ISO 9001:2008 INTERNAL QUALITY AUDIT AND PERFORMANCE OF THE COCA-COLA BOTTLING PLANTS

BY:

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DECLARATION

This research project is my original work and has not been submitted for the award of a degree in any other university or institution.

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This research project has been submitted for examination with my approval as the university supervisor.

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DEDICATION

To my family: my father Job Gacharia, for all his sacrifices to enable me achieve my academic goals, my only sibling and brother, James Gacharia for his encouragement and moral support; and in memory of my late mother, Jacinta Gacharia, for being an inspiration to me and for her vote of confidence in me.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

ISO 9001:2008 quality management system enables organizations demonstrate their ability to consistently provide products and services that meet customer and regulatory requirements with the focus on enhancing customer satisfaction. An internal quality audit is one of the requirements for an organization implementing ISO 9001:2008. Internal quality audits seek to continually examine and improve the implementation of the ISO 9001:2008 quality management system to meet the organization's quality objectives. They can contribute to an improvement in performance by enabling organizations to be internally motivated for the efficient performance of the ISO 9001:2008 quality management system. The quality objectives are connected to the business objectives and hence the internal audit's objectives can also be connected to the business objectives through quality objectives. Quality management systems based on the ISO 9000 series are the recognized approach to meeting quality assurance standards at the Coca-Cola bottling plants. Auditing is the currency of the certification. It is established through third party audits and maintained through internal quality audits. The study investigates the implementation of the ISO 9001:2008 internal quality audits within the bottling plants. It then examines how the audits impact performance. The study found out that ISO 9001:2008 internal quality audits have a positive impact on performance.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

An organization is guaranteed of continued existence, if it is able to satisfy the needs of its stakeholders notably: its customers, the society, its own employees, and of the business goals of its owners (Poulida and Constantinou, 2002). These stakeholders have varying needs for example: customers will want products that meet or exceed their expectations; the society expects to benefit from the existence of the organization without adversely impacting the environment they share; whilst employees want to work in a conducive environment.

Evaluation of an organization's quality management system is one of the ways of assessing the ability of an organization to achieve the satisfaction of each of the aforementioned stakeholders. A quality system can be defined as a process that combines with manufacturing or service provision to ensure quality perfect products and services (Guchu and Mwanaongoro, 2012). In order to help organizations achieve the above aims, ISO family of quality management system standards provide frameworks for evaluation of and guidelines for establishment of effective quality management systems (ISO 9001:2008). ISO 9000 is an example of a certified management standard that was created by the International Organization for Standardization. It provides quality management system specifications required by an organization in order to demonstrate that the organization can provide products that consistently meet customer and applicable regulatory requirements (ISO, 2002).

Some studies (Litsikas, 1997; Rao, Ragu and Solis, 1997) have suggested that management standards contain a bag of beneficial practices which can be leveraged on in order to improve the operational performance of organizations. This can be attributable to the fact that development and implementation of a quality assurance system enables organizations to better organize and synchronize their operations. This is achieved through documenting their processes, clearing out ambiguities and clearly defining duties and responsibilities among employees and departments. Moreover, the most important advantage is that it enables organizations adopt a proactive way of managing quality, by focusing mainly on the prevention of errors, rather than correction following later detection, which was the focus of the traditional quality control.

1.1.1 ISO 9000 Quality Management System

ISO 9000 is a set of quality management standards. Organizations adopt ISO 9000 because it helps them achieve standards of quality that are recognized and respected throughout the world (ISO, 2003). The main target of ISO 9000 is to help company to set up and maintain a quality oriented management system. In implementing ISO 9000, a company needs to develop and maintain quality policy, quality objectives in all levels and many operational documented procedures require company to settle down a system and mechanism to tracking company performance (Steven, 1994).

Without a quality system, organizations cannot achieve a world-class standard of quality. An example of one of the most common ISO 9000 QMS is ISO 9001:2008. The structure of ISO 9001:2008 reflects Plan-Do-Check-Action Deming cycle. The ISO 9001:2008

standard consists of four sets of systematic requirements notably: Management responsibility, Resource management, Product realization, as well as Monitoring, analysis and improvement. (ISO 9001:2008).

Establishment of an ISO 9001:2008 has being associated with various achievements notably: documenting processes forces an organization to focus on how they do business; documented processes create repetition, eliminate variation, improve efficiency and reduce costs; corrective and preventative measures are developed and become permanent company-wide solutions; employee morale is increased as they're empowered to take control of their work; customer satisfaction and loyalty grows as the company delivers proactive rather than reactive solutions; better products and services arise from continuous improvement process; improved profit levels as productivity improves and rework costs are reduced; improved internal/external communications– employees, customers and suppliers are assured a voice; verification by third party auditor builds credibility with customer, supplier and competitive organizations (Henkoff, 1993; Marash and Marquardt 1994; McQueen, 1993; Rayner and Porter, 1991; Williams, 1997).

On the other hand, ISO 9001:2008 quality management system has been criticized for some of their limitations e.g. amount of resources in terms of the money, time and paperwork required for registration as well as maintenance. Moreover, ISO 9001 certification does not guarantee product or service quality, especially in cases where receiving certification is prioritized over achieving quality (Corrigan, 1994; Henkoff, 1993; Johannsen, 1995; Stephens, 1994).

Successful implementation of ISO 9000 can be achieved with incorporation of all elements of quality; commitment from all managers and employees involved; focus on prioritized improvements; and development of an overall process for driving improvements.

Measuring, testing and auditing activities are carried out to ensure the effectiveness and efficiency of the system (Steven, 1994). To obtain and maintain ISO 9001:2008 certificate, an organization's quality system must be measured against the requirements of the standards by itself or by a certification body. Firms that comply with ISO 9001:2008 regulations are usually certified by a certifying body with the evaluation tool preferred by many organizations being third party audit.

1.1.2 ISO 9000 Quality Audits

ISO 9000 quality audits involve an organization's self-assessment/evaluation against the ISO 9000 standards. Self-assessment involves evaluation of existing quality manual so as to formalize the way things are done, demonstrate the way things are done, demonstrate things are done right, monitor what is being done and improve (Guchu and Mwanaongoro, 2012). This evaluation is also referred to as a baseline audit and consists of adequacy and compliance audits.

An adequacy audit is defined as the audit that determines the extent to which the documented quality system, represented by the quality manual and the associated procedures, meets the requirements of the applicable standard whilst a compliance audit

is the audit which seeks to establish the extent to which the documented system is implemented and observed by the workforce (Batalas training manual, 1991).

ISO 9000 quality audits are broadly classified as either internal or external (Lim and Niew, 1995). An internal quality audit should be performed before the certification audit (external audit) to assess the effective implementation of the newly established quality assurance system. This enables the identification of non-conformances and hence facilitating their rectifications by appropriate remedial measures.

Internal audits can contribute to an improvement in organization performance. This can be attributable to the fact that they enable organizations to be internally motivated for the introduction and for efficient performance of the ISO 9000, the quality objectives are connected to the business objectives and consequentially the internal audit's objectives can also be connected to the business objectives through quality objectives (Alic and Rusjan, 2010).

1.1.3 Organization Performance

Organization performance comprises the actual output or results of an organization as measured against its intended outputs (Richard *et al*., 2009). The primary goals of organization performance are to increase organization effectiveness and efficiency to improve the ability of the organization to deliver goods and/or services.

Performance measurement can be defined as the process of quantifying the efficiency and

effectiveness of action (Alaa and James, 1996). Organizations measure performance by analyzing financial and non-financial metrics over time, across departments, between different entities e.g. employees, organizations, investments, systems; and against benchmarks and targets to gauge success. To correctly measure for performance success, the benchmarks and target comparisons must be aligned with strategic goals (Obigbemi, 2012).

A performance measure can be defined as a metric used to quantify the efficiency and/or effectiveness of an action whilst a performance measurement system can be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions (Alaa and James, 1996).

Alaa and James, 1996 further note that in production, the performance measures could take any of the following dimensions: quality-based measure e.g. product conformance, features, reliability, perceived quality, serviceability, technical durability etc.; time-based measure e.g. manufacturing lead time, deliver lead time, due-date performance, frequency of delivery etc.; cost- based measure: e.g. production cost, service cost, value added, and selling price; flexibility based measure e.g. new product introduction, deliverability, volume, resource mix.

1.1.4 Coca-Cola Central, East and West Africa Bottling Plants

The Coca-Cola Central, East and West Africa Bottling Plants constitutes of seventy bottling plants across thirty countries in Africa. Their core business is to manufacture a variety of non-alcoholic ready to drink beverages notably: cold sparkling beverages, juice

drinks, water, cordials and hot niche beverages which serve over 60% of Africa's population.

Quality Management Systems (QMS) based on the ISO 9000 series are the recognized approach to meeting quality assurance certification requirements in these bottling plants. Auditing is central to this process as the currency of the certification. It is established through third party audits and maintained through internal quality audits. Demonstration of adherence to the quality management standards based on the ISO 9000 series, is not only achieved through third party certification, but enhanced through embracing continuous internal quality audits.

1.2 Statement of the problem

Much of the research conducted on implementation of ISO 9000 quality assurance standards reveal the existence of a dilemma with regards to the degree to which the development and implementation of a quality assurance system, according to the ISO 9000 series of standards, can finally guarantee better organization performance. Clear causality has not been established. Whilst some studies suggest the existence of a positive relationship, others have found either no such relationship or a negative one leading to two views i.e. optimistic and pessimistic views.

The optimistic view (Henkoff, 1993; Marash and Marquardt 1994; McQueen, 1993; Rayner and Porter, 1991; Williams, 1997) is primarily founded on the premise that the standards offer a well-structured tool to begin with quality. As a result of this, the top

management's commitment to it becomes easier; the gap between the current quality management environment and TQM is decreased; companies are able to shift focus from the final products to the processes that produce these products; the internal organization and operation is improved; companywide improvement in uniformity and effectiveness of communication; employees' quality issues awareness is increased; they lower quality variations and quality related costs; customers' satisfaction and trust increases; continuous improvement is encouraged through regular and imperative quality audits.

On the other hand, there exists a pessimistic view on this. According to several authors notably Corrigan (1994), Henkoff (1993), Johannsen (1995) and Stephens (1994), many organizations' primary focus is quick certification, without real commitment to quality. This may result in the development of a rigid system. Consequently, bureaucracy is increased, flexibility and innovation reduces, without guaranteeing real and continuous improvement of products and processes as well as improved satisfaction of the customer, who is finally the only judge of quality. The fact that the processes are not necessarily evaluated for their efficiency before they get documented and also do not include any operational or other business results in their requirements, then these standards cannot guarantee efficiency, as what cannot be measured cannot be easily managed.

From the above two views, implementation of the ISO 9000 quality management systems standards is critical. Moreover, it is also claimed that a thorough and consistent implementation of the standards can offer a good first step towards TQM, since when proper implementation of the quality assurance system is done, this represents a sub-

system of TQM (Conti, 1993; Lamprecht,1991).Implementation involves establishing and maintaining an effective documented quality system in order to achieve ISO 9000 registration. One of the common strategies to achieve this is through conducting an internal quality audit (Tigani, 2011).

However, the impact of the ISO 9000 internal quality audits on organization performance has been relatively understudied. There is therefore a need to delve and determine to what extent the implementation of the ISO 9000 standards, through internal quality audits impacts organization performance.

This study therefore examines the change of performance after implementing ISO 9000 quality audits. Specifically, the impact of ISO 9001:2008 internal quality audits on performance in the Coca-Cola Bottling plants. The study will be guided by the following research questions:

a) To what extent are the ISO 9001:2008 internal quality audits implemented in the Coca-Cola-Bottling plants?
b) Do ISO 9001:2008 internal quality audits implementation lead to an improvement in performance of the Coca-Cola Bottling plants?

1.3 Objectives of the study

The specific objectives of the study are as follows:

a) To examine the level of implementation of ISO 9001:2008 internal quality audits within the Coca-Cola bottling plants.

b) To investigate the impact of ISO 9001:2008 internal quality audits on performance of the Coca-Cola bottling plants

1.4 Value of the study

The findings of this study will contribute to improving understanding about the interrelationship between ISO 9001:2008 internal quality audits and performance in the Coca-Cola Bottling plants. A majority of the bottling plants will find the study valuable to their operations and moreover, a benchmark to decisions on quality management. Organizations, especially those that are implementing ISO 9000, can also leverage on the findings of the study by helping them understand the impact of internal quality audits to their performance. Policy makers can also benefit from this study by enabling them, as they formulate policies with regard to quality assurance and standards, to appropriately link them with their performance implication.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section provides a theoretical background of the concept of ISO, performance, and the audit of quality management systems. It then concludes by providing the conceptual framework for the study.

2.2 The Concept of ISO

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). ISO has technical committees that are charged with coming up with the ISO standards. The ISO family of standards represents an international consensus on good management practices with the aim of ensuring that an organization can deliver products or services that meet the customer's quality requirements (ISO 2002). These standards are voluntary.

The numerous standards have been grouped into ISO series for example, ISO 9000, ISO 14000 and ISO 26000 series.

2.2.1 ISO 9000

ISO 9000 is an internationally accepted quality management system for organizations, whose primary objectives are: the need to demonstrate their ability to consistently provide products/services that meet customer and regulatory requirements with the focus on enhancing customer satisfaction; as well as ensure continuous quality improvement. It describes what needs to be accomplished (ISO 9001:2008).

The foundational basis of ISO 9000 family of Quality Management System standards consists of a business process concept, and eight underpinning self-reinforcing fundamental principles (ISO 9000:2005(E)). These principles are outlined as follows:

Customer focus i.e. organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.

Leadership i.e. leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.

Involvement of people i.e. people at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.

Process approach i.e. a desired result is achieved more efficiently when activities and related resources are managed as a process.

System approach i.e. identifying, understanding and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.

Continual improvement i.e. continual improvement of the organization's overall performance should be a permanent objective of the organization.

Factual approach to decision making i.e. effective decisions are based on the analysis of data and information.

Mutually beneficial supplier relationships i.e. an organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

However, the attaining of the ISO 9000 Certificate does not automatically imply an effective implementation of a quality management system.

2.2.1.1 ISO 9001:2008

The ISO 9001:2008 standard consists of four sets of systematic requirement notably: management responsibility, resource management, product realization, as well as monitoring, analysis and improvement (ISO, 2000).

The clauses of management responsibility require a company to set up, deploy and maintain a set of quality objectives that are in line with company strategy and quality policies. The company has to stipulate the roles and responsibility for each function. The quality management responsibility function also has been emphasized as an important factor for quality management system.

The clause of resource management refers to the requirement about education and training for employees in order to improve their awareness and skills. It also mentions the requirement about ensuring a conducive working environment.

The clauses of product realization strongly emphasizes on control of production and operation processes and include: the realization processes, customer communication including the identification of customer requirements; design and/or development

changes; identification of regulatory and legal requirements; the criteria for selection and periodic evaluation of suppliers; as well as validation of processes.

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The clauses of monitoring, analysis and improvement focus on measurement of organization performance (both product and process). It includes internal audit, control of nonconformity, measuring and monitoring of processes, the planning for continual improvement of the quality management system, corrective and preventive action

2.2.2 Reasons for Maintaining ISO 9000 Certification

Hutchins (1997) identifies two major reasons for obtaining and keeping ISO 9000 certification notably: customer-marketing benefits and internal benefits.

Customer-marketing benefits include the advantages such as the ability to convey commitment to quality, to fulfil contract requirements, as well as to convey operational and systems assurance and facilitates on-time delivery.

Organizations, on the other hand, can also benefit from obtaining and keeping ISO 9000 certification, thanks to internal benefits. One such internal benefit is that ISO 9000 implementation facilitates business and quality planning through detailed records which eventually may positively transform the organization positively. They also provide insights on company inter-relationships. Moreover, they encourage the need for an internal focus which leads to an improvement in efficiency and effectiveness in their operations. It also assists staff in understanding and improving operations.

Several authors (Henkoff, 1993; Marash and Marquardt 1994; McQueen, 1993; Rayner and Porter, 1991; Williams, 1997) have noted that organizations that implement ISO 9000-based QMS benefit in a variety of ways. They focus on how they do business by ensuring documented processes create repetition, eliminate variation, improve efficiency and reduce costs. It also ensures the development of corrective and preventative measures that become permanent company-wide solutions. Employee morale is increased as they're empowered to take control of their work. Customer satisfaction and loyalty grows as the company delivers proactive rather than reactive solutions. Better product and service quality arises as a result of continuous improvement. Improved organization performance as well as improved profit levels a function of improved productivity and reduced rework costs. Improved communications (both internal and external) as employees, customers and suppliers are assured a voice. Verification by third party auditor builds credibility with customer, supplier and competitive organizations.

However, ISO 9000-based quality management systems have been criticized for the amount of money, time and paperwork required for registration and implementation. Further, ISO 9000 certification does not guarantee product or service quality, especially in cases where receiving certification is prioritized over achieving quality (Corrigan, 1994; Henkoff, 1993; Johannsen, 1995; Stephens, 1994).

Successful implementation of ISO can be achieved with incorporation of all elements of quality; commitment from all managers, engineers and employees involved; focus on

prioritized improvements; and development of an overall process for driving improvements.

2.3 Quality Management Systems Audits

Auditing can generally be defined as a snapshot evaluation of the organization's performance in regard to best practice (Ghobadian and Woo, 1996).

A quality audit, according to the standard for vocabulary, ISO 8402 (clause 4.9), is defined as a systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.

The standards provide guidelines for conducting audits of quality systems. The current standard for auditing is ISO 10011.1990 Guidelines for auditing quality systems. It contains Parts 1-3 which cover auditing, qualification criteria for auditors and management of audit programs respectively.

2.3.1 Classification of Quality Audits

According to Lim and Niew (1995) quality audits may be broadly classified as either internal or external and take one of the three following forms: First party, second party or third party

A first party audit, also known as an internal audit, is an audit conducted by an organization on itself. It may either cover part of or the entire organization. It is deemed

mandatory by ISO 9000 Clause 4.17, Internal Quality Audits. Second party audits, on the other hand, are audits conducted by one company on another and are considered as external audits. They are normally conducted on a supplier by a customer. A third party audit is conducted by an independent company (the third party) on a supplier to gain certification. It is always known as an external audit.

2.3.2 Internal Quality Audit (IQA)

This is a quality audit conducted by an organization on itself (Lim and Niew, 1995). Organizations need to audit their own QMS procedures and activities to enable them determine whether they are adherent to planned arrangements, as well as to establish to what extent the effectiveness of the QMS is adequate and being followed by the staff (ISO 9000, Clause 4.17, Internal Quality Audits).

Hoyle (1996) states that the primary objectives of an IQA is to determine whether the QMS is effective in maintaining control to meet the resultant products and services of the specified requirements and achieving the prescribed quality objectives; as well as establish through unbiased means, factual information on quality performance. Therefore, actively checking and monitoring the implementation of a QMS, is the only way to know whether it works. In this way, shortcomings of the QMS are identified and their solutions obtained. It is hence necessary to undertake an internal quality audit, irrespective of whether it is a formal requirement of ISO 9000 or not.

2.3.3 Third Party Audit versus Internal Quality Audit

The third party external audit determines whether the QMS meets the standards and requirements of ISO 9000. Certification is then done, based upon proof of existence of appropriate procedures as well as their proper implementation. This certificate, however, is not evidence of implementation of these procedures on an ongoing basis.

IQA, on the other hand, seeks to continually examine and improve the implementation of the QMS to meet the organization's quality objectives. It provides the specific evidence of compliance.

The conduct of the IQA is very similar to the third party assessment process, except that the company plays a prime role. Many companies maintain the system with minimal implementation in order to meet the requirements of the external auditor (Thomas, 1996). A company that relies solely on the minimum frequency of IQAs to monitor the system will receive few benefits and could easily lose third party certification. The external auditor's role is merely to oversee and report how well the system is maintained according to ISO 9000.

2.4 ISO 9000 Quality Audits and Organization Performance

Several studies (Schoefler *et al.*, 1974; Buzzel and Wiersema, 1981; Craig and Douglas, 1982; Phillips *et al.*, 1983; Jacobson and Aarker, 1987; Capon *et al*., 1990; Rust *et al*., 1994; Maani *et al*., 1994; Flynn *et al*., 1995; 1997; Forker *et al*., 1996; Caruana and Pitt, 1997; Adam *et al*., 1997) have drawn conclusions with regard to the relationship between

ISO 9000 quality audits and various aspects of organization performance which include but not limited to: higher sales volume and growth, market share gain, reduced costs, improved profitability etc. This has being attributed to various factors at play notably: fewer customer defections due to improved product quality, reduced wastage, competitiveness in the market which is a function of superior product quality to other market players, cost leadership etc.

Findings from some studies have deduced the powerful impact that better conformance, one of the benefits associated with ISO 9000 certification, can have on reducing costs and through better product quality, therefore attracting and retaining customers. Jacobson and Aarker, (1987) found product quality had a positive influence on return on investment, market share and price. Forker *et al*., (1996) discovered that quality, defined as conformance to specifications, was significantly related to sales growth and the return achieved on the sales growth. Further, Flynn *et al*., (1997) indicated that achieving conformance to specification with low levels of rework has a direct effect on competitive advantage, whilst quality differential, had an even greater impact. "Right first time" was strongly associated with better process flow management while quality differential was shown to be linked with better process management and quality control (Flynn *et al*., 1997). This further illustrated that better product quality relative to competitors was associated with sales growth and better sales margins.

It was also found that good quality control, which is effectively implemented following ISO 9000 quality audits, was related to competitive advantage. A properly implemented

ISO 9000 quality management system will have process control as an essential activity. Better process control will be consistently associated with less rework and hence lower costs in achieving conformance quality. These lower costs will lead to better comparative business performance. This is in line with Deming (1986) who reasons that as quality improves, waste is eliminated, costs are reduced and financial performance improves. Other authors (Ebrahimpour *et al*, 1997; Casadesus, 2000; Buttle, 1997; Quazi and Padibjo, 1998) found out that ISO 9000 quality audits actually led to market share gain and better product quality performance.

However, some studies (Gore, 1994; Terziovski *et al*., 1997; SEPSU, 1994; Jones *et al.*, 1997; Abraham *et al.*) found no significant positive relationship between ISO 9000 quality audits and performance. This was attributed to various factors namely: lack of internal motivation, minimalist approach in implementation, and wrong motives for seeking certification e.g. reacting to external pressure.

2.5 Conceptual Framework

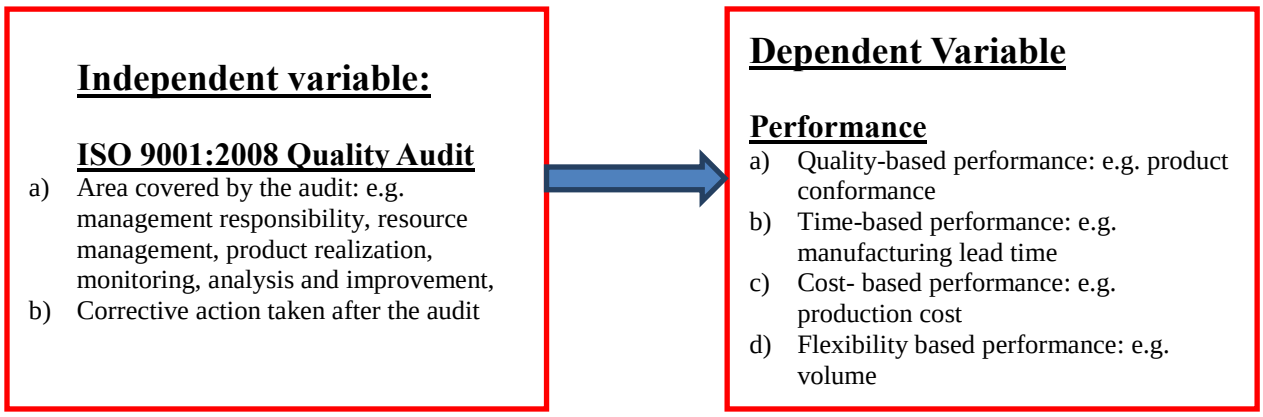
From the above, it is clearly evident of the critical role played by quality audits in the implementation of ISO quality management systems. However, there has been minimal or no research, on whether the role of internal quality audits in ISO implementation could impact performance.

This study will therefore seek to find out whether ISO 9000 implementation, with the help of continuous internal quality audits, impacts performance. Specifically, the study

will investigate the impact of ISO 9001:2008 internal quality audits on performance of the Coca-Cola bottling plants.

The independent variable in this case is ISO 9001:2008 internal quality audit, whilst the dependent variable is performance, as illustrated in figure 2.5 below.

Figure 2.5: ISO 9001:2008 Internal Quality Audits and Performance



CHAPTER THREE: RESEARCH METHODLOGY

3.1 Research Design

Research design refers to a plan for a research work, which aims at providing guidelines, which the research work is being conducted (Mugenda and Mugenda, 2003). The study adopted a case study of the Coca-Cola bottling plants within the Central, East and West Africa region. A case study, as defined by Yin (1984), is a research design that investigates contemporary phenomenon within its real life context when the boundaries between the phenomenon and the context are not clearly evident and in which multiple sources of evidence are used. It captures an understanding of a complex issue and can enhance strength to what is already known through previous research. Case studies emphasize detailed contextual analysis of a limited number of events or conditions and their relationships. A case study was chosen in order to provide focused and detailed insight to the relationship between ISO 9001:2008 internal quality audits and performance, with the help of a detailed analysis of the Coca-Cola bottling plants.

A causal design was also adopted. According to Zikimund (2003), a causal research refers to research conducted to identify the cause and effect relationship among variables when the research problem has already being narrowly defined. A causal design is primarily done to identify cause and effect relationship among variables. In most causal studies, researchers have an expectation of the relationship to be explained. In this case, there is an expectation that ISO 9001:2008 quality audits have an impact on performance of the bottling plants.

3.2 Study Population and Data Collection

A population is a well-defined set of people, services, elements and events, group of things or households (Mugenda and Mugenda, 2003). Cooper and Schindler (2003) also define a population as the total collection of elements about which some inferences need to be made. The study population, in this case, consisted of all the seventy bottling plants in the Coca-Cola Central, East and West Africa region as illustrated in appendix 1.1. The study targeted the bottling plants that had implemented ISO 9001:2008 for the last five years.

The study used primary data. The data collection instrument was a questionnaire. It was reviewed to ensure that it was complete, free of measurement error and bias. This was in line with ensuring that results obtained from the analysis of the data were valid by accurately representing the phenomenon under investigation (Orodho, 2005). The questionnaire was then administered to the Quality, Environment and Safety Managers in charge of the plants via email coupled with follow up telephone calls.

The questionnaire consisted of three sections. The first section contained the general information of the bottling plant. The second section then examined the implementation of ISO 9001:2008 internal quality audits. The bottling plants were expected to provide information with regard to whether they had implemented ISO 9001:2008 for a period of more than five years or not. This was then followed by the scope areas covered by the audit and the degree of implementation of the audit in each of the scope areas. The scope includes management responsibility, resource management, product realization, as well

as monitoring, analysis and improvement. The degree of implementation of the audit was determined by a 5-point scale from weak implementation (1) to strong implementation (5). This was followed by the frequency of audits and lastly the action taken after the audits. This was in line with the first objective of the study.

In the third section of the questionnaire, the impact of ISO 9001:2008 internal quality audits on performance was examined to investigate whether an improvement of performance was realized. Performance areas that were considered in this case include: quality based performance, time based performance, cost based performance, and flexibility based performance. Ranking of the responses was based on a 5-point scale from "Not improved at all" (1) to "Strongly improved" (5). This adequately addressed the second objective of the study.

The data collection instrument is illustrated in appendix 1.2. The data was collected and evaluated for consistency, usefulness, credibility and adequacy. It was then analyzed using Microsoft excel application software. Regression analyses and descriptive statistics were used to analyze the data and results were presented in the form of tables and interpretations given in prose. This was then used to come up with findings and conclusions of the study. A summary of the recommendations based on the findings were drawn and presented as part of this study.

3.3 Data Analysis

Data analysis involves reviewing, categorizing, tabulating and recombining evidence to ascertain meaning relating to the study's initial aim and objective, research questions and issues (Miles and Huberman, 1994).

Data collected was analyzed using descriptive statistics techniques such as mean and standard deviation. The relationship between ISO 9001:2008 internal quality audits and performance in the Coca-Cola bottling plants was evaluated using multiple regression models with performance as the dependent variable whilst ISO 9001:2008 quality audits as the independent variable. Performance was considered as a compositor of five indicators i.e. quality based performance (Y0), time based performance (Y1), cost based performance (Y2), and flexibility based performance (Y3). The independent variables constituted the degree of implementation of the ISO 9001:2008 internal quality audits in each of the scope areas of ISO 9001:2008 quality management system i.e. management responsibility, resource management, product realization, as well as monitoring, analysis and improvement. The independent variables were further broken down as follows: Management Responsibility was broken down into Quality Planning (QP), Function and Responsibility (FR), and Management leadership (ML); Resource Management was broken down into Education and Training (ET) as well as Work, Environment, Infrastructure and Safety (WEIS); Product Realization was broken into Customer Information Management (CIM), Design Control (DC), Product Standardization (PS), as well as Supplier Control (SC); Lastly, Monitoring, Analysis and Improvement was broken down into Inspection and Testing (IT), Nonconformity Control (NC), as well as

Quality Improvement (QI). The relationship between each of the performance compositors and the components of ISO 9001:2008 internal quality audits was represented in the following models below:

$Y0 = \alpha0 + \beta0\ QP + \beta1\ FR + \beta2\ ML + \beta3\ ET + \beta4\ WEIS + \beta5\ CIM + \beta6\ DC + \beta7\ PS + \beta8\ SC + \beta9IT + \beta10\ NC + \beta11\ QI + Ɛ0$ …. Quality Based Performance and ISO 9001:2008 Internal Quality Audits

$Y1 = \alpha1 + \beta0\ QP + \beta1\ FR + \beta2\ ML + \beta3\ ET + \beta4\ WEIS + \beta5\ CIM + \beta6\ DC + \beta7\ PS + \beta8\ SC + \beta9IT + \beta10\ NC + \beta11\ QI + Ɛ1$ …. Time Based Performance and ISO 9001:2008 Internal Quality Audits

$Y2 = \alpha2 + \beta0\ QP + \beta1\ FR + \beta2\ ML + \beta3\ ET + \beta4\ WEIS + \beta5\ CIM + \beta6\ DC + \beta7\ PS + \beta8\ SC + \beta9IT + \beta10\ NC + \beta11\ QI + Ɛ2$ …. Cost Based Performance and ISO 9001:2008 Internal Quality Audits

$Y3 = \alpha3 + \beta0\ QP + \beta1\ FR + \beta2\ ML + \beta3\ ET + \beta4\ WEIS + \beta5\ CIM + \beta6\ DC + \beta7\ PS + \beta8\ SC + \beta9IT + \beta10\ NC + \beta11\ QI + Ɛ3$ …. Flexibility Based Performance and ISO 9001:2008 Internal Quality Audits

Where $\alpha0$, $\alpha1$, $\alpha2$, and $\alpha3$ are the points of intercept; $\beta0$, $\beta1$, $\beta2$, $\beta3$, $\beta4$, $\beta5$, $\beta6$, $\beta7$, $\beta8$, $\beta9$, $\beta10$ and $\beta11$ are the coefficients of the chosen components of the independent variable; whilst Ɛ0, Ɛ1, Ɛ2 and Ɛ3 are the error terms of the equations.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter covers data analysis, results and discussion with respect to the level of implementation of ISO 9001:2008 internal quality audits within the sampled Coca-Cola bottling plants as well as the impact of ISO 9001:2008 internal quality audits on their performance. The chapter begins by presenting demographics of the sampled bottling plants. It then covers the implementation of the ISO 9001:2008 internal quality audits in the bottling plants, followed by the performance improvement after implementation of the internal quality audits, and then discusses the impact of the ISO 9001:2008 internal quality audits on performance of the bottling plants.

4.2 Demographics of the Respondent Bottling Plants

The questionnaire was delivered via emails to the Quality, Safety and Environment (QSE) managers in charge of all the 70 Coca-Cola bottling plants within the Central, East and West Africa region. Out of the 70 questionnaires, 46 were dully filled and returned. This represented a response rate of 66%. However, only 37 questionnaires were considered for this study as they met the pre-set criteria of implementing ISO for a period of a minimum of 5 years. The general characteristics of respondents can be described in table 1 below.

Table 1: General Characteristics of Respondent Bottling Plants

Classification by subregion

Subregion	Number	%
African Islands	2	5%
East Africa	9	24%
French West Africa	8	22%
Mid Africa	5	14%
Nigeria	13	35%
Total	**37**	**100%**

Classification by workforce size

Workforce size	Number	%
500-1000	15	41%
Above 1000	19	51%
Below 500	3	8%
Total	**37**	**100%**

From the above table, majority of the bottling plants sampled for this study were from the Nigeria sub region (35% of total sample). East Africa, French West Africa, Mid Africa and African Islands had 24%, 22%, 14% and 5% of the bottling plants respectively.

Under the classification by workforce size, plants that had a workforce size above 1000 employees were the majority (51%), followed by 500-1000 and below 500 at 41% and 8% respectively.

4.3 ISO 9001:2008 Internal Quality Audits Implementation in the Coca-Cola Bottling Plants

In order to quantitatively assess the degree of ISO 9001:2008 internal quality audits implementation, the level of implementation of the audits in each of the four main areas of ISO 9001:2008 quality management system i.e. management responsibility, resource management, product realization as well as measuring, analysis and improvement was measured by a five-point scale.

These four areas were further be subdivided into fifteen indices as follows: management responsibility consisted of three indices i.e. quality planning (QP), function and responsibility (FR) as well as management leadership (ML); resource management comprised of two indices i.e. education and training (ET) as well as work, environment, infrastructure and safety (WEIS); product realization constituted of customer information management (CIM), design control (DC), product standardization (PS) and supplier control (SC); measuring, analysis and improvement consist of four indexes i.e. inspection and testing (IT), non-conformity control (NC), as well as quality improvement (QI).

Table 2 below shows the degree of implementation of ISO 9001:2008 internal quality audits for all the sampled plants. It reflects that the most covered areas by the audit are nonconformity control (Mean=4.65) and quality planning (Mean=4.05) whilst the least covered are work environment, infrastructure and safety (Mean=3.68) as well as quality improvement (Mean=3.68).

Table 2: Areas of Implementation of ISO 9001:2008 Internal Quality Audits

	Scope of ISO 9001:2008 internal quality audit implementation											
	Management responsibility(MR)			Resource management(RM)		Product Realization(PR)				Measuring, Analysis and Improvement(MAI)		
	Quality planning	Function and responsibility	Management leadership	Education and training	Work environment, infrastructure and safety	Customer information managemen	Design control	Product Standardization	Supplier control	Inspection and testing	Nonconformity control	Quality improvement
	QP	*FR*	*ML*	*ET*	*WEIS*	*CIM*	*DC*	*PS*	*SC*	*IT*	*NC*	*QI*
X	4.05	3.86	3.84	3.84	3.68	3.92	3.89	3.81	3.84	3.92	4.65	3.68
S	0.81	0.82	0.87	0.87	1.03	0.80	0.70	0.81	0.76	0.80	0.48	0.82

X- Mean

S- Standard Deviation

4.4 Evaluating Performance after ISO 9001:2008 Internal Quality Audits Implementation

The level of performance improvement after conducting the ISO 9001:2008 internal quality audits was quantitatively evaluated using a five-point scale. Four components of performance were considered for this study i.e. quality based performance, time based performance, cost based performance and flexibility based performance. Table 3 below illustrates the scores based on each of the areas of performance.

Table 3: Performance Improvement after ISO 9001:2008 Internal Quality Audit

	Evaluating Performance after ISO 9001:2008 Implementation			
	Quality-based Performance	Time-based Performance	Cost-based Performance	Flexibility-based Performance
	QP	*TP*	*CP*	*FP*
X	4.14	3.89	3.97	4.11
S	0.75	0.74	0.69	0.70

X- Mean
S- Standard Deviation

From the results in table 3, quality based performance improved the most (Mean=4.14) after ISO 9001:2008 internal quality audits whilst time-based performance improved the least (Mean=3.89).

4.5 ISO 9001:2008 Internal Quality Audits and Performance

As seen in the above section, the degree of ISO 9001:2008 internal quality audits implementation was ascertained using twelve indices. On the other hand, performance was considered as a compositor of five components i.e. quality-based performance, time-based performance, cost- based performance and flexibility based measure.

The relationship between ISO 9001:2008 internal quality audits implementation and performance was evaluated by multiple regression models with performance as the dependent variable. Table 4 below shows the regression coefficients of the independent variables and their t statics for each of the components of performance mentioned above.

Table 4: Relationship between ISO 9001:2008 Internal Quality Audits and Performance

	Quality Performance (Y0)		Time based performance (Y1)		Cost based performance(Y2)		Flexibility based performance (Y3)	
Adjusted R Square	**0.915144966**		**0.828136432**		**0.748510363**		**0.87852324**	
F	**33.35441417**		**15.45570649**		**9.928920949**		**22.69608175**	
Standard Error	**0.218874725**		**0.30563922**		**0.344340223**		**0.243473201**	
Independent Variable	***Coefficients***	***t Stat***	***Coefficients***	***t Stat***	**Coefficients**	**t Stat**	**Coefficients**	**t Stat**
Intercept	0.624087231	1.146395536	0.453892006	0.597074129	1.045077039	1.220240266	0.215762358	0.356294662
Quality planning (QP)	0.228198162	2.432670561	0.207584051	1.584716826	0.038145784	0.258479173	0.343163725	3.288644863
Function and responsibility (FR)	-0.006147448	-0.053191988	0.045075464	0.279304601	0.019317482	0.106245302	0.031097242	0.24188987
Management leadership (ML)	-0.058959993	-0.553619503	0.169137582	1.137314576	0.111607245	0.666122653	-0.144773766	-1.22204803
Education and training (ET)	-0.318662317	-1.587171281	0.275116319	0.981286827	-0.152570179	-0.4830261	-0.438319793	-1.962585634
Work environment, infrastructure and safety(WEIS)	0.303797575	2.972696907	0.067985669	0.476398332	0.175989985	1.094616874	0.211890879	1.863901842
Customer information management(CIM)	-0.068376512	-0.523997045	0.366618232	2.011974542	0.100643893	0.490249521	-0.034390503	-0.236921717
Design control (DC)	0.216089176	1.27783351	0.066262955	0.280607055	0.265156705	0.996670787	0.23188275	1.232690781
Product Standardization (PS)	-0.001869227	-0.018771906	-0.052574033	-0.378097725	-0.065097372	-0.415544508	0.18446194	1.665319076
Supplier control (SC)	0.102193455	1.25143093	-0.062782643	-0.550566678	0.28495207	2.21800987	-0.102888518	-1.132648514
Inspection and testing (IT)	0.678412584	2.334029261	-0.146270701	-0.360376343	0.306471821	0.67020985	0.588733472	1.820855891
Nonconformity control (NC)	-0.233849365	-1.229064887	-0.001411312	-0.005311879	-0.285880627	-0.955061194	-0.006752233	-0.031902925
Quality improvement (QI)	0.112251032	0.982617053	-0.056095191	-0.351646349	0.017666468	0.098299555	0.132860497	1.045524642

The subsections below delve into the details of the relationship between each of the components of performance and ISO 9001:2208 internal quality audits.

4.5.1 ISO 9001:2008 Internal Quality Audits and Quality Based Performance

The relationship between ISO 9001:2008 internal quality audits and quality based performance was evaluated using a regression model with quality performance (Y0) as the dependent variable as shown below:

$$Y0 = \alpha0 + \beta0\ QP + \beta1\ FR + \beta2\ ML + \beta3\ ET + \beta4\ WEIS + \beta5\ CIM + \beta6\ DC + \beta7\ PS + \beta8\ SC + \beta9 IT + \beta10\ NC + \beta11\ QI + Ɛ0$$

Substituting for the values in table 4:

$$Y0 = 0.624 + 0.228\ QP - 0.006\ FR - 0.059\ ML - 0.319\ ET + 0.304\ WEIS - 0.068\ CIM + 0.216\ DC - 0.002\ PS + 0.102 SC + 0.678\ IT - 0.234\ NC + 0.112\ QI + 0.219$$

The total number of observations was 37 with the significant level of testing set at 95%. Testing for significance of the multiple regression models, the obtained F-value (with 12 and 26 degrees of freedom) is 33.354. Because F=33.354 is larger than F (12, 26) = 2.15, the conclusion is that at least one of twelve independent variables is related to quality based performance. For each multiple regression coefficient, its estimate and t-value are showed in Table 4. The conclusion is that there exists a positive relationship between quality based performance and ISO 9001:2008 internal quality audits conducted on each of the following areas: quality planning (QP), work environment, infrastructure and safety (WEIS), design control (DC), supplier control (SC), inspection and testing (IT), quality improvement (QI).

4.5.2 ISO 9001:2008 Internal Quality Audits and Time Based Performance

The relationship between ISO 9001:2008 internal quality audits and time based performance was evaluated by a regression model with time-based performance (Y1) as dependent variable as shown below:

$$Y1 = \alpha 0 + \beta 0\ QP + \beta 1\ FR + \beta 2\ ML + \beta 3\ ET + \beta 4\ WEIS + \beta 5\ CIM + \beta 6\ DC + \beta 7\ PS + \beta 8\ SC + \beta 9 IT + \beta 10\ NC + \beta 11\ QI + \varepsilon 1$$

Substituting for the values in table 4:

$$Y1 = 0.453 + 0.208\ QP + 0.045\ FR + 0.169\ ML + 0.275\ ET + 0.068\ WEIS + 0.367\ CIM + 0.066\ DC - 0.053\ PS - 0.063 SC - 0.146\ IT - 0.001\ NC - 0.056\ QI + 0.306$$

The total number of observations was 37 with the significant level of testing set at 95%. Testing for significance of the multiple regression models, the obtained F-value (with 12 and 26 degrees of freedom) is 15.456. Because F=15.456 is larger than F (12, 26) = 2.15, the conclusion is that at least one of twelve independent variables is related to time based performance. For each multiple regression coefficient, its estimate and t-value are showed in Table 4. The conclusion is that there exists a positive relationship between time based performance and ISO 9001:2008 internal quality audits conducted on each of the following areas: quality planning (QP), function and responsibility (FR), management leadership (ML), education and training (ET), work environment, infrastructure and safety (WEIS), customer information management (CIM) and design control (DC).

4.5.3 ISO 9001:2008 Internal Quality Audits and Cost Based Performance

The relationship between ISO 9001:2008 Internal Quality Audits and cost based performance was evaluated by a regression model with cost-based performance (Y2) as dependent variable as shown below:

$$Y2 = \alpha 0 + \beta 0\ QP + \beta 1\ FR + \beta 2\ ML + \beta 3\ ET + \beta 4\ WEIS + \beta 5\ CIM + \beta 6\ DC + \beta 7\ PS + \beta 8\ SC + \beta 9 IT + \beta 10\ NC + \beta 11\ QI + \text{Ɛ}2$$

Substituting for the values in table 4:

$$Y2 = 1.045 + 0.038\ QP + 0.019\ FR + 0.112\ ML - 0.153\ ET + 0.176\ WEIS + 0.101\ CIM + 0.265\ DC - 0.065\ PS + 0.285 SC + 0.306 IT - 0.286 NC + 0.017\ QI + 0.344$$

The total number of observations was 37 with the significant level of testing set at 95%. Testing for significance of the multiple regression models, the obtained F-value (with 12 and 26 degrees of freedom) is 9.93. Because F=9.93 is larger than F (12, 26) = 2.15, the conclusion is that at least one of twelve independent variables is related to cost based performance. For each multiple regression coefficient, its estimate and t-value are showed in Table 4. The conclusion is that there exists a positive relationship between cost based performance and ISO 9001:2008 internal quality audits conducted on each of these areas: quality planning (QP), function and responsibility (FR), management leadership (ML), work environment, infrastructure and safety (WEIS), customer information

management (CIM), design control (DC), supplier control (SC), inspection and testing (IT), as well as quality improvement (QI).

4.5.4 ISO 9001:2008 Internal Quality Audits and Flexibility Based Performance

The relationship between ISO 9001:2008 internal quality audits and flexibility based performance was evaluated using a regression model with flexibility-based performance (Y3) as dependent variable as shown below:

$$Y3 = \alpha 0 + \beta 0\ QP + \beta 1\ FR + \beta 2\ ML + \beta 3\ ET + \beta 4\ WEIS + \beta 5\ CIM + \beta 6\ DC + \beta 7\ PS + \beta 8\ SC + \beta 9 IT + \beta 10\ NC + \beta 11\ QI + Ɛ 3$$

Substituting for the values in table 4:

$$Y3 = 0.216 + 0.343\ QP + 0.031\ FR - 0.145\ ML - 0.438\ ET + 0.212\ WEIS - 0.034\ CIM + 0.232\ DC + 0.184\ PS - 0.103 SC + 0.589 IT - 0.007\ NC + 0.133\ QI + 0.243$$

The total number of observations was 37 with the significant level of testing set at 95%. Testing for significance of the multiple regression models, the obtained F-value (with 12 and 26 degrees of freedom) is 22.696. Because F=22.696 is larger than F (12, 26) = 2.15, the conclusion is that at least one of twelve independent variables is related to flexibility based performance. For each multiple regression coefficient, its estimate and t-value are showed in Table 4. The conclusion is that there exists a positive relationship between

flexibility based performance and ISO 9001:2008 internal quality audits conducted on each of these areas: quality planning (QP), function and responsibility (FR), work environment, infrastructure and safety (WEIS), design control (DC), product standardization (PS), inspection and testing (IT) and quality improvement (QI).

4.6 Corrective Action after ISO 9001:2008 Internal Quality Audits and Performance

In order to quantitatively assess the impact of the corrective actions taken after ISO 9001:2008 internal quality audits and performance, an average of the performance improvement in each of the performance measures based on a five point scale, was calculated for each of the two classifications of the plants i.e. those that took corrective measures and those which didn't. Table 5 below gives a summary of the results.

Table 5: Corrective actions after ISO 9001:2008 Internal Quality Audits and Performance

Corrective Action	QP Improvement	TP Improvement	CP Improvement	FP Improvement
No	2.22	2.78	2.56	2.44
Yes	4.04	3.93	4.21	3.93
Total	**3.59**	**3.65**	**3.81**	**3.57**

From the above table, it was noted that plants that undertook corrective measures after ISO 9001:2008 Internal Quality Audits achieved on average a higher score in performance improvements across all the performance measures.

4.7 Interpretation and discussion of the results of data analysis

The existence of a positive relationship between ISO 9001:2008 internal quality audits and performance in the Coca-Cola bottling plants can clearly be discerned from the results of the data analysis above. For example, the study found out that there exists a positive relationship between quality based performance and ISO 9001:2008 internal quality audits conducted on quality planning, work environment, infrastructure and safety, design control, supplier control, inspection and testing, quality improvement. The results also showed the existence of a positive relationship between time based performance and ISO 9001:2008 internal quality audits conducted on quality planning, function and responsibility, management leadership, education and training, work environment, infrastructure and safety, customer information management and design control. Similarly, the study demonstrated the existence of a positive relationship between cost based performance and ISO 9001:2008 internal quality audits conducted on quality planning, function and responsibility, management leadership, work environment, infrastructure and safety, customer information management, design control, supplier control, inspection and testing, as well as quality improvement. Finally, the existence of a positive relationship between flexibility based performance and ISO 9001:2008 internal quality audits conducted on quality planning, function and responsibility, work environment, infrastructure and safety, design control, product standardization, inspection and testing and quality improvement was illustrated.

The above results are in line with some of the findings in the literature review notably: Quazi and Padibjo (1998) who found a positive relationship between ISO 9000 quality

audits and product quality based performance; Mann and Kehoe (1994), Buttle (1997) as well as Casadesus *et al*. (2000) also found a positive relationship between ISO 9000 quality audits and cost based performance. Moreover, Schoefler et al., (1974); Buzzel and Wiersema, (1981); Craig and Douglas, (1982); Phillips et al., (1983); Jacobson and Aarker, (1987); Capon et al., (1990); Rust et al., (1994); Maani et al., (1994); Flynn et al., (1995); Forker et al., (1996); Caruana and Pitt, (1997); Adam et al., (1997) found out that there exists a positive relationship between ISO 9000 quality audits and other various aspects of organization performance i.e. sales performance, market share performance, reduced costs and improved profitability.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter begins by giving a brief summary of the study as well as the conclusions drawn. This is followed by recommendations and concludes with the study's limitations.

5.2 Summary of the Study

The study examined the concepts as well as the relationship between ISO 9001:2008 internal quality audits and performance in the Coca-Cola bottling plants. Particularly, it considered the relationship of the ISO 9001:2008 internal quality audits on specific areas of the ISO 9001:2008 quality management system i.e. Management Responsibility, Resource Management, Product Realization as well as Measuring Analysis and Improvement, and performance i.e. quality based performance, time base performance, cost based performance and flexibility based performance. The ISO 9001:2008 internal quality audit was the independent variable whilst performance was the dependent variable.

5.3 Conclusion

The result of this study demonstrates that quality performance within the Coca-Cola bottling plants was positively impacted by ISO 9001:2008 internal quality audits conducted on quality planning, work environment, infrastructure and safety, design

control, supplier control, inspection and testing, quality improvement. This is in line with Quazi and Padibjo (1998) who found a positive relationship between ISO 9000 quality audits and product quality based performance.

Similarly, time based performance of the bottling plants was positively impacted by ISO 9001:2008 internal quality audits conducted on quality planning, function and responsibility, management leadership, education and training, work environment, infrastructure and safety, customer information management and design control. Cost based performance of the bottling plants was positively impacted by ISO 9001:2008 internal quality audits conducted on quality planning, function and responsibility, management leadership, work environment, infrastructure and safety, customer information management, design control, supplier control, inspection and testing, as well as quality improvement. This is in line with findings from studies conducted by Mann and Kehoe (1994), Buttle (1997) as well as Casadesus *et al*. (2000) who found a positive relationship between ISO 9000 quality audits and cost based performance. Finally, flexibility based performance was positively impacted by ISO 9001:2008 internal quality audits conducted on quality planning, function and responsibility, work environment, infrastructure and safety, design control, product standardization, inspection and testing and quality improvement.

The above conclusions are in line with findings from several other empirical studies that link ISO 9000 quality audits and performance notably: Schoefler et al., (1974); Buzzel

and Wiersema, (1981); Craig and Douglas, (1982); Phillips et al., (1983); Jacobson and Aarker, (1987); Capon et al., (1990); Rust et al., (1994); Maani et al., (1994); Flynn et al., (1995); Forker et al., (1996); Caruana and Pitt, (1997); Adam et al., (1997). These studies found out that there exists a positive relationship between ISO 9000 quality audits and various aspects of organization performance i.e. sales performance, market share performance, reduced costs, improved profitability etc.

5.4 Recommendations

This study makes recommendation for policy implication and also for further research.

5.4.1 Recommendation with policy implication

The study established that the ISO 9001:2008 internal quality audits on various scope areas of the ISO 9001:2008 quality management system positively impacted various performance areas to a great extent. It is therefore recommended that the bottling plants put more emphasis on these audit areas/scope areas to ensure performance improvement is realized. This would mean that in order for them to improve their quality performance, they need to focus on quality planning, work environment, infrastructure and safety, design control, supplier control, inspection and testing, as well as quality improvement. Similarly, in order to achieve an improvement in time based performance, they should lay more emphasis on quality planning, function and responsibility, management leadership, education and training, work environment, infrastructure and safety, customer information management and design control. On the other hand, for them to improve cost based performance, they should be keen on quality planning, function and responsibility,

management leadership, work environment, infrastructure and safety, customer information management, design control, supplier control, inspection and testing, as well as quality improvement. Lastly, for them to improve flexibility based performance, they should pay close attention to quality planning, function and responsibility, work environment, infrastructure and safety, design control, product standardization, inspection and testing as well as quality improvement.

5.4.2 Recommendations for further research

This study focused on the impact of ISO 9001:2008 internal quality audits and performance of the Coca-Cola bottling plants within Central, East and West Africa. However, the outcome of the study could not be relevant to all beverage industries or other industries that don't manufacture beverages. Therefore, it is recommended that the study be extended to other beverage industry players or other sectors of the economy.

5.4 Limitations of the Study

The study only focused on one company due to time constraints as opposed to focusing on several other players within the non-alcoholic ready to drink beverage industry or even other manufacturing organizations.

The study also focused on a few performance dimensions i.e. quality-based performance, time-based performance, cost- based performance, and flexibility based performance. Focus on a broader spectrum of performance incorporating other critical aspects of

performance e.g. market share performance, return on investment, sales performance and profitability, was lacking in this study.

Another major limitation of the study was the use of only a quantitative measure i.e. a five-point scale, to measure the implementation of the ISO 9001:2008 internal quality audits as well as their impact on performance. The use of qualitative measures was lacking in this study.

REFERENCES

Adam, E.E., Jr, Corbett, L.M., Flores, B.E., Harrison, N.J., Lee, T.S., Rho, B., Ribera, J., Samson, D. and Westbrook, R. (1997), "An international study of quality improvement approach and firm performance", International Journal of Operations & Production Management, Vol. 17 No. 9, pp.842-73.

Alaa M. Ghalayini and James S. Noble, "The changing basis of performance measurement", Organization, 2000

Andy Neely, Mike Gregory and Ken Platts "Performance measurement system design - A literature review and research agenda", International Journal of Operations & Production Management, Vol. 15, No. 4, 1995, pp. 80-116

Batalas training manual, Audits, January 1991, pp. 1-3

Capon, N., Farley, J.U. and Hoening, S. (1990), "Determinates of financial performance: a meta-analysis", Management Science, October, pp. 1143-59

Casadesus, M., Heras, I. and Ochoa, C. (2000), "The benefits of the implementation on ISO 9000 normative Empirical research in the Spanish companies", paper presented at the First World Conference on Production and Operations Management, Seville.

Clare Chow-Chua, Mark Goh and Tan Boon Wan "Does ISO 9000 certification improve business performance? ", International Journal of Quality &Reliability Management Vol. 20 No. 8, 2003 pp. 936-953

Cooper, D.R. and Schindler P.S. (2003) International Edition: Business Research

Methods (8th Edition); New Delhi; MacGraw Hill

Ebrahimpour, M., Withers, B.E. and Hikmet, N. (1997), "Experiences of US- and foreign-owned firms: a new perspective on ISO 9000 implementation", Decision Sciences, Vol. 26 No. 5, pp.659-92

Flynn, B.B., Schroeder, R.G., Flynn, E.J., Sakakibara, S, and Bates, K.A. (1997), "World-class manufacturing project: overview and selected results", International Journal of Operations & Production Management, Vol. 17 No. 7, pp.671-85

Forker, L.B., Vickery, S.K. and Droge, C.L. (1996), "The Contribution of quality to business performance", International Journal of Operations & Production Management, Vol. 16 No. 8, pp.44-62

G. Guchu and Z. Mwanaongoro, ISO Quality Management System Implementation for Small to Medium Manufacturing Firms Kenya

Ghobadian, A. and Woo, H.S. (1996) 'Characteristics, benefits and shortcomings of four major quality awards', International Journal of Quality and Reliability Management, Vol. 13, No. 2, pp.10–14.

Gore, M. (1994), "The quality infrastructure", Purchasing and Supply Management, February, pp. 41-3.

Heras, I. & Dick, G.P., & Casadesus, M. 2002 ISO 9000 registration's impact on sales and profitability: A longitudinal analysis of performance before and after accreditation.

Heras, I., Casadesus, M. and Dick, G.P.M. (2002), "ISO 9000 certification and the bottom line: a comparative study of the profitability of Basque companies", Managerial Auditing Journal, Vol. 16 No. 1, forthcoming.

Hoyle, D. (1996), ISO 9000 Quality Systems Hand Book (2nd Ed), Butterworth Heinemann, Oxford

Hutchins, G. 1997. ISO 9000: A comprehensive guide to registration, audit guidelines and successful certification. 2nd Edition New York: Wiley.

International Journal of Operations & Production Management, Vol. 16 No. 8 1996, pp. 63-80

ISO 8402:1994: Quality management and quality assurance- Vocabulary

ISO 9000:2005(E). Quality management systems - Fundamentals and vocabulary

ISO 9001:2008

ISO/IEC Guide 62:1996 General requirements for bodies operating assessment and certification/registration of quality systems

Jacobson, R. and Aarker, D. (1987), "The strategic role of product quality", Journal of Marketing, Vol. 51 No. 4, pp. 31-44

Jeng, Y. C. 1998. Performance evaluation of ISO 9000 registered companies in Taiwan. TQM Magazine, 10: 132 – 138.

Litsikas, M. 1997. Companies choose ISO certification for internal benefits. Quality 36, 20 - 26.

Milena Alic, Borut Rusjan, (2010) "Contribution of the ISO 9001 internal audit to business

Miles, MB. & Huberman, AM. (1994). Qualitative Data Analysis (2nd edition) Thousand Oaks, CA: Sage Publications

Mugenda O.M and Mugenda A.G (2003).Research Methods Quantitative and qualitative approaches, Africa Centre for Technological Studies Press, Nairobi, Kenya.

Naveh, E., Marcus, A., Allen, G., & Koo Moon, H. 1999. ISO 9000 Survey '99: An Analytical Tool to Assess the Costs, Benefits and Savings of ISO 9000 Registration. MacGraw-Hill: New York, San Francisco, Washington D.C.

O.A. Tigani, "The impact of the implementation of ISO 9000 quality management system upon the perception of the performance of the organization's worker", Global Journal of Management and Business research, vol. 11(8), pp. 99 -113, 2011.

Obigbemi Imoleayo Foyeke, The role of organizational performance on accruals management of manufacturing companies in Nigeria, International Journal of Management and Strategy http://www.facultyjournal.com/ (IJMS) 2012, Vol. No.3, Issue 5, July-Dec.2012 ISSN: 2231-0703

Orodho, J. (2005). Elements of Education and Social Science Research Methods Bureau of Educational Research Institute of Research and Development performance",

International Journal of Quality & Reliability Management, Vol. 27, No. 8, pp.916 - 937

Phan Chi Anh and Yoshiki Matsui, Quality Management and Competitive Performance - An empirical evident of impact of ISO 9000 in Vietnamese manufacturing companies

Poulida, O. and L. Constantinou (2002) Development of an Integrated Management System in a Small and Medium-size oil Industry: Safety, Energy and Environment

Rao, S., T. S. Ragu & Solis, L. E., 1997. Does ISO 9000 Have an Effect on Quality Management Practices? An International Empirical Study Total Quality Management 8, 335-346.

Samson, D. and Terziovski, M., 1999.The relationship between total quality management practices and operational performance Journal of Operations Management 17, 393-409

Standard ISO 9001:2000 Quality Management System – requirements International Standard

Steven Sakofsky, "Survival after ISO 9000 Registration". Quality Progress, May 1994

Terziovski, M., Samson, D. and Dow, D. (1997), "The business value of quality management systems certification: evidence from Australia and New Zealand", Journal of Operations Management, Vol. 15 No. 1, pp1-18

The International Journal of Quality & Reliability Management 19, 774–791.

The ISO survey of ISO 9000 and ISO 14000 in 2003, www.iso.org

Thomas, K. (1996), How to Keep ISO 9000, Kogan Page Ltd, London

Voss, C.A., Ahlstrom, P & Blackmon, K. 1997 Benchmarking and operational performance: some empirical results. Benchmarking for Quality Management & Technology 4, 273 – 277

Yann-Chyn Jeng, "Performance evaluation of ISO 9000 registered companies in Taiwan", The TQM Magazine, Volume 10 · Number 2 · 1998 · pp. 132–138

Yin, R. K. (1984) Case study research: Design and methods. Newbury Park, CA: Sage

Zairi, M., 1991.Total Quality Management for Engineers. Woodhead Publishing Limited, Cambridge, UK

APPENDICES

Appendix 1.1: Coca-Cola Central, East and West Africa Bottling Plants

No.	Bottling Plant	Country
1	Bujumbura	Burundi
2	Mutsamudu	Comoros
3	Pointe Noire	Congo
4	Mpila-Brazzaville	Congo
5	Bukavu	DRC
6	Boma	DRC
7	Kinshasa	DRC
8	Lubumbashi	DRC
9	Kisangani	DRC
10	Hyper Psaro	DRC
11	Mbandaka	DRC
12	Djibouti	Djibouti
13	Asmara	Eritrea
14	Addis Ababa	Ethiopia
15	Dire Dawa	Ethiopia
16	Nyeri	Kenya
17	Kisumu	Kenya
18	Mombasa	Kenya
19	Nairobi	Kenya
20	Eldoret	Kenya
21	Kisii	Kenya
22	CCJK	Kenya
23	Antsiranana	Madagascar
24	Antananarivo	Madagascar
25	Phoenix	Mauritius
26	Mamoudzou	Mayotte
27	Maputo-Schweppes	Mozambique
28	Maputo-Machava	Mozambique
29	Nampula	Mozambique
30	Chimoio	Mozambique
31	St. Denis	Reunion
32	Kigali	Rwanda
33	Mahe	Seychelles
34	Mogadishu	Somalia
35	Zanzibar	Tanzania
36	Dar-Es-Salaam	Tanzania
37	Moshi	Tanzania
38	Mwanza	Tanzania
39	Mbeya	Tanzania
40	Mbarara	Uganda
41	Kampala	Uganda
42	Benin City	Nigeria
43	Jos	Nigeria
44	Enugu	Nigeria
45	Apapa	Nigeria
46	Kaduna	Nigeria
47	Ikeja	Nigeria
48	Ilorin	Nigeria
49	Port Harcourt	Nigeria
50	Kano	Nigeria
51	Owerri	Nigeria
52	Ibadan-Asejire	Nigeria
53	Maiduguri	Nigeria
54	Abuja	Nigeria
55	Bobo Dioulasso	Burkina Faso
56	Ouagadougou	Burkina Faso
57	Port Gentil	Gabon
58	Libreville	Gabon
59	Cotonou	Benin
60	Bafoussam	Cameroon
61	Douala	Cameroon
62	Garoua	Cameroon
63	Yaounde	Cameroon
64	Ndjamena	Chad
65	Abidjan	Ivory Coast
66	Bamako	Mali
67	Niamey	Niger
68	Dakar	Senegal
69	Lome	Togo
70	Hargeisa	Somaliland

Appendix 1.2: Data Collection Instrument

1. General Information

a. Bottling Plant Name

b. Country Location

c. Region

d. Workforce

- □ Under 500 employees
- □ Between 500-1000 employees
- □ Above 1000 employees

2. ISO 9001:2008 Internal Quality Audit Implementation

a. Period of ISO 9000 QMS implementation

- □ Below 5 years
- □ At least 5 years

b. Scope of ISO 9001:2008 internal quality audit implementation

Please give self- evaluated status of ISO 9001:2008 audit implementation.

Ranking in 5 point-scales from "Weakly implemented ISO 9001:2008 audit at all" (1) to "Strongly implemented ISO 9001:2008 audit" (5)

Area of the audit scope	Degree of Audit implementation				
Management responsibility					
Quality planning	1	2	3	4	5
Function and responsibility	1	2	3	4	5
Management responsibility/ leadership	1	2	3	4	5
Resource management					
Education and training	1	2	3	4	5
Work environment, infrastructure and safety	1	2	3	4	5
Product Realization					
Customer information management	1	2	3	4	5
Design control	1	2	3	4	5
Product Standardization	1	2	3	4	5
Supplier control	1	2	3	4	5
Process control	1	2	3	4	5
Storage and handling	1	2	3	4	5
Measuring, Analysis and Improvement					
Inspection and testing	1	2	3	4	5
Nonconformity control	1	2	3	4	5
Quality improvement	1	2	3	4	5

c. Frequency of ISO 9001:2008 internal quality audits

□Once annually

□Twice annually

□More than twice annually

d. Action after ISO 9001:2008 internal quality audits

□Has the organization deployed corrective measures post ISO 9001:2008 internal quality audit?

□No corrective measures deployed post ISO 9001:2008 internal quality audit

3. Evaluating Performance after ISO 9001:2008 Implementation

Please indicate how ISO 9001:2008 internal quality audits have impacted performance. The ranking in 5 point-scales from "Not improved at all" (1) to "Strongly improved" (5).

Performance Dimension	**Current Situation**				
Quality-based Performance					
Beverage product quality index (BPQI)	1	2	3	4	5
Time-based Performance					
Operating Equipment Efficiency(OEE)	1	2	3	4	5
Cost-based Performance					
Variable cost per crate of beverage (VCC)	1	2	3	4	5
Flexibility-based Performance					
Volume (V)	1	2	3	4	5