and data analysis, which are data reliability, validity testing, data categorization, and statistical interpretation.

**Phase 1:** Data Validity Testing—in this stage, evaluating tool validity was tested, and the data gained from the questionnaires was computed on SPSS.

**Phase 2:** Data Reliability Testing—a reliability test was piloted before classifying data. Teo (2013) indicates that testing the reliability consists of showing how consistent a test measures any item that is supposed to be measure.

**Phase3:** Data categorization—after data computing and performance of the reliability test, data were classified.

**Phase 4:** Statistic Interpretation—in this phase, collected data movements are described, as demonstrated by the tables and graphs.

Statistical validity is the extent to which the statistical covariation between treatment and the result is accurate (Edmonds *et al*., 2016:9; Johnson & Christensen, 2014: 300). Academics recognize many validity types for instance content, criterion and construct validity. Validity is frequently assessed by the use of correlation coefficients. Content validity was tested for this research study. Content validity of a test refers to whether it accurately measures knowledge of the content domain of which it was designed to measure, in other words it looks at whether the items adequately and representatively sample the content area to be measured (Wesonga, 2014; Golafshani, 2003).

To ensure the validity of the research questionnaires, the researcher consulted with his supervisor on the accuracy of the questionnaires before distributing to the research participants. Questionnaires were only circulated after the supervisor and the investigator were confident that the evaluation tool was accurate. Many other tools such as the range, standard deviation, Data Skewed Distributions, Mean, Kurtosis, Interval Scale of Measurement, and, Correlation analysis. were used for descriptive statistics to confirm the validity of the study. However, the research used Cronbach's alpha and the correlation matrix tools to measure the consistency of the variables.

## 3.12 ETHICAL CONSIDERATIONS

"As researchers, we are morally bound to conduct our research in a manner that minimizes potential harm to those involved in the study" (Bloomberg & Volpe, 2012:111). Scholars, avow that everyone contributing to the research should consent and have to be informed about the research process, they should have the right to privacy, confidentiality, anonymity, and respect (Mouton, 2001:243-244). Ethical considerations are crucial for any qualitative or quantitative study that involves the participation of people.

During the collection of data, participants remained anonymous (refer to Appendix 4, the questionnaire cover letter) The same applied to face-to-face interviews. Respondents were assured the protection of their designations and identity numbers. Any devices used to collect data such as camera, tape recorders, or any other device was used with the research participant's approval. The investigator confirmed protection of the rights, interests, sensitivities of the company, and obtained material and information provided based on reciprocal trust and confidence. Contributors to this investigation had rights that included, but were not limited to the following:

- A right to refuse to be interviewed,

- A right to refuse to answer questions,
- A right to reject telephonic calls or e-mail surveys,
- A right to reject any question,
- A right to reject interviews at mealtimes,
- A right to reject any interview at night, and,
- A right to reject or accept long periods of interviews.

Before the full-scale examination, the investigator obtained written approval for the research from the top management of the brewery of Gabon (refer to Appendix 2), where Cape Peninsula University of Technology (CPUT) was acknowledged as the researcher's representative institution. An information sheet (Appendix 4) was distributed to the targeted group clarifying what the research required, including the desired benefits of the research.

Furthermore, the researcher reassured the participants of their protection and obtained their consent to contribute to the research. This statement included the objectives of the study and requested each participant's authorization to proceed (Appendix 3: declaration of consent). There have not been any risks due to contributing. The researcher upheld the research contributors' interests and rights when it comes to matters concerning the writing and publication of information. They were also assured a copy of the research report should they deem it necessary.

## 3.13 SUMMARY

This chapter investigated the research methodology and design selected to explore the impact of ISO9001 on service delivery at the logistics department of a brewery in Gabon. The exploratory sequential mixed-methods approach was selected and elucidated with the data collection instruments used. The research target group and samples were cited and well-defined. The researcher debated the research boundaries, and then the section was completed by specifying data collection and data analysis approaches as well as ethical considerations.

# CHAPTER 4: OVERVIEW OF THE CASE- SOBRAGA

## 4.1 INTRODUCTION

The beverage market's sole beer producer and largest soft drink producer and largest beer and water bottling firm is the brewery of Gabon KNwn as Sobraga, which was established in 1966-1967 (Oxford Business report, 2015). Sobraga producer Castel Group, a family-owned firm, is a world actor in the beverage industry worldwide and most likely the only one in Gabon, and the company is specializing in two sectors: beer and wine. The brewery is one of the country's major private sector employers with around 992 full-time employees nationally and about 300 temporary employees at its five production facilities including:

- Franceville created in 1971,
- Port-Gentil created in 1973,
- Oyem created in 1978, and,
- Mouilla created in 1985

The company also created a thousand jobs indirectly with retailers, distributors, wholesalers, operators of drink outlets, and warehouses. It has expanded in the sector of activity by buying the company of the wine of Gabon (SOVINGAB). With a turnover estimated around CFA 170 billion (bn) approximately (€225m) in 2014. It is ranked among the largest firms in Gabon. The company produces six brands of beer, castle, Guinness, 33 exports, Regab (the best-selling country beer), and soft drinks including, Fanta, Coca-Cola, Sprite, djino, Orange, and imperial Tonic (Oxford Business report, 2015).

In 2009, all the company facilities obtained ISO9001:2008 certification. Sobraga accounts for around 90% turnover in 2014 of the group's total turnover, and a 90% share of beer sales. The group includes bottled water producer Soboleco and has seen an increase in its revenues and volumes of its bottles sold over the last ten years. The company also produces two brands of bottled water: aning'Eau, purified water bottle produces in Port-Gentil, commercialized since April 201, and Andza, the country's best-selling bottle of water, produced from in the Batéké plateau from natural sources near Franceville (Oxford Business report, 2014).

This chapter provides a comprehensive overview of Sobraga environment, touching on the company's investments and management systems.

## 4.2 SOBRAGA INVESTMENTS

### 4.2.1 Internal Organization Investments

Sobraga significantly invested over the last three years a total of around (€30m) approximately R438 042 737 to expand and develop its production facilities. In effect, an amount of around (€13.3 m) exactly R194 210 277 has been allocated to increase its main plant located at Owendo (North of Libreville) in 2013 (Oxford Business report, 2015). The Owendo production facility now represents 70% of the national production, plus 9 million liters of beer per month. The company has also inaugurated a new plastic bottle plant in 2014 at its Andza plant in leconi (South EST of Gabon), which has considerably multiplied its production capacity to approximately 12000 units per hour. The same new production line has also launched the 33 cl of bottles for Andza. This was a novelty for the Gabonese markets. To cope with the sharp increase in local demand in 2017, Sobraga via its subsidiary, the breweries of Léconi (Soboleco) decided to anticipate its planned investments in 2018. Thus, 4 bn francs (R89 022 520) will be injected this year too, among others, the purchase of equipment to produce 15,000 bottles day, or 300,000 per month (Oxford Business report, 2013-113).

### 4.2.2 Social Commitments

- **Sobraga Commits Against Female Cancer**

During the awareness of the women's cancer called "October rose" in Gabon in 2015, the company has deployed an internal and external communication campaign dealing with the commitment of women in society to this matter of public health. "October rose" has been launched to sensitize Gabonese women about breast and cervical cancers and to reach as many women as possible. The company is still working alongside associations to get the message across, and to make the company ambassador of the campaign. The company has consequently deployed visuals at all production sites, and all the organization’s female employees benefit from free screening during the campaign in a dedicated health facility built for the purpose. To raise more interest, the company has launched "Pink Friday" exceptionally throughout October 2016, which has allowed employees to put on pink accessories in support of the national awareness campaign every Friday ( Sobraga, n.d).

- **Sobraga supports tomorrow’s entrepreneurs**

The brewery of Gabon has allocated FCFA 15 million (R 333 819, 27) to support Junior Achievement (JA) Gabon to finance their activities (JA Gabon, online). The company and JA agreed on a partnership. This contract aims to support activities undertaken by JA Gabon's programs. The start-up programs will be able to benefit 350 youths in high schools in Libreville, Lambaren (5rd capital of Gabon), and Moanda (Town in the south Est of Gabon). One part of these funds will also be spent on the realization and production of the TV show on entrepreneurship called "Planet startup". Finally, a program called startup of the weekend organized by JA will also receive financial support. All of these initiatives were established to demonstrate the commitment of the brewery to entrepreneurial activities in Gabon (Sobraga, n.d).

### 4.2.3 Corporate Social Investments

Standing on its commitments to environmental issues in Gabon, Sobraga has launched a voluntarism environmental move with the implementation of a wastewater treatment plant at all of its production facilities in Gabon. The implementation of this large scale-scale project, which aims to comply with regulations in term of wastewater (environmental code), make the company the pioneer in the treatment of wastewater throughout the national territory. It is an "aerobic" type station operating continuously (24/24) with a volume of water recovered of 700 m3 per day, for a quantity of water treated with 100%. Maintenance costs and follow-up are estimated at CFAF 100 million (R2 225 433,54) per year. Creating jobs, transferring new technology, protecting the environment by thinking about future generations and controlling the quantities of water discharged per day in the company are all advantages associated with this promising project (Sobraga, 2017).

### 4.2.4 Education

In April 2014, the Gabon Breweries Society (Sobraga) undertook an awareness-raising campaign on the environmental protection of pupils of Akournam II public school in the second district of the municipality Owendo. Furthermore, Sobraga participated in the financing of five SOS children’s village accommodation in Libreville, Port-Gentil, Akanda, and Oyem. The company not only assists with day-to-day running costs but also supports various educational programs attended by residents of the sponsored houses (Sobraga, n.d).

### 4.2.5 Skills Development and Training

The Group recognizes its obligations with its stakeholders and employees to ensure that the organizational structure and human resources meet the company's goals and objectives. The company is committed to train and develop its employees at all levels of the organization and to improve their capabilities through training and education, transfer of competences, and other internal development programs (Sobraga, n.d).

### 4.2.6 Diversity and Inclusion

The brewery of Gabon offers a work environment free from discrimination, as a fundamental right. The company expects employees to show a high degree of ethical conduct and have real respect for individuals. The company argues that to sustain its business the firm must prove its commitment to an inclusive and diversified labour force. It is seen that there is a high degree of commitment when working with employees from different backgrounds (Sobraga, n.d).

### 4.2.7 Environment Commitments

Sobraga has shown its commitment to operate in an environment responsibly by adopting the ISO 14001 environmental management Standard.
The brewery minimizes any effect in its environment by:

- Taking into account the organization's conditions in all decisions making and actions,
- supporting internal and external environmental education,
- improving environmental effectiveness at all times,
- organising the internal audit to identify legislated principles and methods, then,
- offering the required financial supports and human resources.

In addition to the comprehensive environmental management programs already in place at each plant, every manufacturing process is closely scrutinized to determine where new efficiencies can be introduced to further reduce any negative environmental impact (Sobraga, n.d).

### 4.2.8 Corporate

The company encourages the standard of good corporate governance required by the Gabonese legislation act and the combined code of corporate methods and conduct. The Board of Directors of the brewery of Gabon shows its engagement with the principles approved by the legislation including transparency, accountability, and responsibility, the Gabonese brewery conforms to the Gabonese labor market legislation (Sobraga, n.d).

## 4.3 MANAGEMENT SYSTEMS AT SOBRAGA

Sobraga adopted and complied with various international management systems in order to improve the organization's health and safety conditions. Consequently, the company was certified for the following:

- ISO9001:2008 Quality management certification,
- ISO14001 environmental management system and,
- OHSAS 18001 Occupational, Health, and Safety Management System.

Additionally, Sobraga has recently been certified for ISO22000 Food safety management. All these certifications are applied in all the organization’s plants. In effect, the following have been established:

- The wastewater treatment plant,
- storage of flammable and combustible products,
- a drying station of grains
- a recycling station of waste, and,
- conformity report on electrical appliances and machines.

The company is continuously improving its management system and procedures to ensure that they meet their customer needs and expectations.

### 4.3.1 Quality Management System

The QMS was established and documented in the organization based on expectations. ISO9001:2008 requirements were managed through a process and under the responsibility of a pilot who ensures implementation of the QMS.
Additionally, the processes are categorized into the three following categories:

- **The management processes**: these include strategic activities that guide the company, ensure quality management, and significantly influence its **effectiveness.**
- **Product realization process**: this determines the core activity of the brewery of Gabon. It corresponds to the indispensable activities on the product's life cycle.
- **The support processes:** these include activities or processes that do not directly add value perceivable by the costumers. They bring the necessary assets and data for the efficiency and effectiveness of the management processes and product realization (Sobraga QMS, 2017).

### 4.3.2 Health & Safety

"The Health and safety of people in our company is crucial. The company continues to set an on-going target of zero injuries and zero occupational infections" (HR department , 2018).

As a result, the company certified to OHSAS 18001 and ISO14001:2004. These certifications enable the company to conform to health and safety standards and international environmental requirements.

Thus, the objectives and the targets of these programs are defined based on the priorities that are identified when assessing health and safety risks and environmental impacts. Moreover, this happened regardless of the conformity of the site and the targets defined by the health and safety and environmental management team.

### 4.3.3 Food and Safety Management System

Sobraga established, documented, and put in place the ISO22000 standard. The entire food supply chain has been assessed to identify the pitfalls and to better control raw materials, the processes, equipment, and finished products. **Figure 4.1** below demonstrates the ISO22000 management system.

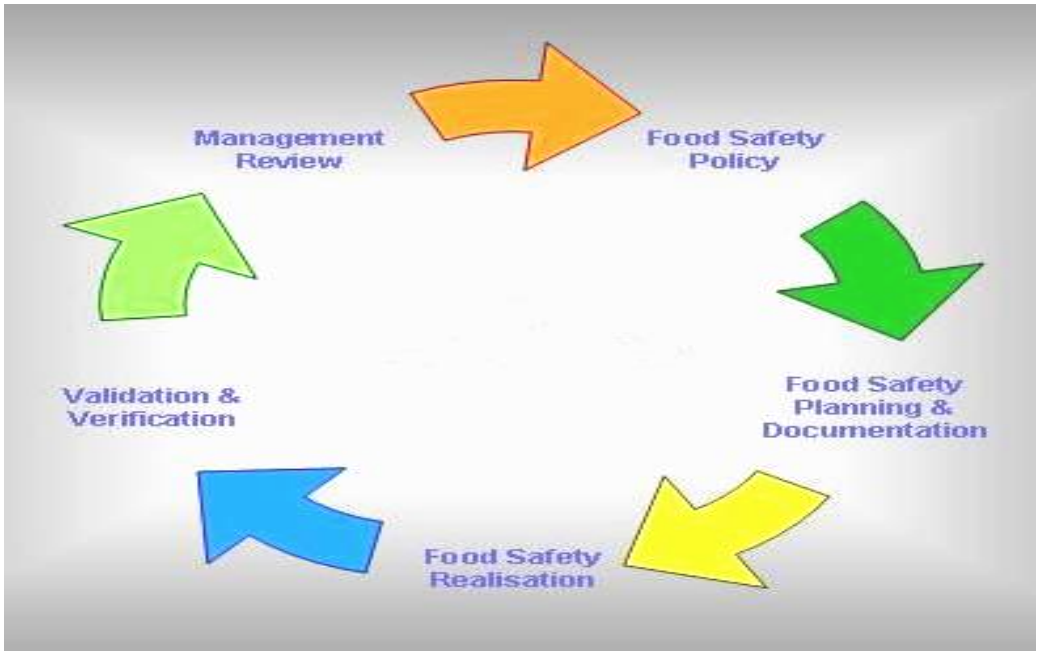



Figure 4. 1: ISO22000 Management System

(Source: Sobraga'quality, n.d)

## 4.4 SUMMARY

The background to the research environment gives an overview of the case study, namely the brewery of Gabon. In effect, the organization is one of the leading organizations in Gabon that not only employs thousands of Gabonese, but it also involves Gabonese society in significant actions and commitments. By having the monopoly of the breweries' distribution and production in Gabon, Sobraga contributes to the economic growth of the country. Additionally, the company has taken a step forward as the first company to implement a set of certifications for the last ten years in Gabon. This is a considerable advantage that makes the organization more productive and more efficient.

# CHAPTER 5: DATA ANALYSIS AND DISCUSSION

## 5.1 INTRODUCTION

The aim of this chapter is to analyse and discuss the outcome of the interviews and survey conducted in the logistics department at the brewery of Gabon. Ravitch and Carl (2015:438) define data collection as a series of related, iterative processes. While, Pingili and Sindhu (2017) asserts that data analysis is "the process of bringing order, structure, and meaning to the mass of collected data". The respondents who contributed to this research study were mostly employed at the logistics department where the ISO9001 certification has been implemented since 2009. A questionnaire had been distributed to employees to determine the impact of the ISO9001 within the selected department. A personal interview was conducted with the manager responsible for the department as a means of collecting qualitative data. The research study used descriptive and inferential statistics to scrutinize the data using the Statistical Package Social Science (SPSS).

The quantitative data that the researcher collected and analysed using SPSS was coded into numerical representations, such as gender, age, education, job title, work experience. Additionally, for the study, the respondents had been asked to align their responses to the questions based on the five Likert scale format. With the use of SPSS, these responses have been converted into numbers for capturing. Thus, after the analysis, SPSS generated the following descriptive data: frequency, means, and standard deviation and others as outcomes. These tools show the frequencies of responses and the percentages for each of the items in the survey about the impact of ISO9001 in the service department at Sobraga (Appendix 7). The study used Cronbach's Alpha for reliability test of all the items.

This chapter reported on the analysis of each finding, commencing with qualitative and quantitative data results.

## 5.2 RESPONSE RATE

The research target demographic was selected at the brewery of Gabon located at Owendo in Libreville. The logistics department was selected with a prerequisite: the Company should be certified at ISO9001 Standard. Thus, from a total of 135 possible respondents in the logistics department, only 127 responded, which was roughly a 94% response rate.

## 5.3 SCALE OF MEASUREMENT

The measurement tools used for the qualitative part of this study were an interview (refer to Appendix 5), while demographics and rating scale questionnaire (refer to Appendix 4 and Appendix 6) were used for the quantitative data. Thus, the first part of the questionnaire represents demographic information and was assessed with the normal scale of measurement, while the second part of the questionnaire was measured with a Likert scale (Appendix 7).

## 5.4 QUALITATIVE DATA RESULTS

### 5.4.1 In-Depth Interview

According to Kumar (2011:160), an in-depth interview is a face-to-face interview where there is a repeat interaction between the investigator and the interviewee. Additionally, in this type of interview, the researcher seeks to comprehend the latter's viewpoints. The study used an in-depth interview as another approach of collecting data and also as an intention of collecting information from the manager's experience in the department. The interview questions are coded IQ1, IQ2, IQ3, IQ4, IQ5, IQ6 and IQ7.

### 5.4.2 Interview Questions

The interview questionnaire is composed of listed written questions, in which all answers are documented (Kumar, 2011:245). The questions for the in-depth interview were stated as follows:

- IQ1: Are responsibilities and roles clearly stated and appointed within your departments and what are the KPI’s for these positions?
- IQ2: How does the logistics department provide satisfactory service for ongoing management tasks, reviews (are your objectives being achieved?), management reporting, employees' training, and internal auditing compliance?
- IQ3: Is any quality plan put in place in the logistics department? if yes, what does it cover?
- IQ4 How do you assess your department performance? And what are the criteria to measure it?
- IQ5: How does the logistics department deal with incidents?
- IQ6: Are there strategies in place for changes to existing or new processes?
- IQ7: Do your employees know their work and how do they assure the delivery

of service?

## 5.5 RESULTS AND DISCUSSIONS OF THE IN-DEPTH INTERVIEWS

For this specific In-depth interview, the researcher interviewed the an employee of the logistics department of the brewery of Gabon works in the logistics department for more than fifteen years and was in the management position in the logistics department for 7 years. His work experience in the logistics department made her a good person to be interviewed. The interview took place in Sobraga on the week of October 27th and 28th of October 2017. The responses are summarized below each question. “IQ” denotes the relevant interview question.

**IQ1: Are responsibilities and roles clearly stated and appointed within your departments, and what are the KPI’s for these positions?**

"Yes, the logistics department is assigned with the obligations of ensuring that the whole process of logistics is maintained and improved in harmony with the company’s achievement of goals and objectives at an economical cost. The duties of the logistics department include warehousing, distributing, storage, movement of goods from point internally or externally from point A to B, following and delivery of goods. It involves an entire process of planning, controlling, leading, and coordination to ensure that the items reach the right spot, at the right timing, for reasonable costs, and in good conditions. The warehouse supervisor, distribution supervisor, storage manager and the movement of goods manager roles have all been stated and assigned. Furthermore, the movement of a good supervisor is directly accountable for the quality of the service delivery while the storage manager plays the role of coordinator and incident manager". The main key performance indicators are all under two functions of the department.

**Distribution (transport)**

- **Prompt Delivery**, "which is the capacity to implement its services effectively timely. Accurate on-time service delivery is significant for our clients and customers."
- **Cost per Pounds**, "This KPI assists our customers to continue to buy well as it helps them to save money when they buy goods."

**Warehouse**

- **Inventory accuracy, "**this helps us to determine the assurance of warehouse staff when organizing deliveries. We want a high degree of precision to ensure that the right goods are sent to customers."
- **Dock to Stock,** "we are using this KPI to track and trace the level efficiencies of incoming operations, and to guarantee that the goods are ready for orders any time."
- **On-Time Shipping,** this is used to indicate the percentage of goods that left the warehouse on-time.
- **Order Accuracy**, "this KPI is used to demonstrate how accurate orders can be filled."

It is observed that the IQ1 is directly related to the secondary research objective stated as follows: "**Measuring service delivery"**. The IQI highlights the KPI of the brewery of Gabon. These KPIs play an important role when measuring organization effectiveness as well. It is agreed that measuring service delivery consists of assessing the implementation of the organization's specialized capabilities and skills through actions, processes, and performance (Vargo & Lush, 2004:324-35). Furthermore, the IQ1 is strongly related to the secondary research objective stated as the following: **"Measuring ISO9001 effectiveness"**. According to Walker and Johnson (2009: 85-105), ISO is not only used to achieve the performance standard, it is also used to determine the procedure by which the QMS may be met, and through which the capabilities and effectiveness's of the QMS is enhanced. It appears that the duties, responsibilities and roles are in place according to the KPIs of the logistics department.

**IQ2: How does the logistics department provide satisfactory service for ongoing management tasks, reviews (are your objectives being achieved?), management reporting, employees' training, and internal auditing compliance?**

"We have management reporting on a daily, weekly and fortnightly basis. We ensure that the reports are all sent to the supervisors and managers in the department. These reports include delays in delivery, unpredicted event, truck accidents, staff incidents, status updates, management decision making or problem-solving listed based on the date of occurrence. Additionally, an ad hoc basis is also used for reporting. We hold meetings every morning in each section and the minutes of the meeting are reported to the hierarchy with the representatives of each department, then the final report is sent to the General Manager of Sobraga. There is regular communication amongst staff members through our information channel. We provide adequate training to our

employees when it is required. Internal auditing is conducted in the department of quality every last Friday of the month. We used their report to ensure that non-conformities are assessed and corrected"

The IQ2 interview's response shows a direct link with the research objective: **"Identify how the brewery company measures the impact of ISO9001 implementation on service delivery".** The IQ2 response is supported by scientists who suggest that conducting audits, developing surveys, assessing program results and analysing and reporting data are necessary approaches to determine the effectiveness of communication in the organization (Sinickas, 2005; Williams, 2003). The findings show that the manager is satisfied that the necessary meetings are being held and that these are reported appropriately. Furthermore training of staff is adequate. Non-conformities are identified from internal audit reports and addressed when needed.

**IQ3: Is any quality plan defined in the logistics department? if yes, what does it cover?**

"Yes, we have set a target of zero complaints from our customers for the next three months as a target to ensure that the service quality of our department is the best amongst all the departments in the company. We have also established an assessment system in each section of the department that enables sections to assess themselves, for example, the transport section or department can assess the storage section and vice versa. The aim is to encourage employees to reach our target of zero complaints".

The IQ3 response is related to the following objective **"Measuring ISO9001 effectiveness".** Quality checks and self-assessment is built into the fabric of each department. The zero complaints target is the main measure.

**IQ4 How do you assess your department performance? And what are the criteria to measure it?**

"We are conducting internal audits or quality reviews. External auditors conduct audits annually. Based on our organization policies, we conducted quality reviews annually and the logistics department complies with the rules, with the next quality review planned for December 2017."

**IQ5: How does the logistics department deal with incidents?**

"When an occurrence happens, we first identify which function of the department is

responsible for handling any incident, then we assign. Secondly, we seek the staff who is responsible to resolve the issue. Thirdly, we escalate the problem by categorizing it (urgent or not). Fourthly, we prioritize the incident, then we assign the right technical staff to solve it. We follow the incident and the last, not the least, we communicate the incident to the whole department."

Pendrill (2014:51) Claims that conformity evaluation is any action undertaken to determine whether a product, process or service conforms directly or indirectly relevant requirements or meets specified standards. IQ5 is related to the following research objective**: "Measuring ISO9001 effectiveness".** In this interview's response, the manager briefly describes how the department deals with conformity issues. The steps followed by the department in this context certainly prove the effectiveness of the QMS in the logistics department.

**IQ6: Are there strategies in place for changes to existing or new processes?**

"We have implemented many changes in our department since 2009 when the company has been certified with ISO9001. The whole organizational communication, for instance, has changed and all departments including the logistics department make sure that all the parties have the right information on time. When it comes to strategies to address changes, once we have identified the processes that need changes, in this case addressing changes becomes crucial for the organization. Eventually, we first need to identify the risks and chances related to the processes examined. Once these have been assessed, change may be needed to achieve the advantages related to the assessment of risk and opportunities. And these changes can be associated with any section of the process, I meant by that, input, people, measurements, controls, resources, activities, outputs and so on".

Nkomo and Kriek (2011:453-470) assert that change consists of shifting the strategy and processes of organizations. This goes in line with the following research objectives: **"Find out potential organizational changes that will be realized when ISO9001 is implemented."** Thus, change management strategies are the methods applied to properly manage change in an ecosystem experiencing change forces to accept change and express it towards a positive impact on a given firm (Warrilow, 2010).

## 5.6 DESCRIPTIVE STATISTICS

The data were collected from questionnaires administered to employees and were

captured on a Microsoft Access database. Subsequently, the data were imported as a SAS format through the SAS ACCESS module. Thus, the results were analyzed and interpreted. Descriptive statistics help to summarize data to provide a consistent and logical representation of the data (Struwig & Stead, 2001:158). These data will be presented using charts and tables.

### 5.6.1 Demographical Outcome and Discussion

The demographic and statistical results include personal information that were requested in section 1 in the questionnaire (Appendix 6). The information includes gender, age, education level, job title, and work experience.

### 5.6.2 Demographic Information: Section 1

#### 5.6.2.1 Gender of Participants:

Figure 5.1 shows that 72.4% of the participants are female, while 27.6% are male. Based on this information, most of the participants in the logistics department are men.

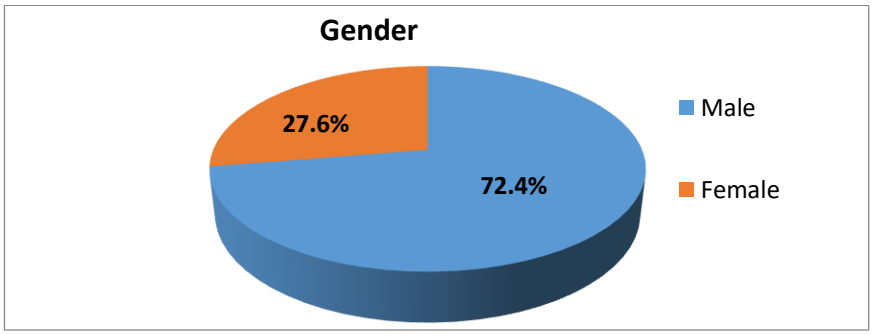



Figure 5. 1: Respondents' Gender

#### 5.6.2.2 Age group of participants

Figure 5.2 demonstrates that the majority age group constitutes 35.4% of the participants and they are between 35-45 years old; next, 27.6% of them are between the ages of 25-35 years of age. Additionally, 22.8% are between 45-55 years old, while 12.6% are between 18-25 years old and 1.6% are 55 years old and above.

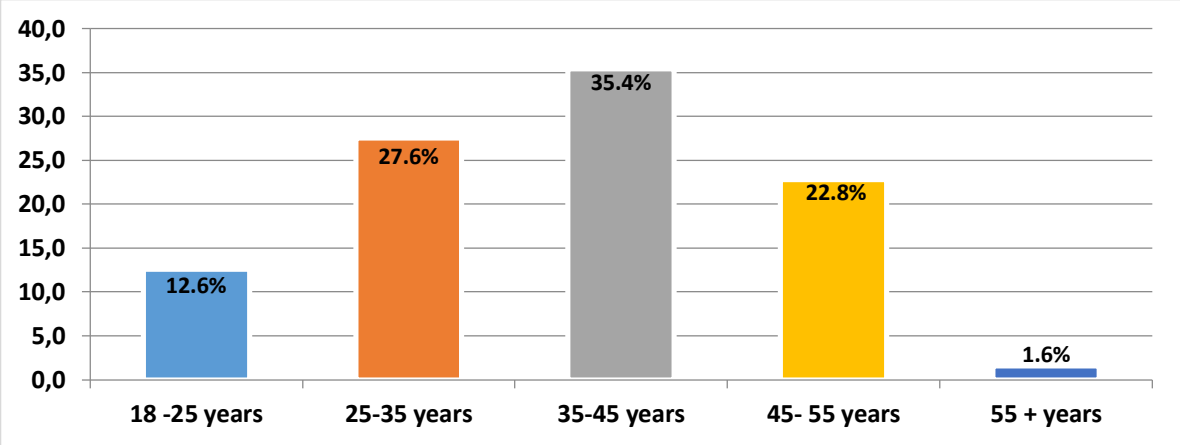



Figure 5. 2: Respondents' Age

### 5.6.2.3 Educational level

Figure 5.3 as indicated, 42%, or the majority of the participants have a National Diploma (ND), 21.3% have a matriculation certificate, while the others 21.3% are not qualified, 6.3% have an undergraduate degree and 8.7% have a master degree qualification.

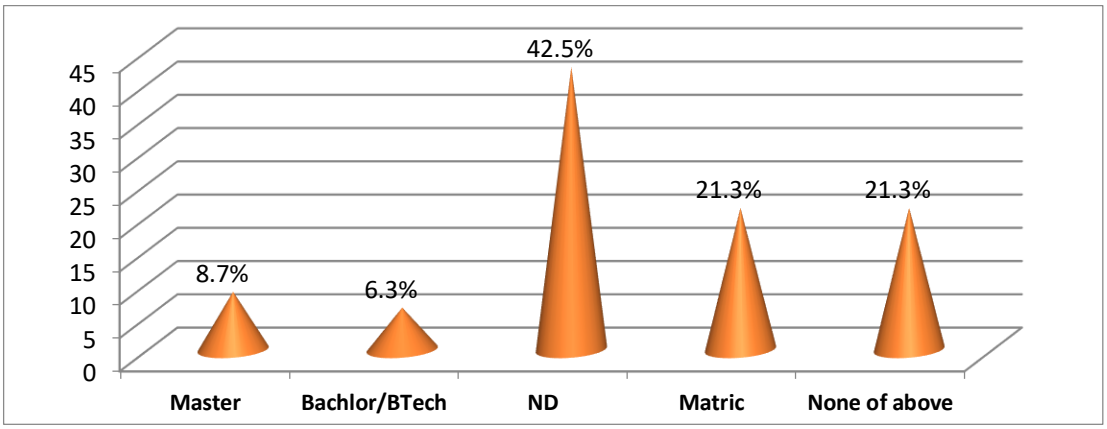



Figure 5. 3 Respondents' education level

### 5.6.2.4 Job title responses:

According to figure 5.4, 2.4% of the participants are top senior management, 10.2% of them are junior managers, 15.8% of the participants are in the administration office and 22% are Forman /supervisors while the majority (49.6%) are shop floor workers.

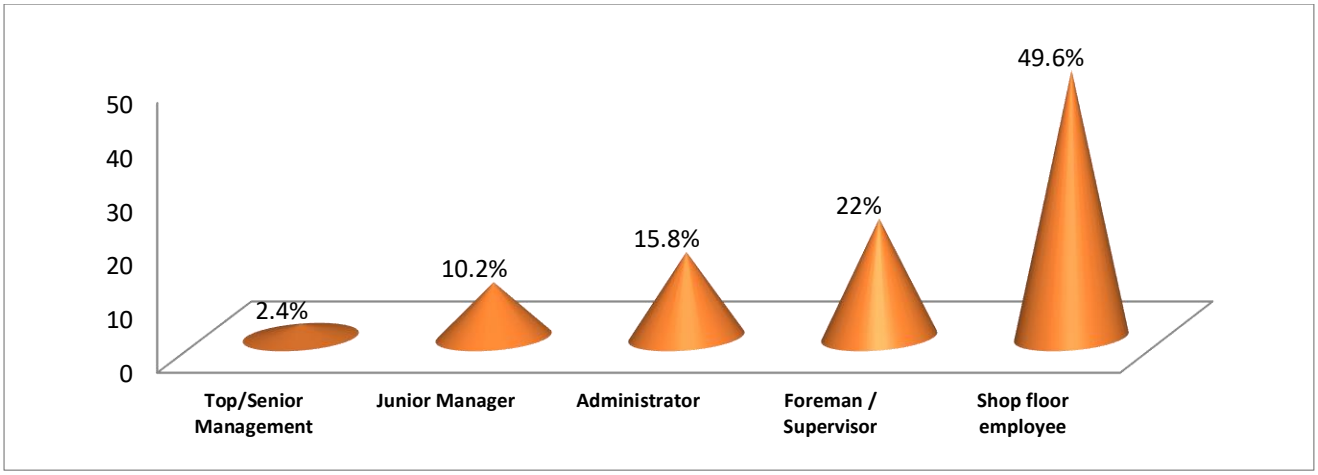



Figure 5. 4: Respondents' job title

### 5.6.2.5 Work experience

Figure 5.5 indicates that more than half of the participants 64% have between 6-15 years of working experience at their present company, 15% have been working for less than five years, 14.2% have been working between 16-20 years and only 6.3% have been working for more than 20 years at Sobraga.

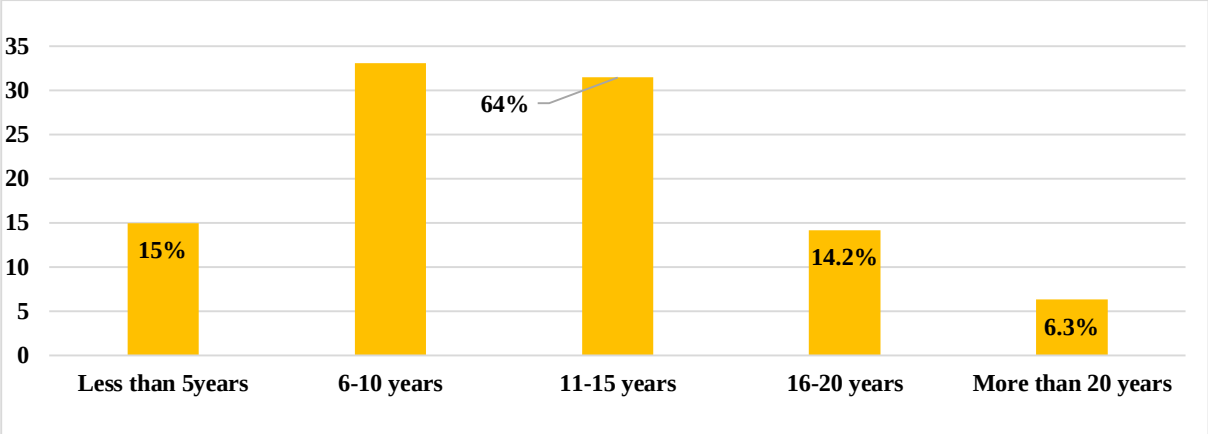



Figure 5. 5: Respondents' work experience

### 5.6.3 Statement Used Based On Likert Scale Results: Section 2

In total, 135 questionnaires were distributed within the logistics department. Most questionnaires were submitted at the administration office of the department with an information letter which clarified the requirements and the purpose of the investigation with instructions to complete the questionnaire (see Appendix 4). As some of the logistics department employees are illiterate (i.e. shop floor's employees) and could not clearly understand the questionnaire, the investigator explained the questionnaire carefully to these employees the purpose of the questionnaire and how it was supposed to be completed. For the sake of the illustration for analysis, the variable based on rating scale data was coded ST1, ST2 and so on. Refer to Table 5.1.

**Table 5. 1:** The statements of questionnaire

| No. | Statement | Code |
|---|---|---|
| 1 | There is a plan for continuous quality improvement. | ST1 |
| 2 | You always have methods and tools for problem-solving at work. | ST2 |
| 3 | The company has methods and tools in place to improve service quality. | ST3 |
| 4 | Customer's requirements are always considered as part of the criteria for evaluation. | ST4 |
| 5 | The quality policies are well established in the company. | ST5 |
| 6 | The company provides training programs for employees. | ST6 |
| 7 | The company regularly collects information for service improvement. | ST7 |
| 8 | There are regular monitoring, and improvement of the processes, procedures, and products. | ST8 |
| 9 | Managers examine the qms regularly. | ST9 |
| 10 | The company provides resources to ensure continuous improvement. | ST10 |
| 11 | Customer complaints are always treated as a major priority. | ST11 |
| 12 | A customer satisfaction survey is provided. | ST12 |
| 13 | Warranty claims and dealer reports are always provided for customers. | ST13 |
| 14 | You have regular contact with customers. | ST14 |
| 15 | The company has a procedure for customers to access the right person easily. | ST15 |
| 16 | The company specifies customer requirements in whatever they need. | ST16 |
| 17 | The company always considers customer perception regarding service quality. | ST17 |
| 18 | The company has an effective channel for customers to obtain information, contracts, orders, feedback, etc. | ST18 |
| 19 | The company has procedures to prevent nonconformities (i.e. customer complaints, late deliveries or team members not trained). | ST19 |
| 20 | The company adopt measure for occurrence of non-conformance | ST20 |
| 21 | There are ways to eradicate the reasons for potential non-conformance. | ST21 |
| 22 | There are inspections for preventing actions taken. | ST22 |
| 23 | Nonconformities are reduced through continuous improvement. | ST23 |
| 24 | The company always makes sure that nonconformities are in control. | ST24 |
| 25 | The company has a procedure indicating the person who is responsible and authorized for nonconformities. | ST25 |
| 26 | Any non-conforming materials are immediately quarantined in the segregated area. | ST26 |
| 27 | Employees are highly motivated since the implementation of ISO 9001 | ST27 |
| 28 | Employees feel at home while they are at work. | ST28 |
| 29 | There is an “open door” policy in place for everybody. | ST29 |
| 30 | It is easy for employees to communicate with managers. | ST30 |
| 31 | All information is available to everyone on time | ST31 |
| 32 | You have experienced life-threatening from customers. | ST32 |

The interpretation of data was based on the sum of the highest scales between agree

to strongly agree. The researcher added agree to percentage / strongly agree with percentage. Then, it continued with agree / disagree and to disagree / strongly disagree, and then, unknown. Thus, the statements of the research were sorted based on their individuality and consistency. In other words, the interpretation was achieved in a set of statements and not essentially singular statements. This section of the decision-making survey used Figure 5.6 which depicted the respondent's views on a typical statement that contains statements related to CI, CS, PNC, motivation, and then, communication.

## 5.7 RATING RESULTS AND DISCUSSIONS

Based on Figure 5.6, the results from all 127 participants are positive. In particular, the majority of the responses are very encouraging. More than 90% of the respondents agree with the statements, ST1, ST2, ST3, ST4, ST5, ST6, ST7, ST8, ST9, ST10, ST11, ST12, ST13, ST15, ST17, ST18, ST19, ST20, ST21, ST22, ST23, ST24, ST25, ST26, and ST28. This implies that these following areas are significant.

- There is a plan for continuous quality improvement (ST1);
- You always have methods and tools for problem-solving at work (ST2);
- The company has methods and tools in place to improve service quality (ST3);
- Customer's requirements are always considered as part of the criteria for evaluation (ST4);
- The quality policies are well established in the company (ST5);
- The company regularly collects information for service improvement (ST6);
- There are regular monitoring, and improvement of the processes, procedures, and products. (ST8);
- Managers examine the QMS regularly. (ST9);
- The company provides resources to ensure continuous improvement (ST10);
- Customer complaints are always treated as a major priority (ST11);
- A customer satisfaction survey is provided (ST12);
- Warranty claims and dealer reports are always provided for customers (ST13);
- The company has a procedure for customers to access the right person easily (ST15);
- The company specifies customer requirements in whatever they need (ST16)
- The company always considers customer perception regarding the service quality ST17
- The company has an effective channel for customers to obtain information,

contracts, orders, feedback, etc. (ST18);

- The company has procedures to prevent nonconformities (i.e. customer complaints, late deliveries or team member not trained) (ST19);
- The company takes actions to deal with the occurrence of nonconformities (ST20);
- There are ways to eradicate the reasons for potential non-conformance (ST21);
- There are inspections for preventing actions taken (ST22);
- Nonconformities are reduced through continuous improvement (ST23);
- The company always makes sure that nonconformities are in control (ST24);
- The company has a procedure indicating the person who is responsible and authorized for nonconformities (ST25);
- Any non-conforming materials are immediately quarantined in the segregated area (ST26); and
- Employees feel at home while they are at work (ST28)

However, ST14, ST27, ST29, ST30, ST31, ST32 statements demonstrated that ISO9001 implementation has no positive impact on these specific areas (Neena, Garg & Neelam, 2016).

- You have regular contact with customers (ST14);
- Employees are highly motivated since the implementation of ISO 9001(ST27);
- There is an “open door” policy in place for everybody (ST29);
- It is easy for employees to communicate with managers (ST30);
- All information is available to everyone on time (ST31);
- You have experienced life-threatening from customers (ST32).

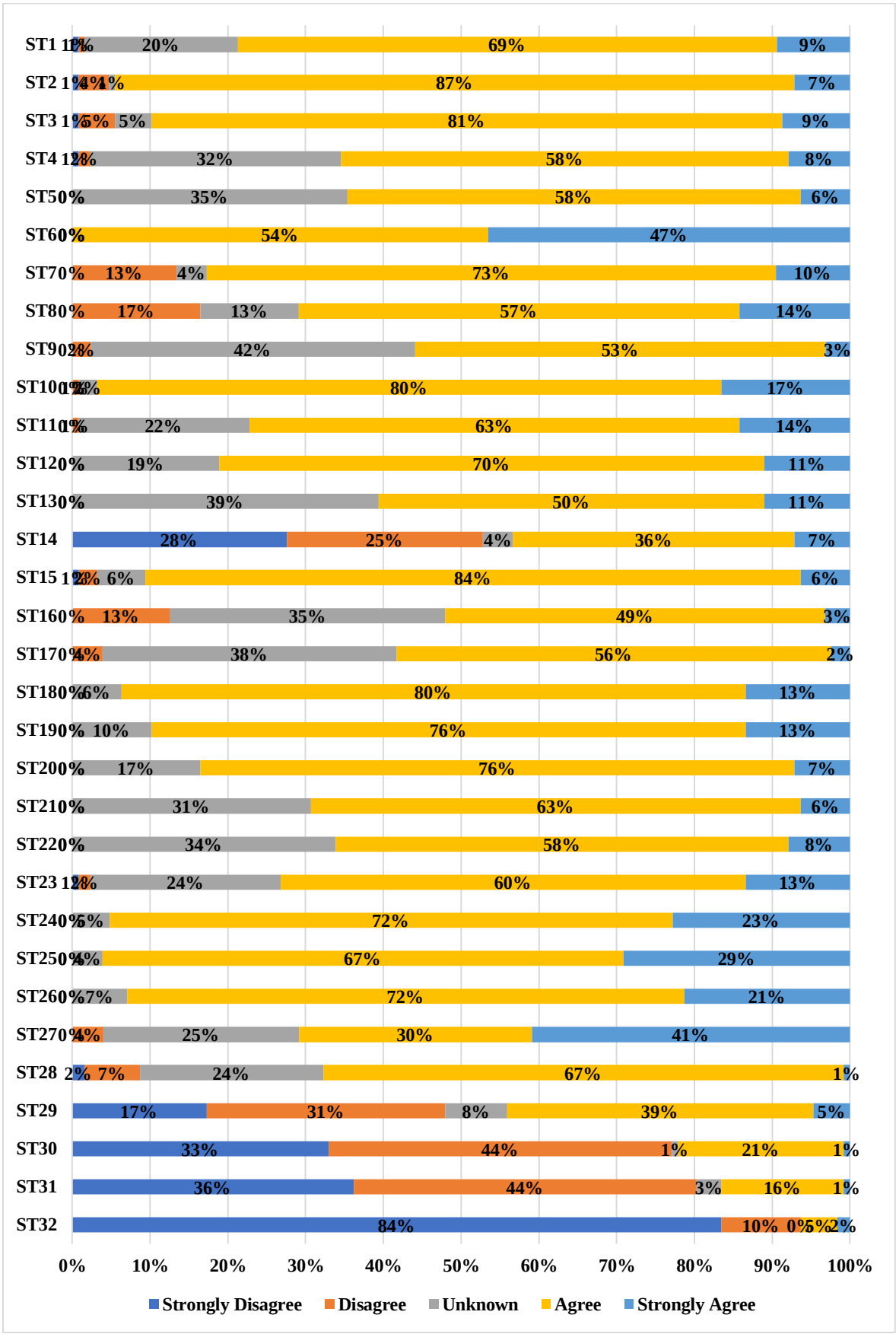



Figure 5. 6: Rating results

**Employees do not all understand the quality management policies. This could imply that employees are not sufficiently trained to understand the quality philosophy. This could be an issue for the department regarding the use of the QMS procedures.**

In terms of non-conformaties, it seems that the brewery pays particular attention to their customers and have in place the tools to ensure they get feedback from them in order to improve quality of product and experiences. The study found that there are no complaints from other departments with regard to the delivery of service. It seemed that the non-conformities observed affected other department processes but no claims were raised.

The study highlighted that a couple of employees have difficulties in communicating with their management. In other words the communication between both employees and management is not open. This matter can in the long term cause misunderstandings and conflicts within the department. Academics suggest that conducting audits, developing surveys, assessing program results, analysing and reporting data are necessary approaches to determine the effectiveness of communication in organizations (Sinickas, 2005; Williams, 2003).

Additionally, the research shows that many employees agreed that they do not have information on time, which obviously can have a huge impact on the reaction time and productivity. Since, some people were not used to the QMS, it seemed that there was a conflict in the adoption of the new philosophy. These issues need to be addressed. It is suggested that organization or the logistics department should enhance processes and capabilities that are designed to enable effective communication channels or processes (Jones *et al*., 2004).

## 5.8 INFERENTIAL STATISTICS

Jackson (2008:320) states that inferential statistics are statistics that seek to find whether there are correlations or differences between variables that are authentic and not due to error. The study retains the Cronbach Alpha test and the correlation matrix as techniques to make conclusions.

### 5.8.1 Coefficient Alpha

This section dealt with the research findings, and the outcomes. Reliability tests were

assessed on the sets of questions/ statements posed to the logistics department employees. The accuracy of a measure is a proof of the constancy and regularity in which the instrument assesses the theory and supports to evaluate the honesty of a measure (Sekaran & Boughie, 2013:203; Eiland, 2008:40).

The outcomes of the tests for the new variable were shown in Appendix 8. It indicates that there is a correlation between the corresponding items, the number scored, and the internal reliability of an instrument (Coefficient Alpha) if the corresponding items are removed. When removing the declarations with the highest value each time one by one, the value raised. Consequently, it was not compulsory as the assessment tools were consistent. According to Table 5.2, the general Cronbach's Alpha value was calculated at .901, which is more than 0.70 the acceptable average required (Nunnaly, 1978:245 in Vaske, *et al*,, 2017). Therefore, the results indicated that the group of variables had an excellent situation and all the individual items in the overall Cronbach's Alpha was highly consistent with each other. This indicates that the dataset has high reliability in this survey. A reliability outcome of this type determined confidence and a guarantee that accurate assumptions were drawn from this data. Table 5.2 below shows the Cronbach's Alpha reliability statistic.

Table 5. 2: Cronbach's Alpha

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .901 | .912 | 32 |

### 5.8.2 Correlation matrix

Spearman’s rank correlation was used as a tool to determine the degree to which two ordinal values are linked one and another (Sedgwick & Philip,2014). The correlation matrix in Table 5.3 shows that strong correlation exists between ST2 (You always have methods and tools for problem-solving at work), ST3 (The company has methods and tools in place to improve service quality), ST4 (Customer's requirements are always considered as part of criteria for evaluation) and ST5 (The quality policies are well established in the company). This implies that the variables are significant to each other.

While ST6 (The company provides training programs for employees), ST7 (The company regularly collects information for service improvement) and ST8 (There are regular monitoring, and improvement of the processes, procedures, and products.) show

a negative correlation among variables. This means that these variables are not significant to each other.

In contrast with ST9, ST10, ST11, ST12, ST13, ST14, ST15 and ST17 which also show a strong positive correlation between each variable. ST16, ST25, ST28, and ST32 reveal these statements are either negatively related with the scale variables or are positively frail in correlation. This implies that the variables are insignificant to each other. Furthermore, ST18, ST19, ST20, ST27, and ST29 display a moderate and positive correlation between each variable. In other words this can signify that the variables are significant to each other. Similarity, the following variables ST21, ST22, ST23, ST24, ST30, and ST31 are equally strongly correlated with each other.

Table 5. 3: Correlation matrix

| | ST1 | ST2 | ST3 | ST4 | ST5 | ST6 | ST7 | ST8 | ST9 | ST10 | ST11 | ST12 | ST13 | ST14 | ST15 | ST16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ST1** | | | | | | | | | | | | | | | | |
| **ST2** | .380** | | | | | | | | | | | | | | | |
| **ST3** | .405** | .609** | | | | | | | | | | | | | | |
| **ST4** | .513** | .309** | .303** | | | | | | | | | | | | | |
| **ST5** | .397** | -0.036 | 0.046 | .326** | | | | | | | | | | | | |
| **ST6** | 0.035 | 0.123 | 0.169 | .205* | -0.077 | | | | | | | | | | | |
| **ST7** | -0.062 | 0.143 | .270** | .238** | 0.002 | .351** | | | | | | | | | | |
| **ST8** | 0.061 | 0.147 | .303** | .233** | 0.08 | .426** | .673** | | | | | | | | | |
| **ST9** | .350** | 0.068 | 0.099 | .446** | .503** | 0.068 | .206* | .387** | | | | | | | | |
| **ST10** | .264** | -0.012 | 0.035 | 0.151 | .292** | 0.159 | 0.075 | .268** | .231** | | | | | | | |
| **ST11** | .338** | 0.104 | 0.144 | .331** | .385** | .218* | .296** | .324** | .379** | .267** | | | | | | |
| **ST12** | .323** | 0.121 | 0.122 | .392** | .431** | .252** | .274** | .365** | .480** | .362** | .705** | | | | | |
| **ST13** | .354** | 0.144 | .178* | .439** | .472** | .236** | .327** | .314** | .576** | .335** | .636** | .697** | | | | |
| **ST14** | .397** | 0.119 | 0.11 | .347** | .533** | 0.042 | -0.001 | 0.132 | .473** | .224* | .445** | .505** | .623** | | | |
| **ST15** | .379** | 0.017 | .220* | 0.117 | .316** | 0.005 | -0.073 | 0.051 | .249** | .232** | 0.17 | .280** | .214* | .227* | | |
| **ST16** | 0.149 | .231** | .326** | .381** | .269** | .251** | .539** | .416** | .377** | 0.121 | .477** | .433** | .555** | .443** | -0.023 | |

| | ST1 | ST2 | ST3 | ST4 | ST5 | ST6 | ST7 | ST8 | ST9 | ST10 | ST11 | ST12 | ST13 | ST14 | ST15 | ST16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ST17 | .406** | 0.043 | 0.097 | .378** | .515** | 0.17 | 0.038 | .208* | .502** | .341** | .371** | .469** | .544** | .510** | .340** | .421** |
| ST18 | .214* | -0.086 | 0.078 | .207* | .300** | .282** | 0.089 | .214* | .268** | .193* | .314** | .289** | .319** | .217* | 0.156 | 0.172 |
| ST19 | .174* | 0.034 | 0.086 | .272** | .399** | .232** | 0.1 | .218* | .319** | 0.125 | .324** | .369** | .353** | .296** | 0.13 | .310** |
| ST20 | .224* | -0.074 | 0.055 | .233** | .415** | 0.118 | 0.156 | .222* | .410** | 0.128 | .396** | .337** | .421** | .339** | 0.128 | .400** |
| ST21 | .361** | 0.02 | 0.126 | .312** | .416** | .266** | .222* | .329** | .416** | .216* | .366** | .458** | .591** | .447** | .206* | .362** |
| ST22 | .399** | 0.089 | .201* | .441** | .471** | 0.169 | .219* | .330** | .507** | .181* | .405** | .428** | .566** | .444** | .265** | .392** |
| ST23 | .334** | 0.126 | .206* | .453** | .331** | .199* | .294** | .390** | .340** | 0.116 | .438** | .342** | .418** | .399** | 0.138 | .453** |
| ST24 | .268** | 0.113 | .175* | .284** | 0.13 | .202* | 0.099 | 0.11 | .213* | 0.145 | .236** | .201* | .283** | 0.068 | .258** | 0.133 |
| ST25 | 0.088 | -0.076 | -0.085 | .196* | 0.088 | 0.126 | 0.073 | 0.085 | 0.047 | 0.066 | 0.172 | .212* | .212* | .227* | 0.121 | 0.11 |
| ST26 | .240** | -0.036 | -0.014 | 0.032 | .193* | -0.042 | -0.139 | -0.039 | .175* | 0.093 | 0.141 | 0.125 | .191* | .304** | .209* | 0.028 |
| ST27 | .177* | .259** | .264** | .222* | 0.059 | .199* | .377** | .279** | .356** | 0.092 | .225* | .255** | .400** | .278** | 0.077 | .488** |
| ST28 | 0.155 | .180* | .285** | 0.153 | 0.088 | .216* | 0.053 | 0.016 | 0.095 | -0.033 | .198* | 0.141 | .343** | .285** | 0.026 | .247** |
| ST29 | .227* | 0.139 | .206* | .290** | 0.141 | .339** | .236** | .391** | .285** | 0.135 | .224* | 0.156 | .291** | .241** | 0.018 | .227* |
| ST30 | .269** | 0.149 | 0.139 | .315** | .302** | 0.135 | -0.014 | .186* | .271** | 0.093 | 0.142 | 0.147 | .244** | .443** | 0.081 | .181* |
| ST31 | .322** | 0.123 | 0.122 | .240** | .252** | 0.144 | -0.065 | 0.093 | .220* | 0.081 | 0.122 | 0.043 | 0.154 | .307** | 0.099 | 0.116 |
| ST32 | 0.117 | 0.044 | 0.093 | .223* | -0.027 | .188* | -0.045 | 0.066 | 0.014 | -0.019 | -0.02 | -0.034 | 0.045 | 0.087 | 0.102 | -0.02 |

| | ST17 | ST18 | ST19 | ST20 | ST21 | ST22 | ST23 | ST24 | ST25 | ST26 | ST27 | ST28 | ST29 | ST30 | ST31 | ST32 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ST17 | | | | | | | | | | | . | . | | | | |
| ST18 | .380** | | | | | | | | | | | . | | | | |
| ST19 | .339** | .620** | | | | | | | | | | | | . | | |
| ST20 | .347** | .522** | .694** | | | | | | | | | | | | | |
| ST21 | .407** | .458** | .465** | .595** | | | | | | | | | | | | |
| ST22 | .430** | .497** | .468** | .639** | .763** | | | | | | | | | . | | |
| ST23 | .295** | .374** | .505** | .546** | .485** | .565** | | | | | | | | | | |
| ST24 | 0.156 | .378** | .437** | .375** | .333** | .324** | .455** | | | | | . | | | | |
| ST25 | 0.021 | .338** | .314** | .288** | .241** | .214* | .422** | .285** | | | | | | | | |
| ST26 | 0.121 | 0.13 | .235** | .344** | .231** | .199* | .198* | 0.148 | .311** | | | | | | | |
| ST27 | .263** | 0.026 | 0.12 | .182* | .226* | .260** | .297** | .287** | 0.093 | 0.112 | | | | | | |
| ST28 | .203* | .249** | .269** | .258** | .242** | .250** | .197* | .195* | 0.159 | .295** | .387** | | | | | |
| ST29 | .206* | .440** | .412** | .345** | .327** | .390** | .422** | .190* | .272** | .197* | 0.054 | .244** | | | | |
| ST30 | .266** | .191* | .255** | .245** | .290** | .348** | .331** | 0.13 | 0.082 | .271** | .186* | .278** | .598** | | | |
| ST31 | .178* | 0.153 | 0.17 | .175* | .260** | .271** | .283** | .181* | 0.025 | .189* | 0.158 | .208* | .472** | .728** | | |
| ST32 | -0.017 | .222* | 0.133 | 0.173 | 0.128 | 0.115 | 0.156 | .230** | 0.114 | 0.064 | -0.04 | 0.085 | .270** | .316** | .315** | |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The correlation matrix (see also Appendix 9) test using SPSS software shows that all aspects (variables) used to measure the effectiveness of service delivery through ISO9001 certification to the Gabonese's firm (Sobraga) are significantly associated at

0.05 levels. This indicates that ISO9001 certification has a significant impact on the quality of service delivery as it helps to reduce delays etc.

## 5.9 Observational findings

The researcher was immersed in the logistics department of the brewery primarily and was able to make observations and correlate these with findings from the interviews and questionnaire.

An excellent organization or department culture is recommended to achieve quality service. It has been observed that apparently employees were motivated to work for the remuneration only. The researcher observed that there was no morning review meeting. This seems contrary to what the logistics mananger indicated in her interview:

We hold meetings every morning in each section and the minutes of the meeting are reported to the hierarchy with the representatives of each department, then the final report is sent to our hierarchy Sobraga. There is an effective liaison amongst staff members through our information channel.

These types of meetings allow organization to review what was done the day before, and it also helps to remind employee the vision of the company by setting day or week goals. Academics assert that companies adopt the CI for developing internal structure and culture that encourage its practices instead of just keeping focus on tools and techniques for solving problems (Rodrigo, Dominguez, Fernando & Martins, 2016).

It has been witnessed that some employees, mostly those who had less than five years work experience, do not know about ISO9001. This could mean that there was no on–boarding process or effort from the management to inform new employees about ISO9001 and what it stands for and why the company needs it. Training and induction training especially needs to be addressed.

It has been observed there was a lack of leadership as employees were not professional amongst themselves when making transactions with other internal departments. Training to implement ISO9001 and the professional etiquette that goes along with that is important. The lack of focus could impact productivity negatively and service delivery would suffer as well.

## 5.9 SUMMARY

This chapter discussed the results and discussions of the data captured from the in-depth interview as the primary data collection source followed by the survey as the second data collection source. The researcher interpreted data with the use of descriptive statistics and inferential statistics, then, displayed inter-item correlations using a correlation table. Afterward, data were interpreted and conclusions were drawn.

Based on the results above, it seems that since the implementation of ISO9001, the logistics department has been operating effectively. Results indicate that the QMS significantly influences the way the department operates. It appears that the top management provides resources to ensure that the department meets its QMS requirements by providing quality service delivery to its customers. Based on these findings it can be concluded that ISO9001 requirements are well established and implemented by the logistics department service.

Chapter 6 is the next chapter and concludes the research study. Recommendations were made to mitigate the research problem.

# CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

## 6.1 INTRODUCTION

In this study, the impact of ISO9001 on service delivery at the logistics department of a brewery in Gabon was investigated. The chapter provides a summary of the research, along with conclusions and recommendation in regard to the implementation of ISO9001 in a selected service department.

## 6.2 THE RESEARCH PROBLEM REEXAMINED

The statement of the research problem is stated as follows “The lack of continuous improvement after implementation of ISO9001 in many services-oriented organizations in Gabon has contributed to the erosion of quality in service delivery.

## 6.3 THE RESEARH QUESTION REVIEWED

The study focused on the following research question: “What mechanisms can the brewery of Gabon use to measured IS09001 effectiveness in service delivery?”

## 6.4 THE INVESTIGATIVE QUESTIONS REVISITED

The aim of this research was to find out; how the ISO9001 philosophy is perceived and understood at a selected service department in the brewery of Gabon. The researcher was guided by the following five questions which have been crucial for the pursuit of the study:

1. `What are the common measurements of ISO9001?
   This question helped the researcher to find out ISO9001 measurement tools regardless of the context and the role these instruments played and should play in this company.
2. How can service delivery be measured?
   This question was focused on finding out the reason the department is failing when it comes to service delivery.
3. What are the key factors affecting ISO9001 implementation within organizations?
   This third question enabled the investigator to found out the potential elements which negatively influence the use of the QMS.

4. How does the brewery company measure ISO9001 implementation on service delivery within a particular department?

   The fourth question has guided the research to find out how the company proceeded to improve their management practices based on the QMS standard.

5. What are the potential organizational changes that come out after implanting ISO9001?

   This last question, helped to find out what actions the company has taken to enable the organisation to adapt to change and practices for new requirements.

## 6.5 THE RESEARCH DESIGN AND METHODOLOGY

The case study research method was selected as the primary research method to conduct the research analysis. For this research, the researcher used an exploratory mixed-method approach, a method in which the qualitative and quantitative approaches are employed. The point was that these mixed methods helped the researcher to conduct a holistic and complete investigation (McMillan and Schumacher, 2014:33). In other words, this method has enabled the research to used accurate tools such as face-to-face interviews, observations, content analysis as part of the qualitative tools and a questionnaire as part of the quantitative techniques. After processing the quantitative data through SPSS, the researcher tested the authenticity of the reliability of the survey using the Cronbach Alpha coefficient which was at 0.9. Therefore, it has shown a significant degree of quantitative reliability.

## 6.6 KEY RESEARCH OBJECTIVES

The following objectives to guide the investigation and ensuring that the research survey and interviews are in line with the research questions were used.

- To determine the common measurements of ISO9001,

This objective helped the researcher to explore instruments or quality management system tools to understand what were the causes leading to the lack of continuous improvement.

- To investigate the assessment criteria of service delivery,

This consisted of finding out the internal audit techniques when assessing service delivery.

- To determine the components affecting ISO9001 Implementation,

This consisted of finding out the factors that contributed to the erosion of the QMS in the logistics department.

- To investigate how the brewery evaluates ISO9001 effectiveness, and,

This objective helped the research to find out the criteria used by the quality controller when assessing ISO9001 implementation within the entire organization.

- To determine the causes of organizational changes that came out after implementing ISO9001

This basically consisted of investigation whether there was a radical organizational change after ISO9001 implementation.

## 6.7 CONCLUSIONS

### 6.7.1 Barriers to ISO9001 implementation

The study found barriers that influence the effectiveness of ISO9001 in the service industry at the brewery in Gabon. The barriers are:

- **Lack of management Involvement**

Management commitment is vital to any service delivery in organizations. The study found that the lack of management involvement is also a key element affecting the implementation of ISO9001 (Keng & Kamal, 2016:23; Mehfooz & Saeed, 2015). Therefore, top management of the brewery has to be more involved when it comes to the implementation the QMS. It is crucial not only for employees but for the entire organization success.

- **Resistance to change**

It is perceived that change is not well perceived in organizations. Organizational changes impact the relationship among employees and management in organizations, fear, and anxiety of job security, job satisfaction and individual control over work plus change to work environments may lead to resistance (Willis *et al*., 2016; Yılmaz & Kılıçoğlu, 2013).

- **Lack of training for management and employees**

Learning practices, qualify the top management or executives to build a better working environment that improves employees' performance (Elnaga & Imra, 2013). Although, researchers assert that training positively impacts employees' commitment, even if providing training to employees and top management is not enough (Brum, 2007).

- **High implementation costs**

Researchers stated that one of the negative aspects of implementing ISO9001 is that, there is a high cost of certification, implementation and sustaining the system (Zimon & Bednárová, 2016). The research found that the cost of implementation is very high. The reason is that companies that certify firms in Gabon are quite large, which means that the company has to pay for expert related expenses to come to Gabon and this without even starting to implement.
This obviously will cost the brewery in the long term as employees have to be trained regularly.

- **Lack of technical skills and expertise**

The main point here is that people are not sufficiently aware of the use of ISO9001. Mangula *et al*. (2013:14-19) stress that ISO9001 implementation can be a cause of poor practices. Whilst, Keng *et al*., (2016:23) note that an interruption could occur if there is no quality consultant when implementing ISO9001. Knowing that people resist change and are not frequently trained, the study presumed that, the lack of skills and expertise could be due to the high cost of the implementation or to employees who still resist changes.

- **Poor quality system**

Mehfooz *et al*., (2015: 2319–7668) perceived that the lack of a proper agenda to allocate money, whereas the authority and accountability to the people should be counted as factors that impact the growth of the ISO9000 standard internally in organizations. This statement simply means that if the quality QMS is not properly used the quality system will literally be affected. Therefore, the management has to ensure that people understand and make use of the QMS.

### 6.7.2 ISO9001 MEASUREMENTS

- **Continuous improvement**

"(CI) it is a quality management concept for continuously improving the quality of products or services and processes to fulfil customer requirements" (Singh *et al*., 2015). The research used CI as a tool to verify whether the brewery regularly improves their organizational commitments. The aim of using this approach was to ensure that the logistics department applied ISO9001 requirements and that the QMS was well established.

- **Non-conformity**

Pendrill (2014:51) affirmed that conformity evaluation is any action undertaken to determine whether a product, process or service conforms directly or indirectly to the relevant requirements or meets specified standards. This tool has been used to find the pitfalls which caused non-conformities in the department. The research analysed that in the organization there were delays in service delivery due to the lack of communication between employees.

- **Customer satisfaction**

Organizations should identify the actual and future needs of customers through the implementation of the QMS (Conca, Llopis & Tari, 2004). The study found that there are no complaints from other departments with regard to the delivery of service. It seemed that the non-conformities observed affected other department processes but no claims were raised.

- **Process improvement**

Benchmarking is identified as a technique of consistently assessing and comparing one's business model against similar methods of work in competing firms to collect data that helps companies to determine and implement enhancements (Siha & Saad, 2008). However, things appeared to be normal since there were no complaints from other department. Regardless of the definition above, the delays for instance were part of the organization tolerable practices. It assumed that there was no effort for process improvement.

- **Employees' motivation**

Motivation is a set of goals and objectives towards which people's attitude is guided, the way through which those objectives are attained and the social forces involved (Buchanan & Huczynski, 2007). Nonetheless, since people were not used to the QMS, it seemed that there was a conflict in the adoption of the new philosophy. The findings

also revealed that there was no real communication between the hierarchy and employees when it comes to understanding the QMS. This might have led to employee lack of motivation. The research used this tool to determine whether employees were motivated to do their daily tasks.

## 6.8 RECOMMENDATIONS

### 6.8.1 Recommendations Based on Interview and Observations

The interview and observations conducted during the department investigation or visits should be followed up by other methods that can be used to measure the effectiveness of ISO9001 in the department. Here methods can be seen as the tool that can be used to identify pitfalls. The following recommendations should be considered when measuring ISO9001 effectiveness:

- It has been witnessed that some employees, mostly those who had less than five years work experience, do not know about ISO9001. This could mean that there was no on–boarding process or effort from the management to inform new employees about ISO9001 and what it stands for and why the company needs it. The Human Resource (HR department should make sure that new employees are familiar with ISO9001. Staff training is critical and orientation to the work practices is an important first training need.
- The working environment was too relaxed and friendship oriented rather than a professional work space. Things appeared to be moving slowly. This could be impacting on taking the actions that fully implement the ISO9001 and the slower service delivery. The workplace needs to be professionalised and staff need to improve productivity and service delivery.
- It is recommended that the top management ensure that people are involved in their activities. Academics point out that, leaders should guide direction and unity of determination for the all in the organization. They should be able to create and maintain healthy and secure work conditions where employees are fully focused on achieving the company objectives (Tricker, 2006; Singhal, 2012; Mehfooz & Saeed, 2015).
- The company should ensure that their website is up to date because the researcher could not access information during a month from the company's website as it was not updated. Customers need up to date information on the company website.

### 6.8.2 Recommendations Based On The Questionnaire Responses

Morning meetings and other channels of communication are critical in ensuring service delivery according to the standrard. These types of meetings allow organization to review what was done the day before, and it also helps to remind employee the vision of the company by setting day or week goals.

It is important for management to ensure that people get trained to understand the quality management principals and objectives. It is therefore important that senior management and employees training should be assessed frequently and consistently after the approval of the certification (Sharif, 2005).

The company has to improve the levels of communication and frequency of communication between the managers and employees. The failure will cause long term misunderstandings and conflicts within the department. Conducting audits and ensuring meetings and monitoring tools are used will ensure that communication does not fail and service delivery does not suffer.
There is a need to make communication channels open and effective; communicatgion is slow and at times messages do not filter to where they need to impact. This will result in slower reaction time and reduced productivity.

## 6.9 SUMMARY

The research objectives of this study found in chapter 1 were answered. Measuring ISO9001 effectiveness and service delivery has been achieved. The key factors affecting IS09001 implementation have been determined. Identifying how Sobraga assesses the impact of ISO9001 on service delivery and the potential organizational changes have also been assessed.

Based on the respondents' feedback the majority of the employees agree that the QMS is well established. Research respondents agree that the logistics department provides the resources they need to do their jobs. Hence, it is suggested that the department monitor activities and operations to ensure that the quality policies are well established and understood. One can conclude that in order to always improve its process and procedures, the logistics department must further develop the quality of their service which will support their service delivery.

## 6.10 MAIN LIMITATION & SOLUTION OF THE STUDY

Although the nature of the research is important and beneficial for any organizational department for most services industries and manufacturing industries in West Africa, for all obvious intentions this research was limited solely to the logistics department at Sobraga, a brewery manufacturer company in Gabon. It is clear that this is an area where further research is needed.

## 6.11 FUTURE WORK

Relying on the findings, opportunities are still available for future research studies. To develop more mechanisms to measure ISO9001 effectiveness within a single department in sub Saharan African companies particularly in West Africa where companies are striving to adopt the ISO9001 standard.

## 6.12 IMPORTANT RESEARCH CONTRIBUTIONS OF THE THESIS

The main inputs of this study are stated as follows:

- This thesis highlighted a timely and analytical view of quality management in a selected service department within a manufacturing company. This breakdown is important for the construction of strong quality service delivery within any company that is ISO9001 certified.
- The extant literature will benefit from valuable information related to the ISO9001 benefits and thereby stimulate future research in this field particularly in the African environment.
- The outcomes of this report could be used and effectively implemented in any service department no matter the industry or size of the company.

## 6.13 CONCLUSION

The report summarizes that ISO9001 certified firms struggle to share the QMS philosophy amongst their employees. The study revealed that employee seems to be working in perfect environmental condition but there are misconceptions in terms of the use of the QMS. It is appears that people kept the old practices that they used before the company became an ISO9001 certified member. The thesis findings demonstrate that organizations seek to implement the ISO9001 standard for recognition and perhaps not for its real advantages. It appears that the achievement

of ISO9001 implementation is dependent on many variables such as organizational culture, organizational commitment to success, and top management support with many other factors. These findings could benefit many African (sub Saharan) companies with regard to improving their QMS practices.

## REFERENCES


Aaker, D.A., Kumar, V. & Day, G.S. 2004. *Marketing Research*. USA: JohnWiley & Sons.

Aba, E. K., Badar, M. A., & Hayden, M. A. 2015. Impact of ISO 9001 certification on firms' financial operating performance. *International Journal of Quality & Reliability Management.* 33 (1): 78-89. https://doi.org/10.1108/IJQRM-02-2014-0021

Abdul Rahim, A.H., Mohd Zaimi, A. M., Bachan, S., Wan Zulkifli W. Y., & Mohd Sofiyuddin A. S. (2004). Perlaksanaan Sistem Pengurusan Kualiti ISO 9000 Dalam Industri Pembinaan.

Adeniji, A.A. Osibanjo, O.A & Abiodun, A.J. 2013. *Organizational Change and Human Resource Management Interventions: An Investigation of the Nigerian Banking Industry.* Nigeria: Ogun State.

Al-Khalifa, K.N. and Aspinwall, E.M., 2000. The development of total quality management in Qatar. *The TQM Magazine*, 12(3):194-204.

Al-Najjar, S.M. and Jawad, M.K., 2011. ISO 9001 implementation barriers and misconceptions: an empirical study. *International Journal of Business Administration*, 2(3): 118.

Al-Nakeeb, A.A., Williams, T., Hibberd, P. and Gronow, S., 1998. Measuring the effectiveness of quality assurance systems in the construction industry. *Property Management*, 16(4): 222-228.

Alolayan, S., 2014. An assessment of quality management system indicators for the ISO 9001: 2008 certified work organisations in Kuwait. Unpublished Doctoral dissertation, Dublin City University, Dublin, Ireland.

Al-Zamany, Y., S. Hoddell and B. Savage (2002). Understanding the difficulties of implementing quality management in Yemen. *The TQM Magazine* 14(4): 240-247.

Amar, K., & Zain, Z. M. (2002). Barriers to implementing TQM in Indonesian manufacturing organization. *The TQM Magazine*, (14)6: 367-372.

Anfara Jr, V.A. and Mertz, N.T. Editors. 2014. *Theoretical frameworks in qualitative research.* USA: Sage publications.

Aggelogiannopoulos, D.R.O.S.I.N.O.S., Drosinos, E.H. and Athanasopoulos, P. 2007. Implementation of a quality management system (QMS) according to the ISO 9000 family in a Greek small-sized winery: A case study. *Food control*, 18(9): 1077-1085.

Anh, P.C. and Matsui, Y. 2011. Relationship between quality management information and operational performance: international perspective. *Management Research Review*, 34 (5): 519-40.

Anyanwu, O. U. (2018). The role of enterprise resource planning systems in continuous auditing of a selected organization in the Western Cape, South Africa. Unpublished Doctoral dissertation, Cape Peninsula University of Technology, Bellville, South Africa.

Ary, D., Jacobs, L.C., Razavieh, A. & Sorenson, C., 2002. *Introduction to research in education.* Belmont, CA: Wadsworth/Thomson Learning.

Ashrafi, R. (2008). A review of ISO 9001:2000 quality management practices in Oman. *International Journal of Productivity and Quality Management*, 3 (1): 74-105.

Attri, R., Sandeep, G., Nikhil, D. 2013. Analysis of barriers of total productive maintenance (TPM). *International Journal of System Assurance Engineering and Management*, 4 (4): 365-377.

Avella, L. and Vázquez-Bustelo, D., 2010. The multidimensional nature of production competence and additional evidence of its impact on business performance. *International Journal of Operations & Production Management*, 30(6): 548-583.

Babbie, E.R., 2013. The basics of social research. Cengage learning. 6th Edition. USA: Wadsworth.

Babbie, E.R. and Mouton, J. 2004. *The Practice of Social Research*. 10th ed. Belmont, CA: Wadsworth.

Bailey, CA. 2007. *Qualitative Field Research*. 2nd Edition. London: Pine Forge Press.

Bateman, N. 2005. Sustainability: the elusive element of process improvement. *International Journal of Operations & Production Management*, 25 (3): 261-276.

Beattie, G & Ellis, A. 1986. *The Psychology of Language and Communication*. New York London: Guilford Press.

Bennis, W.G. & Thomas, R.J., 2002. *Geeks & geezers: How era, values, and defining moments shape leaders*. USA: Harvard Business Press.

Berger, B. K. 2008. Getting communication on senior management's agenda. *In Employee communication: The comprehensive manual for those who communicate with today's employees*, ed. P. Williams, 97-114. Chicago: Ragan Communications.

Bhuiyan, N. and Alam, N. 2005. An investigation into issues related to the latest version of ISO 9000. *Total Quality Management*, 16 (2): 199-213.

Blazejewski, S. & Dorow, W. 2003. Managing organizational politics for radical change: the case of Beiersdorf-Lechia SA, Poznan. *Journal of World Business*, 38(3):204-223

Bless, C. & Higson-Smith, C. 2000. *Fundamentals of Social Research Methods: An African Perspective.* 3rd Edition. Johannesburg: Juta & Co Ltd.

Bloomberg, L. D., & Volpe, M. 2012. *Completing Your Qualitative Dissertation: A Road Map from Beginning to End*. 2nd Ed. Thousand Oaks, CA: Sage Publications.

Boeree, C.G. (2006). Abraham Maslow. Personality Theories. http://webspac.ship.edu/cgboer/maslow.html Retrieved on Septemeber 30, 2019

Boiral, O. (2003). ISO 9000: Outside the Iron Cage. *Organization Science*, 14 (6): 720-73.

Boiral, O. and Roy, M.J. (2007). ISO 9000: integration rationales and organizational impacts. *International Journal of Operations & Production Management*, 27(2): 226-247.

Bolderston, A. 2012. Conducting a research interview. *Journal of Medical Imaging and Radiation Sciences*, 43(1):66-76.

Bose, R. 2006. Understanding management data systems for enterprise performance management*. Industrial Management & Data Systems*, 106(1): 43-59.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2): 27-40.

Brink, E, and Simonetti, D., 2006. Monitoring land cover dynamics in Sub-Saharan Africa. A pilot study using Earth observing satellite data from 1975 and 2000. *Institute for environment and sustainability, joint research centre of the European Commission*.

Briscoe, J.A., Fawcett, S.E. & Todd, R.H. 2005. The implementation and impact of ISO 9000 among small manufacturing enterprises. *Journal of Small Business Management*, 43 (3), 309-30.

Brum, Scott. 2007. What Impact Does Training Have on Employee Commitment and Employee Turnover?. Seminar Research Paper Series. Paper 45. http://digitalcommons.uri.edu/lrc_paper_series/45http://digitalcommons.uri.edu/lrc_paper_series/45

Buciuniene, I., Malciankina, S., Lydeka, Z. and Kazlauskaite, R., 2006. Managerial attitude to the implementation of quality management systems in Lithuanian support treatment and nursing hospitals. *BMC health services research*, 6(1): 120.

Buchanan, D.A. and Huczynski, A.A., 2007. *Organizational behaviour*. UK: Pearson.

Buhanist, P. (2000). Organisational Change, Development Efforts and Action Research. Unpublished Doctoral Dissertation, Helsinki University of Technology, Finland.

Burnes, B., 2004. Kurt Lewin and the planned approach to change: a re-appraisal. *Journal of Management studies*, 41(6): 977-1002.

Burnes, B., 2005. Complexity theories and organizational change. *International Journal of Management Reviews,* 7(2): 73-90.

Burnes, B. 2009. *Managing Change: A Strategic approach to Organizational Dynamics. Business & Economics*. 5th edition. New York: Prentice Hall, pp .322.

Burnes, B., 2009. Reflections: Ethics and organizational change–Time for a return to Lewinian values. *Journal of Change Management*, 9(4): 359-381.

Burns, N and Grove, SK. 2001. *The practice of nursing research: Conduct, critique &utilization.* 4th edition. Philadelphia: WB Saunders.

Cagnazzo, L., Taticchi, P. and Fuiano, F. (2010). Benefits, barriers and pitfalls coming from the ISO 9000 implementation: The impact on business performances. *WSEAS Transactions on Business and Economics*, 7(4): 311–321

Chakraborty, A. 2016. Importance of PDCA Cycle for SMEs. *SSRG International Journal of Mechanical Engineering* ( SSRG – IJME ), 3 (5), May 2016.

Chiarini, A. 2011. Japanese total quality control, TQM, Deming's system of profound knowledge, BPR, Lean and Six Sigma: Comparison and discussion. *International Journal of Lean Six Sigma*, 2 (4): 332-355.

Chiarini, A. (2015). Effect of ISO 9001 non-conformity process on cost of poor quality in capitalintensive sectors. *International Journal of Quality & Reliability Management*, 32 (2): 144 -155.

Chiarini, A. and Vagnoni, E., 2015. World-class manufacturing by Fiat. Comparison with Toyota production system from a strategic management, management accounting, operations management and performance measurement dimension. *International Journal of Production Research*, 53(2): 590-606.

Chi, H. K., Yeh, H. R., & Yang, Y. T. 2009. The impact of brand awareness on consumer purchase intention: The mediating effect of perceived quality and brand loyalty. *Journal of International Management Studies*, 4(1): 135-144.

Chinman, M., Hunter, S.B. and Ebener, P., 2012. Employing continuous quality improvement in community-based substance abuse programs. *International journal of health care quality assurance,* 25(7): 604-617.

Chow-Chua, C., Goh, M. and Wan, T. 2003. Does ISO 9000 certification improve business performance? *International Journal of Quality & Reliability Management,* 20 (8): 936-53.

Clarke, V. and Braun, V. 2013. *Successful qualitative research: A practical guide for beginners.* London: Sage.

Coleman, S. and Douglas A. 2003. Where next for ISO 9000 companies? *The TQM Magazine*, 15 (2): 88-92.

Colton, D. 2000. Quality improvement in health care: conceptual and historical foundations. *Evaluation and the Health Professions*, 23 (1): 7-42.

Conca, F.J., Llopis, J. and Tari, J.J. 2004. Development of a measure to assess quality management in certified firms. *European Journal of Operational Research*, 156 (3): 683-97.

Creswell, J.W., Klassen, A.C., Plano Clark, V.L. and Smith, K.C., 2011. *Best practices for mixed methods research in the health sciences*. Bethesda (Maryland): National Institutes of Health, 2013, pp.541-545.

Creswell,J. W. 2013. *Qualitative inquiry and research design: choosing among fi ve approaches.* 3rd Edition. Thousand Oaks, CA: Sage.

Creswell, J. 2014. *Research design: Qualitative, quantitative and mixed methods approaches* 4th Edition. Thousand Oaks: Sage.

Creswell, John W. 2015. *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. 5th Edition. Boston, MA: Pearson.

Creswell, J.W. & Poth, C.N., 2017. *Qualitative inquiry and research design: Choosing among five approaches.* Thousand Oaks: Sage

Crosby P. 1996. Quality is Still Free: *Making Quality Certain in Uncertain Times*. McGraw-Hill, New York: USA.

Crous, M., 2004. Service delivery in the South African public service: implementation of the Batho Pele principles by Statistics South Africa*. Journal of Public Administration*, 39 (Special issue 1): 574-589.

Cutlip, S. M., Center, A. H., & Broom, G. M. 2006. *Effective public relations* . 9th Edition. UpperSaddle River, NJ: Pearson Prentice Hall.

Daft, R. and Marcic, D. 2008. *Understanding Management*. 3rd Edition USA: Harcourt College Publishers.

Das, A., Paul, H. & Swierczek, F.W. 2008. Developing and validating total quality management (TQM) constructs in the context of Thailand's manufacturing industry. *Benchmarking: An International Journal*, 15 (1): 52-72.

De Toni, A., Nassimbeni, G. & Tonchia, S., 1995. An instrument for quality performance measurement. *International Journal of Production Economics*, 38(2-3): 199-207.

Delport, C.S.L. & Roestenburg, W.J.H. 2011. 'Quantitative data-collection methods: Questionnaire, checklists, structured observation and structured interview schedules. In A.S. De Vos, H. Strydom, C.B. Fouché & C.S.L. Delport (eds.), *Research at grass roots. For the social sciences and human service professions*, 4th Edition. Pretoria : Van Schaik Publishers: pp. 171–205

Denzin, N. K., & Lincoln, Y. S. (Eds.). 2011. *The SAGE handbook of qualitative research* 4th Edition . Thousand Oaks, CA: Sage.

Desimoni, E., & Brunetti, B. 2011. Uncertainty of measurement and conformity assessment: A review. *Analytical and Bioanalytical Chemistry*, 400(6): 1729–1741.

Devadass, R. 2011. Employees' motivation in organizations: an integrative literature review. *In Proceedings of the International Conference on Sociality and Economics Development* , IPEDR 10 (2011): 566-570.Singapore: IACSIT Press.

DeWalt, K. M. & DeWalt, B. R. (1998). Participant observation. In H. Russell Bernard (Ed.), Handbook of methods in cultural anthropology (pp.259-300). Walnut Creek: AltaMira Press

Dhar, R.L. 2015. Service quality and the training of employees: The mediating role of organizational commitment. *Tourism Management*, 46: 419-430.

Dickenson R., Campbell D. and Azarov V. 2000. Quality management implementation in Russia: Strategies for change. *International Journal of Quality & Reliability Management*, 17 (1): 66-81.

Dievernich, F.E., Tokarski, K.O. and Gong, J. (Editors). 2016. *Change Management and the Human Factor*. Springer International Pu.

Dobre, O.I., 2013. Employee motivation and organizational performance. *Review of applied socio-economic research*, 5(1).

Douglas, A, Coleman, S.& Oddy, R. 2003. The case for ISO 9000. *The TQM Magazine*, Vol. 15 (5): 316-324.

Dreyfus, T., Hershkowitz, R., & Schwarz, B. 2015. The nested epistemic actions model for abstraction in context - Theory as methodological tool and methodological tool as theory. In A. Bikner-Ahsbahs, C. Knipping & N. Presmeg (Eds.), *Approaches to qualitative research in mathematics education: Examples of methodology and methods* (pp. 185-217). Dordrecht: Springer, Advances in Mathematics Education series.

Dumond, E.J. 1994. Making best use of performance measures and information. *International Journal of Operations & Production Management*, 14 (9): 16-31.

Edmonds, W.A. & Kennedy, T.D., 2016. An applied guide to research designs: Quantitative, qualitative, and mixed methods. Thousand Oaks: Sage Publications.

Elnaga, A., & Imran, A. 2013. The effect of training on employee performance. *European Journal of Business and Management,* 5(4):137-147.

Emrah Cengiz. 2010. Measuring Customer Satisfaction: must or not? *Journal of Naval Science and Engineering* 6 (2): 76-88.

Erlingsson, C. & Brysiewicz, P. 2017. A hands-on guide to doing content analysis. *African Journal of Emergency Medicine*, 7(3): 93-99.

Edvardsson, B., Gustafsson, A. & Roos, I. 2005. Service portraits in service research: a critical review*. International Journal of Service Industry Management*, 16 (1): 107-121.

Evangelos L., Psomas, D., Kafetzopoulos Christos V & Fotopoulos. 2012. Developing and validating a measurement instrument of ISO 9001 effectiveness in food manufacturing SMEs*. Journal of Manufacturing Technology Management,* 24 (1): 52 – 77.

Fernandez, S. and Rainey, H.G., 2017. Managing successful organizational change in the public sector. In Debating Public Administration (pp. 7-26). Routledge.

Fernandez-Gonzalez, J.A. and Prado, C. 2007. Measurement and analysis of customer satisfaction: company practices in Spain and Portugal. *International Journal of Productivity and Performance Management,* 56 5/6 500-17

Fishbach, A., & Ferguson, M. F. (2007). The goal construct in social psychology. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social Psychology: Handbook of Basic Principles* (pp. 490–515).

Fishbach, A., Friedman, R. S., & Kruglanski, A. W. (2003). Leading us not unto temptation: Momentary allurements elicit overriding goal activation. *Journal of Personality and Social Psychology*, 84: 296–309.

Fochios, S. (2013). NonConformance Management Who is Responsible for Reporting an NC ? everyone ! 1–12.

Fowler Jr, F.J., 2013. *Survey research methods.* Thousand Oaks: Sage publications.

Frahm, J.A. and Brown, K.A., 2005. Building an organizational change communication theory. *In Academy of Management Proceedings* (Vol. 2005, No. 1, pp. C1-C6). Briarcliff Manor, NY 10510: Academy of Management.

François, P., Peylin, J.C., Touba, M., Labarère, J., Reverdy, T. and Vinck, D., 2003. Evaluating implementation of quality management systems in a teaching hospital's clinical departments. *International Journal for Quality in Health Care,* 15(1): 47-055.

Fritzenschaft, T. (2014). *Criticial Success Factors of Change Management.* Springer Gabler

Fuentes, C., Benavent, F., Moreno, M. & Val, M. 2000. Analysis of the implementation of ISO 9000 quality assurance systems. *Work Study* 49(6):229-241.

Fussell, S. R. & Kreuz, R. J. (Eds.), 2014. *Social and cognitive approaches to interpersonal communication: Introduction and Overview*. Psychology Press.

Gader, A.M.A., Ismail, M.Y., Hamouda, A.M.S., Ismail, N. and Al-Khalifa, K. 2008. ISO 9000 performance among the Malaysian companies: the effects of motives. *International Journal of Industrial and Systems Engineering*, 4(1):32-45.

Gardener, M. 2016. Support strategies used by foundation phase teachers to develop cognitive academic language proficiency. Unpublished Doctoral dissertation, Cape Peninsula University of Technology, Bellville, South Africa.

Gay, C., Mahoney. M., & Graves, J. 2005. *Best practices in employee communication: Study of global challenges and approaches.* San Francisco: IABC Research Foundation.

George, J. M., & Jones, G. R. 2002. *Understanding and Managing Organizational Behavior*. 3rd Edition. New York: Pearson Education, Inc.

Goetsch, D. and Davis, S. 2005. *Understanding and Implementing ISO 9000:2000*, Prentice-Hall, Englewood Cliffs, NJ.

Golafshani, N. 2003. Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report* 8 (4).

Gonzalez, R. and Martins, M. 2016. Capability for continuous improvement. *The TQM Journal,* 28 (2): 250 – 274.

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

Gounaris, S., Panigyrakis, G. and Chatzipanagiotou, K. 2007. Measuring the effectiveness of marketing information systems*. Marketing Intelligence & Planning*, 25 (6): 612-31.

Green, J., & Thorogood, N. 2014. Qualitative methods for health research, pp152-156.

Green, L., Jones, B., & Miles, I. (2012). 8 Skills and Innovation. Innovation Policy Challenges for the 21st Century, 27, 185.

Gupta, R. K. and Awasthy, R. (2015) 'Qualitative research in management: Methods and Experiences', (1), p. 292.

Hall, A., Melin, L. and Nordqvist, M., 2001. Entrepreneurship as radical change in the family business: Exploring the role of cultural patterns. *Family Business Review*, 14(3):193-208.

Hayes, J., 2014. *The theory and practice of change management*. USA: Palgrave, Macmillan.

Heras, S., Landin, G. & Fa, M. (2006). A Delphi study on motivation for ISO 9000 and EFQM. *International Journal of Quality & Reliability Management*, 23 (7): 807-27.

Heras-Saizarbitoria, I., Casadesús, M. & Marimón, F. (2011). The impact of ISO 9001 standard and the EFQM model: the view of the assessors. *Total Quality Management & Business Excellence,* 22 (2): 197-218.

Heras-Saizarbitoria, Iñaki and BOIRAL, Olivier. 2013. ISO 9001 & ISO 14001: towards a research agenda on management system standards. *International Journal of Management Reviews*, 15 (1): 47-65.

Hesham, A., & Magd, E. 2007. ISO 9001: 2000 Certification Experiences in Egyptian Manufacturing Sector: Perceptions and Perspectives. *International Journal of Quality & Reliability Management,* 25 (2): 173-200.

Heuvel, J.V.D., Koning, L., Bogers, A.J.J.C., Berg, M. & van Dijen, M.E.M. 2005. An ISO 9001 quality management system in a hospital, bureaucracy or just benefits. *International Journal of Health Care Quality Assurance*, 18 (5): 361-369.

Honore, L., Yaya, P., Marimon, F, & Casadesus, M. 2013. Industrial Management & Data Systems Can ISO 9001 improve service recovery? Industrial Management & Data Systems. *International Journal Industrial Management & Data Systems*, 113(6): 1206–1221.

Hoyle, D. 2001. ISO 9000 Quality Systems Handbook, 4th Edition. Oxford: Butterworth-Heinemann.

Hume, L. and Mulcock, J. eds., 2004. *Anthropologists in the field: Cases in participant observation*. USA: Columbia University Press.

Human resource department at Sobraga, 2018 interview with the researcher on 22 August 2018, Libreville/Gabon.

Matuziene, I. & Gaidamavicien, D. 2009. Assessment of the employee motivation: a case study of production enterprise. *Social Research,* 2 (16): 55-56.

Ismyrlis, V., Moschidis, O. & Tsiotras, G. 2015. Critical success factors examined in ISO 9001:2008-certified Greek companies using multidimensional statistics. *International Journal of Quality & Reliability Management,* 32(2): 114–131.

ISO, I., 2004. 9000: 2000—Quality Management Systems—Fundamentals and Vocabulary. International Organization for Standardization (ISO), Switzerland.

ISO. 2015. ISO 9001:2015 Quality management systems - Requirements, 2015, 1–40.

ISO. ISO 9001, Quality Management System-Requirements. Geneva: ISO; 2008.

Jackson, S.L., 2013. *Statistics plain and simple*. Cengage Learning.

Jayamaha, N.P., Grigg, N.P. & Mann, R.S. 2008. Empirical validity of Baldrige criteria: New Zealand evidence. *International Journal of Quality & Reliability Management*, 25 (5): 477-93.

Johnson, B. R., & Christensen, L. 2014*. Educational Research: Quantitative, Qualitative, and Mixed Approaches.* Thousand Oaks, CA: Sage Publications, Inc

Jones, E., Watson, B., Gardner, J., & Gallois, C. 2004. Organizational communication:Challenges for the new century. *Journal of Communication,* 54(4): 722-750.

Juran J. (1989). *Juran on leadership for Quality: An Executive handbook*. New York, USA: The Free Press.

K.A.Chandrakanth .(no date). Paper on PLAN DO CHECK ACT (PDCA). pp. 1–10.

Kamalian, A. R., Yaghoubi, N. M., & Moloudi, J. (2010). Survey of Relationship between Organizational Justice and Empowerment (A Case Study). *European Journal of Economics, Finance and Administrative Sciences*, 24: 165-171.

Kam, C.W. & Tang, S.L. Mangula, M. 2013. Development and implementation of quality assurance in public construction works in Singapore and Hong Kong. *International Journal of Quality & Reliability Management,* 14 (9): 909-28.

Karipidis, P., Athanassiadis, K., Aggelopoulos, S. & Giompliakis, E., 2009. Factors affecting the adoption of quality assurance systems in small food enterprises. *Food control*, 20(2): 93-98.

Kawulich, B.B. 2005. Participant observation as a data collection method. In Forum Qualitative Sozialforschung/Forum: *Qualitative Social Research*, 6 (2).

Kemp, M. J. & Low, G. C. 2008. ERP innovation implementation model incorporating change management. *Business Process Management Journal*, 14.

Keng, T. C. & Kamal, S. Z. 2016. Implementation of ISO Quality Management System in Construction Companies of Malaysia. *Journal of Technology Management and Business,* 3(01): 1–23.

Kennan, W. R., & Hazleton, V. 2006. Internal public relations, social capital, and the role of effective organizational communication. *In C. H. Botan & V. Hazleton (Eds.), Public relations theory II* (pp. 311-340).

Kerrigan, M.R., 2014. A framework for understanding community colleges' organizational capacity for data use: A convergent parallel mixed methods study. *Journal of Mixed Methods Research*, 8(4): 341-362.

Keyton, J. 2011. *Communication and organizational culture: A key to understanding work experience.* Thousand Oaks, CA: Sage

Kirkman, B.L. & Shapiro, D.L. 2001. The impact of cultural values on job satisfaction and organizational commitment in self-managing work teams: The mediating role of employee resistance. *Academy of Management journal*, 44(3): 557-569.

Kitchen, P.J, & Daly, F. (2002). Internal communication during change management. Corporate Communications*: An International Journal,* 7(1): 46-53.

Kivetz, R., Urminsky, O., & Zheng, Y. 2006. The goal-gradient hypothesis resurrected: Purchase acceleration, illusionary goal progress, and customer retention. *Journal of Marketing Research,* 43: 39–58.

Kleine, C., & Weienberger, B. E. 2014. Leadership impact on organizational commitment: The mediating role of management control systems choice. *Journal of Management Control*, 24(3): 241–266.

Kontogeorgos, A, & Semos, A. 2006. Quality costing methods: Implementation in food companies in Northern Greece. *In Proceedings, 9th Panhellenic Congress of Agricultural Economics*, November 2–4, Athens (pp. 113–128).

Korir, J., Mukolive, E., Loice, J. & Kimeli, K. 2012. Change Management Effects on Hotel Performance*. Journal of Social Sscience Tomorrow* 1(8): 127 -142.

Kothari, C. 2004. *Research Methodology: Methods & Techniques*. India: New Age Publishers (P) Ltd.

Kreitner, R. & Kinicki, A. 2010. *Organizational behavior (Ninth edition).* New York: McGraw-Hill Irwin.

Kreitner, R. and Kinicki, A. 2007. *Organizational Behavior.* (7th Ed). New York, New York: McGraw-Hill.

Kumar, R. 2011. *Research Methodology: a step-by step guide for beginners* (3rd edition). London: SAGE Publication Ltd.

Kumar, R. 2014. *Research methodology: a step-by-step guide for beginners*. 4th Edition. London: SAGE Publication Ltd.

Kumasey, A.S., Bawole, J.N. & Hossain, F., 2017. Organizational commitment of public service employees in Ghana: do codes of ethics matter*? International Review of Administrative Sciences,* 83(1_suppl): 59-77.

Lee, P., To W. & Yu, B. 2009. The implementation and performance outcomes of ISO 9000 in service organizations. *International Journal of Quality & Reliability Management,* 26 (7): 646 -662.

Leedy, P. D. & Ormrod, J. E. 2010. *Practical research planning and design*. Boston: Pearson.

Li, F.L., Chi, C.H., Wang, Y. & Liu, C., 2016. *Service Intelligence Oriented Distributed Data Stream Integration.* arXiv preprint arXiv:1604.03453

Lichtman, M. 2013. *Qualitative research in education: a user's guide*. Los Angeles: SAGE Publications, pp 208.

Quality department at sobraga, 2018 interview with the researcher on 03 August 2018, Libreville/Gabon.

Sui Pheng, L. & Wee, D. (2001) "Improving maintenance and reducing building defects through ISO 9000", *Journal of Quality in Maintenance Engineering*, Vol. 7 Issue: 1, pp.6-24.

Luecke, R., 2003. *Managing change and transition* (Vol. 3). Harvard: Harvard Business Press.

Lui, M. (2015). Travel agencies' perception of ISO 9001 certification. *The TQM Journal,* 27 (6): 741-751.

Luning, A. & Marcelis, J. 2006. A techno-managerial approach in food quality management research. *Trends in Food Science and Technology*, 17 (7): 378-85.

Lutz, W. & Knox, S. (Eds). 2014. *Quantitative and qualitative methods in psychotherapy research.* Routledge, pp 60.

Machuca, Jose, González-Zamora, M. & Aguilar-Escobar, VG. 2007. Service Operations Management research. *Journal of Operations Management*, 25 (3): 585-603.

Magd, H. A. 2006. An investigation of ISO 9000 adoption in Saudi Arabia. *Managerial Auditing Journal,* 21(2):132-147.

Magd, H. 2005. An investigation of ISO 9000 adoption in Saudi Arabia. *Managerial Auditing Journal,* (21)2: 132-147.

Maletič, D., Soršak, M., Maletič, M. & Gomišček, B., 2009. Načrtovanje in uvajanje stalnih izboljšav v vzdrževanju [Planning and implementation of continuous improvement in maintenance]. V: *JEMEC*, Viktor (ur.), pp.97-101.

Maletič, D., Maletič, M. and Gomišček, B., 2012. The relationship between continuous improvement and maintenance performance. Journal of Quality in Maintenance Engineering, 18(1), pp.30-41.

Mangula, M.S. & Karugira, D., 2013. Effect of Quality Management Systems (ISO 9001) Certification on Organizational Performance in Tanzania: A Case of Manufacturing Industries In Morogoro. *International Journal of Technology enhancements and emerging engineering research*, 1(1):14-19.

Marija, S. 2016. Employees Motivation and Traansition of ISO9001 QMS Toward *TQM*,iipp, 17 (14): 260-270.

Marin Vinuesa, L.& Ruiz Olalla, M., 2011. Non-Financial Measures in Quality Environments: Their Contribution to Business Performance. ESIC *Market Economic and Business Journal,* 139: 169-193.

Martin, A. 2016. ISO 9001 Impact on Operational Performance, (2008*). In conference proceedings: 20th International Conference on ISO & TQM, At University of Buraimi*, pp. 26–28.

Martinez-Lorente A., Dewhurst F. and Dale B. 1998. Total Quality Management: origins and evaluation of the term. *The TQM Magazine*, 10 (5): 378-386.

Maurer, R., 2006. Resistance and change in organizations. *The NTL handbook of organization development and change: Principles, practices, and perspectives*, San Francisco, CA: Pfeiffer, pp.121-138.

Mbumbo, E. P. T. 2015. Management accounting skills of decision makers of small, medium and micro tourism enterprises in Western Cape, South Africa. Unpublished Doctoral dissertation, Cape Peninsula University of Technology, South Africa.

McColl-Kennedy, J.R. & Anderson, R.D. 2002. Impact of leadership style and emotions on subordinate performance. *The Leadership Quarterly*, 13(5): 545-559.

McMillan J. H. & Schumacher, S. 2014. *Research in education evidence based enquiry*. 7th edition. Essex: Pearson.

McNulty, T. & Ferlie, E., 2004. Process transformation: Limitations to radical organizational change within public service organizations. *Organization studies,* 25(8):1389-1412.

Mehfooz, N. & Saeed Lodhi, D. (2015). Implementation barrier of ISO 9001 with in service and manufacturing organizations in Pakistan. *IOSR Journal of Business and Management*Ver. I, 17(9): 2319–7668.

Meiling, J., Backlund, F. & Johnsson, H. 2012. Managing for continuous improvement in off-site construction. *Engineering, Construction and Architectural Management*, 19 (2): 141 – 158.

Merriam, S. B., & Tisdell Elizabeth J. 2015. *Qualitative Research A Guide To Design and Implementation.*4th Edition. USA: Jossey Bass A Wiley Brand.

Mertens, W., Pugliese, A. and Recker, J. 2016. *Quantitative Data Analysis: A Companion for Accounting and Information Systems Research*. Heidelberg, Germany: Springer.

Mgquba, N., 2017. Factors influencing effectiveness of change management interventions in a selected petrochemical company in the Western Cape, South Africa. Unpublished Doctoral dissertation, Cape Peninsula University of Technology, South Africa.

Miller, K. 2014. *Organizational communication: Approaches and processes*. USA: Cengage Learning.

Mohammad A. S. H. 2000. Applying the ISO Standards to a Construction Company: A Case Study. *International Journal of Project Management*, 18 (2000): 275-280.

Moran, J.W. & Brightman, B.K. (2011). Leading organizational change. *Career Development International,* 6(2): 111 –118.

Mouton, J. 2001.*How to succeed in your Master's & Doctoral Studies*. Pretoria: Van Schaik Publishers.

Mullins Laurie J. 2007. *Management and Organizational Behaviour,* Eight edition, Prentice Hall. Pp258-260.

Neelankavil, J. P. (2015). International business research. *Business & Economics.* pp 161.

Neely, A., Gregory, M. and Platts, K. 1995. Performance measurement system design a literature review and research agenda. *International Journal of Operations & Production Management*, 15 (4): 80-116.

Nelson, S. and Harris, J., Seiko Epson Corp, 2008. Annotation Management System. U.S. Patent Application 11/963,256.

Neuman, W. L. 2014. Social Research Methods: Qualitative and Quantitative Approaches. *Relevance of social research* (Vol. 8).

Ng, KB; Leung, GKK; Johnston, JM. & Cowling, BJ. 2013. Factors affecting implementation of accreditation programmes and the impact of the accreditation process on quality improvement in hospitals: A SWOT analyses. *Hong Kong Medical Journal*, 19(5): 434–446.

Njenga, M. M. 2013. Effect of implementing quality management systems on surgical patient care: experience of moi teaching and referral hospital. Unpublished Masters thesis, University of Nairobi, Kenya.

Nkomo, S.M., and Kriek, D. 2011. Leading Organisational Change in the new South Africa. *Journal of Occupational and Organisational Psychology,* 84, 453–470.

Ntuli, B., & Allopi, D. 2013. Impact of inadequate experience and skill on the construction sector in KwaZulu-Natal, South Africa. *Engineering, Technology & Applied Science Research*, 3(9): 30–38.

Nunes, J. C., & Dreze, X. 2006. The endowed progress effect: How artificial advancement increases effort. *Journal of Consumer Research*, 32: 504–512.

Ochieng, J., Muturi, D. and Njihia, S.N., 2015. The impact of ISO 9001 implementation on organizational performance in Kenya. *The TQM Journal*, 27(6): 761-771.

Okwiri, O.A. and Owino A. 2013. ISO 9001 quality management system audit as an organizational effectiveness evaluation tool. *International Journal of Information Technology and Business Management*. 20 (1).

O'Leary, Z. 2014. *The essential guide to doing your research project* (2nd ed.). Thousand Oaks, CA: SAGE Publications, Inc.

Olson, K., Young, R. a, & Izabela Z, S. 2016. *Handbook of Qualitative Health Research for Evidence-Based Practice* (Vol. 4). Germany: Springer.

Onwuegbuzie, A.J. & Combs, J.P., 2010. *Emergent data analysis techniques in mixed methods research: A synthesis. Handbook of mixed methods in social and behavioral research.* Thousand Oaks: Sage.

Patidar, J. (2015) Research Assumptions. Blogspot. https://www.slideshare.net/drjayeshpatidar/research-assumption Viewed 1 April 2017.

Pendrill, L. R. 2014. Using measurement uncertainty in decision-making and conformity assessment. *Metrologia,* 51(4): S206–S218.

Piana, V. & Torres, L. 2003. Reshaping public sector accounting: an international comparative view. *Canadian Journal of Administrative Sciences*, 20 (4): 334-50.

Pingili, S. & Sindhu, N. 2017. Biology and Data Interpretation Techniques Concepts. *Journal of Global Research in Computer Science*, 6(6).

Plano Clark, V.L., Schumacher, K., West, C., Edrington, J., Dunn, L.B., Harzstark, A., Melisko, M., Rabow, M.W., Swift, P.S. and Miaskowski, C., 2013. Practices for

embedding an interpretive qualitative approach within a randomized clinical trial. *Journal of Mixed Methods Research*, 7(3): 219-242.

Prajogo, D. I. 2011. The roles of firms' motives in affecting the outcomes of ISO adoption. *International Journal of Operations & Production Management* 31(1): 78-100.

Prior, L.F., 2008*. Document analysis*. The Sage encyclopedia of qualitative research methods, 2, pp.230-232.

Psomas, E. L., Kafetzopoulos, D. P., & Fotopoulos, C. V. 2012. Developing and validating a measurement instrument of ISO 9001 effectiveness in food manufacturing SMEs. *Journal of Manufacturing Technology Management*, 24(1): 52–77.

Psomas, E.L., Pantouvakis, A. & Kafetzopoulos, D.P. 2013. The impact of ISO 9001 effectiveness on the performance of service companies. *Managing Service Quality: An International Journal*, 23(2): 149-164.

Psomas, E., Fotopoulos, C.& Kafetzopoulos, D. 2011. Core Process Management Practices, Quality Tools and Quality Improvement in ISO 9001 Certified Manufacturing Companies. *Business Process Management Journal* 17 (3): 437–460.

Psomas, E., Kafetzopoulos, D. P., & Fotopoulos, C. V. 2010. Critical factors for effective implementation of ISO 9001 in SME service companies. *Managing Service Quality,* 20(5): 440–457.

Ravitch, S. M., & Carl, N. M. 2015. *Qualitative research: Bridging the conceptual, theoretical, and methodological*. California: SAGE Publications.

Reed, J.H. and Hall, N.P., 1997. Methods for measuring customer satisfaction. *In Energy Evaluation Conference,* Chicago.

Ritchie, J., Lewis, J., Nicholls, C.M. and Ormston, R. eds., 2013. *Qualitative research practice: A guide for social science students and researchers.* Sage, pp 56.

Robson, C., 2002. *Real World Research* 2nd edition Oxford: Blackwell.

Rodrìnges-Escobar, J. A., Gonzalez-Benito, J., & Martìnez-Lorente, A. R. 2006. An analysis of the degree of small companies' dissatisfaction with ISO 9000 certification. *Total Quality Management*, 17(4):507–521.

Roulston, K. 2013. Qualitative Research. *Interactional problems in research interviews*. 14 (3): 277 – 293.

Ruck, M.K. Ed., 2015. *Exploring Internal Communication: Towards Informed Employee Voice*. Gower Publishing, Ltd.

Rudestam, K.E. & Newton, R.R., 2015. *Surviving your dissertation : a comprehensive guide to content and process,* (5th Ed).

Ruiz-Olalla, M.C. 2011. Non-financial Measures in quality environments: their contribution to Business Performance. *Esic Market*, 139: 169-193.

Sadıkoğlu E. Zehir C. 2010. The Relationship between Tqm Practices and Organizational Performance: an Empirical Investigation. *International Journal of Production Economics* 127: 13-26.

Sadri, G. & Clarke R. B. 2011. Meeting employee requirements: Maslow's hierarchy of needs is still a reliable guide to motivating staff. *Industrial Engineer*, Oct. 2011, p. 44+.

Salkind, N. J. 2012.*100 Questions (and Answers) About Research Methods.* Thousand Oaks, CA: Sage Publications, Inc. p71.

Siha, S.M. & Saad, G.H. 2008. Business process improvement: empirical assessment and extensions. *Business Process Management Journal*, 14 (6): 778-802.

Sampaio, P., Saraiva, P. & Rodrigues, A.G. 2009. An analysis of ISO 9000 data in the world and the European union. *Total Quality Management and Business Excellence,* 20 (1) 2, pp. 1303 – 1320.

Sanchez, L. and Blanco, B., 2014. Three decades of continuous improvement. *Total Quality Management & Business Excellence*, 25(9-10): 986-1001.

Saner, R., 2002. Quality assurance for public administration: a consensus building vehicle. *Public Organization Review*, 2(4): 407-414.

Saracho, O. 2015. Handbook of Research Methods in Early Childhood Education Review of Research Methodologies. Charlotte, NC: Information Age.

Sawczuk, B. 1996. *Risk Avoidance for the Building Team, E &FN Spon*. 2-6 Boundary Row, and London SE1 8HN, UK: Chapman & Hall.

Scott, D. and Usher, R., 2011. *Researching education: Data, methods and theory in educational enquiry.* London-Oxford-New York-New Delhi-Sydney: Bloomsbury Publishing.

Sedgwick, P., 2014. Spearman's rank correlation coefficient. *BMJ*, *349:* 7327.

Sekaran, U. & Bourgie, R. (2013). *Research methods for business: A skill-building approach*. Chichester, West Sussex: Wiley Publisher.

Sekaran, U. & Bougie, R., 2016. *Research methods for business: A skill building approach.* USA: John Wiley & Sons.

Shamsuddin, N. & Johari, N., 2014. The effect of internal audit towards internal control system Effectiveness. *In E-proceedings of the Conference on Management and Muamalah. Kolej Universiti Islam Antarabangsa Selangor (KUIS).*

Sharif, I. M. 2005. The Barriers Affecting the Implementation of Quality Management System-ISO 9000 in Libyan Manufacturing Public Sector Organisations . Unpublished PhD thesis, School of Management Faculty of Business and Informatics University of Salford.

Sharma, M. & Kodali, R. 2008. TQM implementation elements for manufacturing excellence. *The TQM Magazine*, 20 (6): 599-621.

Shields, L., & Twycross, A. 2003. The Difference between Quantitative and Qualitative Research. *Journal of Paediatric Nursing*, 15 (9): 24-24

Shim, S.K., 2016. The Effects of Leadership Style on Service Quality in Long-Term Care Facility: The Mediating Effect on Organizational Commitment. *The Journal of the Korea Contents Association,* 16(9): 105-116.

Simedi, S. 2010. ISO 9OO1 Implementation Studies on Small Medium Enterprises, Motives, Problems and Benefits. *Standardization* 12 (13): 197-201.

Singh, J. & Singh, H. 2015. Continuous improvement philosophy – literature review and directions. *Benchmarking: An International Journal*.

Singh, P. 2008. Empirical Assessment of ISO 9000 Related Management Practices and Performance Relationships. *International Journal of Production Economics* 113 (1): 40–59.

Singh, P. J. & Mansour-nahra, P. 2006. ISO 9000 in the public sector: a successful case from Australia. *The TQM Magazine*, 18 (2): 131-142.

Singh, P.J., Feng, M. & Smith, A. 2006.ISO 9000 series of standards: comparison of manufacturing and service organizations. *International Journal of Quality & Reliability Management*, 23 (2): 122-42.

Singhal, D., & Singhal, K. R. 2012. Implement ISO9001:2008 Quality Management System: A Reference Guide: *PHI Learning*.

Sinickas, A. D. 2005. *How to measure your communication programs: A practical manual for maximizing* the *effectiveness of your messages and media.* (3rd ed.). San Francisco: IABC Knowledge Centre.

Sivaram, N.M., Devadasan, S.R., Sreenivasa, C.G., Karthi, S. and Murugesh, R., 2012. A literature review on the integration of total productive maintenance elements with ISO 9001 standard. *International Journal of Productivity and Quality Management*, 9(3): 281-308.

Smith, R. A. 2013. Measuring quality management system performance using quantitative analyses. Unpublished Doctoral dissertation, *Cape Peninsula University of Technology*, South Africa.

Sobraga . 2017. qquality manual 2017. Gabon: Sobraga.

Sobraga. n.d intellectual property policy.https://sobraga.net/ [ 15 December 2018].

Solomon, N. P., Bester, A., & Moll, M. 2017. Diffusion of a quality management system: A case study. *South African Journal of Industrial Engineering*, 28(2):149-164.

Sousa, R. & Voss, C. A., 2002. Quality management re-visited: a reflective review and agenda for future research*. Journal of Operations Management*, 20(1):91-109.

Sousa-Poza, A., Altinkilinc M., & Searcy, C. 2009. Implementing a Functional ISO 9001 Quality Management System in Small and Medium-Sized Enterprises. *International Journal of Engineering*, (3)3: 220-228.

Stefanucci, J. K., Proffitt, D. R., Clore, G., & Parekh, N. 2008. Skating down a steeper slope: Fear influences the perception of geographical slant. *Perception*, 37, 321–323.

Stopczynski, A., Sekara, V., Sapiezynski, P., Cuttone, A., Madsen, M.M., Larsen, J.E. & Lehmann, S., 2014. Measuring large-scale social networks with high resolution. *PloS one*, *9*(4), p.e95978.

Struwig, F.W. & Stead, G.B. 2001. *Planning, designing and reporting research.* South Africa: Pearson Education.

Subashini, R., & Gopalsamy, V. 2016. A review of service quality and customer satisfaction in banking services: Global scenario. *Journal of Internet Banking and Commerce*, 21(Special Is).

Sumaedi, S. & Yarmen, M. The effectiveness of ISO 9001 implementation in food manufacturing companies: a proposed measurement instrument. *Procedia Food Science*, 2015, 3: 436-444.

Sundarasaradula, D., Hasan, H., Walker, D.S. and Tobias, A.M., 2005. Self-organization, evolutionary and revolutionary change in organizations. *Strategic Change*, 14(7): 367-380.

Suresh, H., 2001. Change Management Must for today's Organization. *Think Business Networks Pvt. Ltd,* July I, 200.

Tan, C.K. 2011. Case Studies of Human-Related Problems in the Implementation of Quality Management. In Tan C.K. (2011). *Research in Quantity Surveying*, pp 48-68.

Tang, S.L., Poon, S.W., Ahmed, S.M. & Wong, F.K.W. 2004. Modern Construction Project Management, 2nd ed. Aberdeen: HKU Press.

Teachman, B. A., Stefanucci, J. K., Clerkin, E. M., Cody, M. W., & Proffitt, D. R. 2008. A new mode of fear expression: Perceptual bias in height fear. *Emotion,* 8: 296–301.

Teddlie, C. & Tashakkori, A. 2008. *Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Techniques in the Social and Behavioral Sciences.* Thousand Oaks, CA: SAGE Publications.

Teo, T., 2013. *Handbook of Quantitative Methods for Educational Research.* Rotterdam, Netherlands: Sense Publishers, pp 21.

To, W.M., Lee, P.K.C. and Yu, B.T.W. 2011. ISO 9001:2000 implementation in the public sector: a survey in Macao SAR, the People's Republic of China. *The TQM Journal,* 23 (1): 59-72.

Todnem, By. R. 2005. Organisational Change Management: A Critical Review. *Journal of Change Management* 5 (4), December 2005: 369– 380.

Tour-Tillery, M., & Fishbach, A. 2014. How to Measure Motivation: A Guide for the Experimental Social Psychologist. *Social and Personality Psychology Compass*, 8(7): 328–341.

Tricker, R. (2006). ISO 9001:2000. *The Quality Management Process* Netherlands: van Haren Publishing.

Trkman, P. 2010. The critical success factors of business process management. *International Journal of Information Management*, 30(2):125–134.

Tsai, M. , Chuang, S. & Hsieh, W. 2009. An integrated process model of communication satisfaction and organizational outcomes. *Social Behavior and Personality: an international journal* 37(6): 825-834.

Tseros, H. 2015. The new ISO 9001:2015 Standard. Presentation (January).

Tsim, Y.C., Yeung, V.W.S. & Leung, E. 2002. An adaptation to ISO 9000:2000 for certified organisations. *Management Auditing Journal*, 17 ( 5): 245-50.

Tukker, A., Charter, M., Vezzoli, C., Sto, E. & Andersen, M.M. 2008. *Perspectives on radical changes to sustainable consumption and production* (Vol. 1). Austin, Texas: Greenleaf Publishing.

Uwe, F. (2015). Introducing Research Methodology: A Beginner's Guide to Doing a Research Project. Thousand Oaks, CA: Sage.

Valmohammadi, C. & Kalantari, M. (2015). The moderating effect of motivations on the relationship betweenobtaining ISO 9001certificationand organizational performance. *TQM Journal*, 27(5): 503–518.

Van Der Spiegel, M. 2004. Measuring Effectiveness of Food Quality Management System. Unpublished PhD Thesis, Wageningen University, Netherlands.

Van der Spiegel, M., De Boer, W.J., Luning, P.A., Ziggers, G.W. &Jongen, W.M.F., 2007. Validation of the instrument IMAQE-Food to measure effectiveness of food quality management. *International Journal of Quality & Reliability Management*, 24(4):386-403.

Van Tonder, C. 2004. "Organisational development: purposefully engaging change", *Management Today*, 20 (8), September: 20–23.

Van Kemenade, E.A., Hardjono, T.W. and de Vries, H.J., 2011. The willingness of professionals to contribute to their organisation's certification. *International Journal of Quality & Reliability Management*, 28(1):27-42.

Vargo, S.L. and Lusch, R.F. 2004. The four service marketing myths – remnants of a goods-based, manufacturing model. *Journal of Service Research*, 6 (4): 324-35.

Vasileios Ismyrlis, Odysseas Moschidis, & George Tsiotras. 2015. Critical success factors examined in ISO 9001:2008-certified Greek companies using multidimensional statistics. *International Journal of Quality & Reliability Management*, 32 (2): 114-131.

Vaske, J.J., Beaman, J. and Sponarski, C.C., 2017. Rethinking internal consistency in Cronbach's alpha. *Leisure Sciences,* 39(2): 163-173.

Vloeberghs, D. & Bellens, J. 1996. ISO 9000 in Belgium: experience of Belgian quality managers and HRM. *European Management Journal,* 14: 207-11.

Wahid, R. & Corner, J. 2009. Critical Successful Factors and Problems in ISO. *International Journal of Quality and Reliability Management,* 26, (9): 881-893.

Walker, R.H. and Johnson, L.W. 2009. Signaling intrinsic service quality and value via accreditation and certification. *Managing Service Quality,* 19 (1): 85-105.

Walliman, N., 2005. Your research project: a step-by-step guide for the first-time researcher. Thousand Oaks: Sage.

Wargo, W.G., 2015. *Identifying assumptions and limitations for your dissertation*. Menifee, CA: Academic Information Center.

Warrilow, S., 2010. Starting the Change Process. *Journal of Change Management*.

Wasserman, I. C., Gallegos, P. V., & Ferdman, B. M. (2008). Dancing with resistance: Leadership challenges in fostering a culture of inclusion. In K. M. Thomas (Ed.), *Series in applied psychology. Diversity resistance in organizations* (pp. 175-200). New York, NY, : Taylor & Francis Group/Lawrence Erlbaum Associates.

Wesonga O. B., 2014. Top Management Commitment towards Implementation of Total Quality Management (TQM) in Construction Companies in Nakuru County-Kenya. *International Journal of Economics, Finance and Management Sciences*, 2(6): 332.

Williams, L.C. Jr. 2003. *Communication research, measurement and evaluation: A practical guide for communicators*. San Francisco: IABC Knowledge Centre.

Willig, C., 2013. *Introducing qualitative research in psychology*. UK: McGraw-Hill Education.

Willig, C., 2014. *Interpretation and analysis.* The SAGE handbook of qualitative data analysis. Thousand Oaks: Sage: 136-149.

Willis, C. D., Saul, J., Bevan, H., Scheirer, M. A., Best, A., Greenhalgh, T., Bitz, J. (2016). Sustaining organizational culture change in health systems. *Journal of Health Organization and Management*, 30(1): 2–30.

Wolverton, M. L. (2009). Research Design, Hypothesis Testing and Sampling*. Appraisal Journal*. 77 (4): 373.

Woodrow L. (2014). Writing quantitative research in applied linguistics. New York: Palgrave, McMillan.

Wyse, S.E., 2011. Difference between Qualitative Researches vs. Quantitative Research? http://www.snapsurveys.com/blog/what-is-the- difference-between-qualitative-research-and-quantitative-research/. Viewed September 30, 2019.

Yang, R. S., Zhuo, X. Z., & Yu, H. Y. (2009*). Organization theory and management: cases, measurements, and industrial applications.* Taipei: Yeh-Yeh.

Yeung, A.C.L., Lee, T.S. and Chan, L.Y., 2003. Senior management perspectives and ISO 9000 effectiveness: an empirical research. *International Journal of Production Research*, 41(3): 545-569.

Yılmaz, D. & Kılıçoğlu, G., 2013. European Journal of Research on Education Resistance to change and ways of reducing resistance in educational organizations. *European Journal of Research on Education*, 1(1): 14–21.

Yin,R. K. (2013). Validity and generalization in future case study evaluations. *Evaluation,* 19 (3): 321–332.

Yin,R. K. (2013). Validity and generalization in future case study evaluations. *Evaluation*, 19 (3): 321–332.

Zimon, D. , Gajewska, T., & Bednarova, L. 2016. An influence of quality management system for improvement of logistics distribution. *Calitatea*, 17 (155): 68.

Zuo, Z., Wu, S. & Xu, G., 2017. Evaluation of ISO9001 Implementation Effectiveness Based on AHP-FUZZY. *Comprehensive Evaluation Method*. 55(7): 354–366.

**OTHERS REFERENCES:**

http://doi.org/10.1080/17437199.2014.941722. Date of access: 19 July.

http://gaboneco.com/gabon-sobraga-obtient-sa-certification-iso-9001.html

http://thegabon.com/sobraga/

https://sobraga.net/

https://sobraga.net/sobraga-sengage-contre-les-cancers-feminins/

https://www.gaboninitiatives.com/sobraga-pilier-du-developpement-socio-economique-durable-au-gabon/

The Report: Gabon 2013 By Oxford Business Group, P113

The Report: Gabon 2014 By Oxford Business Group.

The Report: Gabon 2015 By Oxford Business Group., p109

The Reporter Gabon 2010 By Oxford Business Group, p181.

# APPENDICES

## APPENDIX 1: CONSENT LETTER

Cape Peninsula
University of Technology

NzeAyong Axel H
Faculty of Business and Management Sciences
Cape PeninsulaUniversity of Technology
P.O. Box 1906, Bellville, 7535
Tel: +27 (0) 717171900
E-mail: nzeayong@yahoo.fr

Date: 16 April 2017

**CONSENT LETTER**

Dear Sir /Madam,

I am Mr Nze Ayong Axel, Currently I am doing my Masters studies in MBA programme at Cape Peninsula University of Technology in Cape Town. The title of my research project is "**The impact of ISO9001 on service delivery at the logistics department of a brewery in Gabon**". This project will be conducted under the supervisionof Dr Bingwen Yan.

In order to complete my research project, I would like to request an access to your company to connect some relevant information to this research. The procedure will consist of distributing questionnaires to the participants within your company in advance. All the information provided will be treated strictly as confidential and purely for academic purpose. No organization's names or precipitants will be appearing in this project.

Upon completion of the project, you will be informed that all the participants from your organization will be voluntary, nobody will be forced. If you require any further information, please do not hesitate to contact me.

Yours sincerely,

A.H NZE AYONG

## APPENDIX 2: PERMISSION LETTER FROM SOBRAGA FOR THE STUDY

Axel Henrick NZE AYONG
Tél : 07 89 80 91
S/c de Mme Evelyne ABORE-NZE
OIF-BRAC
Tel : 07 86 31 64
Libreville- Gabon

Libreville, le 7 mars 2017

A
Monsieur le Directeur Général
SOBRAGA
Libreville - Gabon

SO.BRA.GA
B.P. 487
Tél: 01.70.19.69 / 01.70.19.79
NIF: 790 037
LIBREVILLE

Objet : Projet de recherche académique

**Monsieur le Directeur Général,**

Dans le cadre de mon projet académique, je viens très humblement auprès de votre bienveillance, solliciter appui et autorisation d'une enquête en lien avec la satisfaction « Clients ».

Etudiant en Master Technologique en Administration des Affaires en Afrique du Sud, je dois, dans le cadre de la validation de mon diplôme, procéder à une étude visant à mesurer **« l'efficacité de la certification ISO 09001 dans l'offre de services en entreprises»** et rédiger le rapport y relatif.

Etant à Libreville pour les trois semaines qui suivent, ce sera l'occasion pour moi de mener à bien cette étude qui consistera à mesurer la place que votre entreprise occupe dans le paysage institutionnel de notre pays, sa certification, voire le modèle qu'elle représente dans le processus globale de normalisation et de qualité dans l'approche clients.

En cas d'assentiment de votre part, je mettrai à profit la période qui m'est prescrite à Libreville, pour des entretiens sous format de questionnaires auprès de vos clients.

Restant à votre disposition pour toute information complémentaire, je vous prie de recevoir, **Monsieur le Directeur Général**, l'assurance de ma considération distinguée.

**PJ : lettre de présentation**
**Cap Peninsula University of Technologie**

COURRIER ARRIVEE
LE 08 MAR. 2017
SOBRAGA

**Axel Henrick NZE AYONG**

## APPENDIX 3: DECLARATION OF CONSENT

**DECLARATION**

I, Nze Ayong Axel Henrick, declare that I explained the information in this document to ( Mme ANDRIANJAFITTRINMO i, the logistics Manager of Sobraga (pty) Ltd).

I encouraged her to ask questions and book adequate time to answer them.

I am satisfied that she adequately understood all aspects of the research, as discussed above.

Signed at (place) ……BELLVILLE…… on (Date) ……01 FEBRUARY2018…….

**Signature of Investigator** 

**Contact Information**

Please do not hesitate to contact the investigator should you need more information with regards to the proposed research:

Nze Ayong Axel Henrick
Cell: + 27717171900 (Cape Town)
Tel : +24107898091/+24102145927 ( Gabon)
E-mail : nzeayong@yahoo.fr

**APPENDIX 4: INFORMATION SHEET AND QUESTIONNAIRE**


FACULTY OF BUSINESS AND MANAGEMENT SCIENCES (CAPE TOWN Campus)
Mr Nze Ayong Axel Henrick
Tel: +27 7 17171900

Email:nzeayong@yahoo.fr

**The impact of ISO9001 on Service Delivery at the Logistics Department of a Brewery in Gabon**

**DEAR RESPONDENT**

I am Mr Nze Ayong Axel Henrick, currently studying my Master's Degree in the Faculty of Business and Management Sciences, Cape Peninsula University of Technology. The objective of this survey is to determine the Impact of ISO9001 on Service Delivery at the Logistic Department of a Brewery in Gabon.

The survey is anonymous. Please do not write your name on the survey. Responses cannot be traced to any individual. There are no right or wrong answers to any items in the questionnaire. The free and frank expression of your own opinion will be most helpful. All the information will be kept strictly confidential and only for academic purpose.

This questionnaire includes two sections. Section 1 is about Demographical Data. Section 2 is the decision-making survey contains statements related to continuous improvement, customer satisfaction and prevention of non-conformance service. You are requested to respond to each of the statement by making a "tick" in the space, which most accurately fits the extent based on your opinion.

Should you require further information concerning this survey, please contact me without any hesitation.

Thank you for your participation.

Yours Faithfully

A.H NZE AYONG

**SECTION 1: DEMOGRAPHICAL DATA**

Please put a tick figure in your answer.

1. Gender

| | |
|---|---|
| Male | |
| Female | |

2. Age

| | | |
|---|---|---|
| 1 | 18 -25 years | |
| 2 | 25-35 years | |
| 3 | 35-45 years | |
| 4 | 45- 55 years | |
| 5 | 55 + years | |

3. Education

| | | |
|---|---|---|
| 1 | PhD | |
| 2 | Master | |
| 3 | Bachlor / BTech | |
| 4 | National Diploma | |
| 5 | Matric | |
| 6 | None of the above | |

4. Your job title

| | | |
|---|---|---|
| 1 | Top/Senior Management | |
| 2 | Junior Manager | |
| 3 | Administrator | |
| 4 | Foreman / Supervisor | |
| 5 | Shop floor employee | |

5. Work experience

| | | |
|---|---|---|
| 1 | Less than 5years | |
| 2 | 6-10 years | |
| 3 | 11-15 years | |
| 4 | 16-20 years | |
| 5 | More than 20 years | |

**SECTION 2: QUALITY MANAGEMENT QUESTIONNAIRE**

If you strongly agree with the statement, you would CIRCLE number 1. If, on the other hand, if you disagree with the statement you would CIRCLE number 4, and so on. Please make your preferred option based on your honest opinion.

| No. | ITEM | Decision-making | | | | |
|---|---|---|---|---|---|---|
| | | Strongly Disagree | Disagree | Unknown | Agree | Strongly Agree |
| 1 | The company has an effective plan for continuous quality improvement. | 1 | 2 | 3 | 4 | 5 |
| 2 | You always have methods and tools for problem solving at work. | 1 | 2 | 3 | 4 | 5 |
| 3 | The company has methods and tools in place to improve service quality. | 1 | 2 | 3 | 4 | 5 |
| 4 | Customer's requirements are always considered as part of criteria for evaluation. | 1 | 2 | 3 | 4 | 5 |
| 5 | The quality policies are well established in the company. | 1 | 2 | 3 | 4 | 5 |
| 6 | The company provides training programs for employees. | 1 | 2 | 3 | 4 | 5 |
| 7 | The company regularly collects information for service improvement. | 1 | 2 | 3 | 4 | 5 |
| 8 | The company continuously monitors and improves the processes, procedures and products. | 1 | 2 | 3 | 4 | 5 |
| 9 | Managers review the quality management system at planned intervals. | 1 | 2 | 3 | 4 | 5 |
| 10 | The company provides resources to ensure continuous improvement. | 1 | 2 | 3 | 4 | 5 |
| 11 | Customer complaints are always treated as a major priority. | 1 | 2 | 3 | 4 | 5 |
| 12 | A customer satisfaction survey is provided. | 1 | 2 | 3 | 4 | 5 |
| 13 | A warranty claims and dealer reports are always provided for customers. | 1 | 2 | 3 | 4 | 5 |
| 14 | You have regular contact with customers. | 1 | 2 | 3 | 4 | 5 |
| 15 | The company has a procedure for customers to access the right person easily. | 1 | 2 | 3 | 4 | 5 |
| 16 | The company specifies customer requirements in whatever they need. | 1 | 2 | 3 | 4 | 5 |
| 17 | The company always considers customer perception regarding the service quality. | 1 | 2 | 3 | 4 | 5 |
| 18 | The company has an effective channel for customers to obtain information, contracts, orders, feedback, etc. | 1 | 2 | 3 | 4 | 5 |
| 19 | The company has procedures to prevent nonconformities (i.e. customer complaints, late deliveries or Team member not trained). | 1 | 2 | 3 | 4 | 5 |

| No. | ITEM | Decision-making | | | | |
|---|---|---|---|---|---|---|
| | | Strongly Disagree | Disagree | Unknown | Agree | Strongly Agree |
| 20 | The company takes actions to deal with occurrence of nonconformities. | 1 | 2 | 3 | 4 | 5 |
| 21 | The company explores ways to eliminate the causes of potential nonconformities. | 1 | 2 | 3 | 4 | 5 |
| 22 | The company reviews the effectiveness of the preventive action taken. | 1 | 2 | 3 | 4 | 5 |
| 23 | The company reduces nonconformities through continuous improvement. | 1 | 2 | 3 | 4 | 5 |
| 24 | The company always makes sure that nonconformities are in control. | 1 | 2 | 3 | 4 | 5 |
| 25 | The company has a procedure indicating the person who is responsible and authorized for nonconformities. | 1 | 2 | 3 | 4 | 5 |
| 26 | Any non-conforming materials are immediately quarantined in segregated area. | 1 | 2 | 3 | 4 | 5 |
| 27 | Employees are highly motivated since the implementation of ISO 9001 | 1 | 2 | 3 | 4 | 5 |
| 28 | Employees feel at home while they are at work. | 1 | 2 | 3 | 4 | 5 |
| 29 | There is an “open door” policy in place for everybody. | 1 | 2 | 3 | 4 | 5 |
| 30 | It is easy for employees to communicate with managers. | 1 | 2 | 3 | 4 | 5 |
| 31 | All information is available to everyone on time. | 1 | 2 | 3 | 4 | 5 |
| 32 | You have experienced life threatening from customers. | 1 | 2 | 3 | 4 | 5 |

Thank you for your valuable contribution. Your inputs to this research project are highly appreciated.

**Please check your questionnaire to ensure that you have completed all pages/ items.**

## APPENDIX 5: INTERVIEW QUESTIONNAIRE

Cape Peninsula
University of Technology

NzeAyong Axel H. Department of Business Administration Faculty of Business and Management Sciences Cape Peninsula University of Technology PO Box 652. Cape Town 8000. Tel: +27 717171900 E-mail: nzeayong@yahoo.fr

02/11/2017

**INTERVIEW ON THE ISO9001 'S PERFORMANCE AT THE LOGISTICS DEPARTMENT AT SOBRAGA**

- IQ1 Are responsibilities and roles clearly stated and appointed within your departments and what are the KPI's for these positions?
- IQ2: How does the logistics department satisfies for ongoing management tasks, reviews (are your objectives being achieved?), management reporting, employees' training and internal auditing compliance?
- IQ3: Is any quality plan put in place in the logistics department? if yes, what does it cover?
- IQ4 How do you assess your department performance? and what are the criteria to measure it?
- IQ5: How does the logistics department deal with incidents?
- IQ6: Are there strategies in place for changes to existing or new process?
- IQ7: Do your employees have knowledge of their work and how do they assure the delivery of service?

**APPENDIX 6: DEMOGRAPHICAL DATA**

| Gender | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Male | 92 | 72.4 | 72.4 | 72.4 |
| | Female | 35 | 27.6 | 27.6 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

| Age Group in the Organization | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 18 -25 years | 16 | 12.6 | 12.6 | 12.6 |
| | 25-35 years | 35 | 27.6 | 27.6 | 40.2 |
| | 35-45 years | 45 | 35.4 | 35.4 | 75.6 |
| | 45- 55 years | 29 | 22.8 | 22.8 | 98.4 |
| | 55 + years | 2 | 1.6 | 1.6 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

| Level of Education in the organazation | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Master | 11 | 8.7 | 8.7 | 8.7 |
| | Bachlor/BTech | 8 | 6.3 | 6.3 | 15.0 |
| | ND | 54 | 42.5 | 42.5 | 57.5 |
| | Matrix | 27 | 21.3 | 21.3 | 78.7 |
| | None of above | 27 | 21.3 | 21.3 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

| Job title | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Top/Senior Management | 3 | 2.4 | 2.4 | 2.4 |
| | Junior Manager | 13 | 10.2 | 10.2 | 12.6 |
| | Administrator | 19 | 15.0 | 15.0 | 27.6 |

| | | | | | |
|---|---|---|---|---|---|
| | Foreman / Supervisor | 28 | 22.0 | 22.0 | 49.6 |
| | Shop floor employee | 63 | 49.6 | 49.6 | 99.2 |
| | 6 | 1 | .8 | .8 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

**Work experience in years**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Less than 5years | 19 | 15.0 | 15.0 | 15.0 |
| | 6-10 years | 42 | 33.1 | 33.1 | 48.0 |
| | 11-15 years | 40 | 31.5 | 31.5 | 79.5 |
| | 16-20 years | 18 | 14.2 | 14.2 | 93.7 |
| | More than 20 years | 8 | 6.3 | 6.3 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

## APPENDIX 7: FREQUENCY TABLE FOR LIKERT SCALE DATA

1

| The company has an effective plan for continuous quality improvement. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | .8 | .8 | .8 |
| | Disagree | 1 | .8 | .8 | 1.6 |
| | Unknown | 25 | 19.7 | 19.7 | 21.3 |
| | Agree | 88 | 69.3 | 69.3 | 90.6 |
| | Strongly Agree | 12 | 9.4 | 9.4 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

2

| You always have methods and tools for problem-solving at work. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | .8 | .8 | .8 |
| | Disagree | 5 | 3.9 | 3.9 | 4.7 |
| | Unknown | 1 | .8 | .8 | 5.5 |
| | Agree | 111 | 87.4 | 87.4 | 92.9 |
| | Strongly Agree | 9 | 7.1 | 7.1 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

3

| The company has methods and tools in place to improve service quality. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | .8 | .8 | .8 |
| | Disagree | 6 | 4.7 | 4.7 | 5.5 |
| | Unknown | 6 | 4.7 | 4.7 | 10.2 |
| | Agree | 103 | 81.1 | 81.1 | 91.3 |
| | Strongly Agree | 11 | 8.7 | 8.7 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

4

| Customer's requirements are always considered as part of criteria for evaluation. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | .8 | .8 | .8 |
| | Disagree | 2 | 1.6 | 1.6 | 2.4 |
| | Unknown | 41 | 32.3 | 32.3 | 34.6 |
| | Agree | 73 | 57.5 | 57.5 | 92.1 |
| | Strongly Agree | 10 | 7.9 | 7.9 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

5

| The quality policies are well established in the company. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 45 | 35.4 | 35.4 | 35.4 |
| | Agree | 74 | 58.3 | 58.3 | 93.7 |
| | Strongly Agree | 8 | 6.3 | 6.3 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

6

| The company provides training programs for employees. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Agree | 68 | 53.5 | 53.5 | 53.5 |
| | Strongly Agree | 59 | 46.5 | 46.5 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

7

| The company regularly collects information for service improvement. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Disagree | 17 | 13.4 | 13.4 | 13.4 |
| | Unknown | 5 | 3.9 | 3.9 | 17.3 |
| | Agree | 93 | 73.2 | 73.2 | 90.6 |
| | Strongly Agree | 12 | 9.4 | 9.4 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

8

| The company continuously monitors and improves the processes, procedures and products. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Disagree | 21 | 16.5 | 16.5 | 16.5 |
| | Unknown | 16 | 12.6 | 12.6 | 29.1 |
| | Agree | 72 | 56.7 | 56.7 | 85.8 |
| | Strongly Agree | 18 | 14.2 | 14.2 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

9

| Managers review the quality management system at planned intervals. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Disagree | 3 | 2.4 | 2.4 | 2.4 |
| | Unknown | 53 | 41.7 | 41.7 | 44.1 |
| | Agree | 67 | 52.8 | 52.8 | 96.9 |
| | Strongly Agree | 4 | 3.1 | 3.1 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

10

| The company provides resources to ensure continuous improvement. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Disagree | 1 | .8 | .8 | .8 |
| | Unknown | 3 | 2.4 | 2.4 | 3.1 |
| | Agree | 102 | 80.3 | 80.3 | 83.5 |
| | Strongly Agree | 21 | 16.5 | 16.5 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

11

| Customer complaints are always treated as a major priority. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Disagree | 1 | .8 | .8 | .8 |
| | Unknown | 28 | 22.0 | 22.0 | 22.8 |
| | Agree | 80 | 63.0 | 63.0 | 85.8 |
| | Strongly Agree | 18 | 14.2 | 14.2 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

12

| A customer satisfaction survey is provided. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 24 | 18.9 | 18.9 | 18.9 |
| | Agree | 89 | 70.1 | 70.1 | 89.0 |
| | Strongly Agree | 14 | 11.0 | 11.0 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

13

| A warranty claims and dealer reports are always provided for customers. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 50 | 39.4 | 39.4 | 39.4 |
| | Agree | 63 | 49.6 | 49.6 | 89.0 |
| | Strongly Agree | 14 | 11.0 | 11.0 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

14

| You have regular contact with customers. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 35 | 27.6 | 27.6 | 27.6 |
| | Disagree | 32 | 25.2 | 25.2 | 52.8 |
| | Unknown | 5 | 3.9 | 3.9 | 56.7 |
| | Agree | 46 | 36.2 | 36.2 | 92.9 |
| | Strongly Agree | 9 | 7.1 | 7.1 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

15

| The company has a procedure for customers to access the right person easily. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | .8 | .8 | .8 |
| | Disagree | 3 | 2.4 | 2.4 | 3.1 |
| | Unknown | 8 | 6.3 | 6.3 | 9.4 |
| | Agree | 107 | 84.3 | 84.3 | 93.7 |
| | Strongly Agree | 8 | 6.3 | 6.3 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

16

| The company specifies customer requirements in whatever they need. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Disagree | 16 | 12.6 | 12.6 | 12.6 |
| | Unknown | 45 | 35.4 | 35.4 | 48.0 |
| | Agree | 62 | 48.8 | 48.8 | 96.9 |
| | Strongly Agree | 4 | 3.1 | 3.1 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

17

| The company always considers customer perception regarding the service quality. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Disagree | 5 | 3.9 | 3.9 | 3.9 |
| | Unknown | 48 | 37.8 | 37.8 | 41.7 |
| | Agree | 71 | 55.9 | 55.9 | 97.6 |
| | Strongly Agree | 3 | 2.4 | 2.4 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

18

| The company has an effective channel for customers to obtain information, contracts, orders, feedback, etc. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 8 | 6.3 | 6.3 | 6.3 |
| | Agree | 102 | 80.3 | 80.3 | 86.6 |
| | Strongly Agree | 17 | 13.4 | 13.4 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

19

| The company has procedures to prevent nonconformities (i.e. customer complaints, late deliveries or team member not trained). | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 13 | 10.2 | 10.2 | 10.2 |
| | Agree | 97 | 76.4 | 76.4 | 86.6 |
| | Strongly Agree | 17 | 13.4 | 13.4 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

20

| The company takes actions to deal with occurrence of nonconformities. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 21 | 16.5 | 16.5 | 16.5 |
| | Agree | 97 | 76.4 | 76.4 | 92.9 |
| | Strongly Agree | 9 | 7.1 | 7.1 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

21

| The company explores ways to eliminate the causes of potential nonconformities. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 39 | 30.7 | 30.7 | 30.7 |
| | Agree | 80 | 63.0 | 63.0 | 93.7 |
| | Strongly Agree | 8 | 6.3 | 6.3 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

22

| The company reviews the effectiveness of the preventive action taken. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 43 | 33.9 | 33.9 | 33.9 |
| | Agree | 74 | 58.3 | 58.3 | 92.1 |
| | Strongly Agree | 10 | 7.9 | 7.9 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

23

| The company reduces nonconformities through continuous improvement. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 1 | .8 | .8 | .8 |
| | Disagree | 2 | 1.6 | 1.6 | 2.4 |
| | Unknown | 31 | 24.4 | 24.4 | 26.8 |
| | Agree | 76 | 59.8 | 59.8 | 86.6 |
| | Strongly Agree | 17 | 13.4 | 13.4 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

24

| The company always makes sure that nonconformities are in control. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 6 | 4.7 | 4.7 | 4.7 |
| | Agree | 92 | 72.4 | 72.4 | 77.2 |
| | Strongly Agree | 29 | 22.8 | 22.8 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

25

| The company has a procedure indicating the person who is responsible and authorized for nonconformities. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 5 | 3.9 | 3.9 | 3.9 |
| | Agree | 85 | 66.9 | 66.9 | 70.9 |
| | Strongly Agree | 37 | 29.1 | 29.1 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

26

| Any non-conforming materials are immediately quarantined in segregated area. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Unknown | 9 | 7.1 | 7.1 | 7.1 |
| | Agree | 91 | 71.7 | 71.7 | 78.7 |
| | Strongly Agree | 27 | 21.3 | 21.3 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

27

| Employees are highly motivated since the implementation of ISO 9001 | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Disagree | 5 | 3.9 | 3.9 | 3.9 |
| | Unknown | 32 | 25.2 | 25.2 | 29.1 |
| | Agree | 38 | 29.9 | 29.9 | 59.1 |
| | Strongly Agree | 52 | 40.9 | 40.9 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

28

| Employees feel at home while they are at work. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 2 | 1.6 | 1.6 | 1.6 |
| | Disagree | 9 | 7.1 | 7.1 | 8.7 |
| | Unknown | 30 | 23.6 | 23.6 | 32.3 |
| | Agree | 85 | 66.9 | 66.9 | 99.2 |
| | Strongly Agree | 1 | .8 | .8 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

29

| There is an “open door” policy in place for everybody. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 22 | 17.3 | 17.3 | 17.3 |
| | Disagree | 39 | 30.7 | 30.7 | 48.0 |
| | Unknown | 10 | 7.9 | 7.9 | 55.9 |
| | Agree | 50 | 39.4 | 39.4 | 95.3 |
| | Strongly Agree | 6 | 4.7 | 4.7 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

30

| It is easy for employees to communicate with managers. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 42 | 33.1 | 33.1 | 33.1 |
| | Disagree | 56 | 44.1 | 44.1 | 77.2 |
| | Unknown | 1 | .8 | .8 | 78.0 |
| | Agree | 27 | 21.3 | 21.3 | 99.2 |
| | Strongly Agree | 1 | .8 | .8 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

31

| All information are available to everyone on time | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 46 | 36.2 | 36.2 | 36.2 |
| | Disagree | 56 | 44.1 | 44.1 | 80.3 |
| | Unknown | 4 | 3.1 | 3.1 | 83.5 |
| | Agree | 20 | 15.7 | 15.7 | 99.2 |
| | Strongly Agree | 1 | .8 | .8 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

32

| You have experienced life threatening from customers. | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Strongly Disagree | 106 | 83.5 | 83.5 | 83.5 |
| | Disagree | 13 | 10.2 | 10.2 | 93.7 |
| | Agree | 6 | 4.7 | 4.7 | 98.4 |
| | Strongly Agree | 2 | 1.6 | 1.6 | 100.0 |
| | Total | 127 | 100.0 | 100.0 | |

## APPENDIX 8: RELIABILITY STATISTICS

| **Reliability Statistics** | | |
|---|---|---|
| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
| .901 | .912 | 32 |
| | | |

## APPENDIX 9: INTER-ITEM CORRELATION MATRIX

| | ST1 | ST2 | ST3 | ST4 | ST5 | ST6 | ST7 | ST8 | ST9 | ST10 | ST11 | ST12 | ST13 | ST14 | ST15 | ST16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ST1 | | | | | | | | | | | | | | | | |
| ST2 | .380** | | | | | | | | | | | | | | | |
| ST3 | .405** | .609** | | | | | | | | | | | | | | |
| ST4 | .513** | .309** | .303** | | | | | | | | | | | | | |
| ST5 | .397** | -0.036 | 0.046 | .326** | | | | | | | | | | | | |
| ST6 | 0.035 | 0.123 | 0.169 | .205* | -0.077 | | | | | | | | | | | |
| ST7 | -0.062 | 0.143 | .270** | .238** | 0.002 | .351** | | | | | | | | | | |
| ST8 | 0.061 | 0.147 | .303** | .233** | 0.08 | .426** | .673** | | | | | | | | | |
| ST9 | .350** | 0.068 | 0.099 | .446** | .503** | 0.068 | .206* | .387** | | | | | | | | |
| ST10 | .264** | -0.012 | 0.035 | 0.151 | .292** | 0.159 | 0.075 | .268** | .231** | | | | | | | |
| ST11 | .338** | 0.104 | 0.144 | .331** | .385** | .218* | .296** | .324** | .379** | .267** | | | | | | |
| ST12 | .323** | 0.121 | 0.122 | .392** | .431** | .252** | .274** | .365** | .480** | .362** | .705** | | | | | |
| ST13 | .354** | 0.144 | .178* | .439** | .472** | .236** | .327** | .314** | .576** | .335** | .636** | .697** | | | | |
| ST14 | .397** | 0.119 | 0.11 | .347** | .533** | 0.042 | -0.001 | 0.132 | .473** | .224* | .445** | .505** | .623** | | | |
| ST15 | .379** | 0.017 | .220* | 0.117 | .316** | 0.005 | -0.073 | 0.051 | .249** | .232** | 0.17 | .280** | .214* | .227* | | |
| ST16 | 0.149 | .231** | .326** | .381** | .269** | .251** | .539** | .416** | .377** | 0.121 | .477** | .433** | .555** | .443** | -0.023 | |

| | ST1 | ST2 | ST3 | ST4 | ST5 | ST6 | ST7 | ST8 | ST9 | ST10 | ST11 | ST12 | ST13 | ST14 | ST15 | ST16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ST17 | .406** | 0.043 | 0.097 | .378** | .515** | 0.17 | 0.038 | .208* | .502** | .341** | .371** | .469** | .544** | .510** | .340** | .421** |
| ST18 | .214* | -0.086 | 0.078 | .207* | .300** | .282** | 0.089 | .214* | .268** | .193* | .314** | .289** | .319** | .217* | 0.156 | 0.172 |
| ST19 | .174* | 0.034 | 0.086 | .272** | .399** | .232** | 0.1 | .218* | .319** | 0.125 | .324** | .369** | .353** | .296** | 0.13 | .310** |
| ST20 | .224* | -0.074 | 0.055 | .233** | .415** | 0.118 | 0.156 | .222* | .410** | 0.128 | .396** | .337** | .421** | .339** | 0.128 | .400** |
| ST21 | .361** | 0.02 | 0.126 | .312** | .416** | .266** | .222* | .329** | .416** | .216* | .366** | .458** | .591** | .447** | .206* | .362** |
| ST22 | .399** | 0.089 | .201* | .441** | .471** | 0.169 | .219* | .330** | .507** | .181* | .405** | .428** | .566** | .444** | .265** | .392** |
| ST23 | .334** | 0.126 | .206* | .453** | .331** | .199* | .294** | .390** | .340** | 0.116 | .438** | .342** | .418** | .399** | 0.138 | .453** |
| ST24 | .268** | 0.113 | .175* | .284** | 0.13 | .202* | 0.099 | 0.11 | .213* | 0.145 | .236** | .201* | .283** | 0.068 | .258** | 0.133 |
| ST25 | 0.088 | -0.076 | -0.085 | .196* | 0.088 | 0.126 | 0.073 | 0.085 | 0.047 | 0.066 | 0.172 | .212* | .212* | .227* | 0.121 | 0.11 |
| ST26 | .240** | -0.036 | -0.014 | 0.032 | .193* | -0.042 | -0.139 | -0.039 | .175* | 0.093 | 0.141 | 0.125 | .191* | .304** | .209* | 0.028 |
| ST27 | .177* | .259** | .264** | .222* | 0.059 | .199* | .377** | .279** | .356** | 0.092 | .225* | .255** | .400** | .278** | 0.077 | .488** |
| ST28 | 0.155 | .180* | .285** | 0.153 | 0.088 | .216* | 0.053 | 0.016 | 0.095 | -0.033 | .198* | 0.141 | .343** | .285** | 0.026 | .247** |
| ST29 | .227* | 0.139 | .206* | .290** | 0.141 | .339** | .236** | .391** | .285** | 0.135 | .224* | 0.156 | .291** | .241** | 0.018 | .227* |
| ST30 | .269** | 0.149 | 0.139 | .315** | .302** | 0.135 | -0.014 | .186* | .271** | 0.093 | 0.142 | 0.147 | .244** | .443** | 0.081 | .181* |
| ST31 | .322** | 0.123 | 0.122 | .240** | .252** | 0.144 | -0.065 | 0.093 | .220* | 0.081 | 0.122 | 0.043 | 0.154 | .307** | 0.099 | 0.116 |
| ST32 | 0.117 | 0.044 | 0.093 | .223* | -0.027 | .188* | -0.045 | 0.066 | 0.014 | -0.019 | -0.02 | -0.034 | 0.045 | 0.087 | 0.102 | -0.02 |

| | ST17 | ST18 | ST19 | ST20 | ST21 | ST22 | ST23 | ST24 | ST25 | ST26 | ST27 | ST28 | ST29 | ST30 | ST31 | ST32 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ST17** | | | | | | | | | | | . | . | | | | |
| **ST18** | .380** | | | | | | | | | | | . | | | | |
| **ST19** | .339** | .620** | | | | | | | | | | | | . | | |
| **ST20** | .347** | .522** | .694** | | | | | | | | | | | | | |
| **ST21** | .407** | .458** | .465** | .595** | | | | | | | | | | | | |
| **ST22** | .430** | .497** | .468** | .639** | .763** | | | | | | | | | . | | |
| **ST23** | .295** | .374** | .505** | .546** | .485** | .565** | | | | | | | | | | |
| **ST24** | 0.156 | .378** | .437** | .375** | .333** | .324** | .455** | | | | | . | | | | |
| **ST25** | 0.021 | .338** | .314** | .288** | .241** | .214* | .422** | .285** | | | | | | | | |
| **ST26** | 0.121 | 0.13 | .235** | .344** | .231** | .199* | .198* | 0.148 | .311** | | | | | | | |
| **ST27** | .263** | 0.026 | 0.12 | .182* | .226* | .260** | .297** | .287** | 0.093 | 0.112 | | | | | | |
| **ST28** | .203* | .249** | .269** | .258** | .242** | .250** | .197* | .195* | 0.159 | .295** | .387** | | | | | |
| **ST29** | .206* | .440** | .412** | .345** | .327** | .390** | .422** | .190* | .272** | .197* | 0.054 | .244** | | | | |
| **ST30** | .266** | .191* | .255** | .245** | .290** | .348** | .331** | 0.13 | 0.082 | .271** | .186* | .278** | .598** | | | |
| **ST31** | .178* | 0.153 | 0.17 | .175* | .260** | .271** | .283** | .181* | 0.025 | .189* | 0.158 | .208* | .472** | .728** | | |
| **ST32** | -0.017 | .222* | 0.133 | 0.173 | 0.128 | 0.115 | 0.156 | .230** | 0.114 | 0.064 | -0.04 | 0.085 | .270** | .316** | .315** | |