RELATIONSHIP BETWEEN ISO 9001: 2008 CERTIFICATION AND OPERATIONAL PERFORMANCE IN WATER SECTOR IN KENYA

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DECLARATION

I hereby declare that this research project is my own work and effort, and that it has not been submitted anywhere for any award.

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This research project has been submitted for examination with my approval as the University Supervisor.

SUPERVISOR:

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DEDICATION

I wish to dedicate this work to God for granting me the ability to complete the course. I also dedicate it to all members of my family, my wife Pam, our sons Ted, Emmanuel and Shem, for the many times I could not be with them on full time basis during the period of the course. In addition, I dedicate this work to to my classmates and work colleagues for their support and advice throughout my Master of Business Administration programme.

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ABSTRACT

ISO 9001:2008 quality management system standards are meant to enable organizations to set up effective and efficient management systems for them to meet the needs of interested parties including business goals, society, employees, customer and regulatory authorities and assure sustained success. Water sector agencies in Kenya like others certify in order to achieve operational performance and for marketing value. The Government of Kenya has operationalized performance contracting and one key output in the performance contract is ISO 9001:2008 certification which requires all public agencies to be certified.

The management of water sector institutions are faced with the dilemma of having effective and efficient systems so as to achieve operational performance in order to satisfy the customers and the regulator in the water sector. Achieving ISO 9001:2008 certification in itself requires more money. The objective of the research was to determine the certification status and the relationship between ISO 9001:2008 certification and operational performance in the water sector in Kenya; The study was carried out through a cross-sectional survey covering sample of 35 out of the 77 Water Service Providers.

The research concluded that few water sector agencies have received ISO 9001: 2008 certification. Further, the study also concluded that there is a weak relationship between ISO 9001; 2008 certification and operational performance through customers focus, employee involvement and process approach.

ACRONYMS

BS:	British Standard European Standard
EN:	European Standard
IEC:	International Electrotechnical Commission
ISO:	International Organization for Standardization
P – D – C – A:	Plan - Do - Check - Act
RVA:	Dutch Accreditation Council
UKAS:	United Kingdom Accreditation Society

CHAPTER ONE: INTRODUCTION

1.1 Background

Operations are sets of activities that are used to transform the resources employed by an organization into products and services desired by customers (Chase, Shankar, Jacobs and Aquilano). There are two types of operations; manufacturing and service operations. Manuafacturing operations result into the production of tangible outputs while service operation is an economic activity that the output is neither a product nor a construction or it is a benefit one party can bestow on another that is essentially intangible and does not result in ownership of anything.

The four core service operation performance objectives are cost, quality, speed and flexibility. These are the objectives that organizations employ to achieve the needs of all its stakeholders or interested parties. Cost will result into greater profitability;speed and flexibilty; and quality results in customer satisfaction. Organizations focus on customers so as to increase market share, greater perception of value, productivity and financial performance (Okwiri inprint). Quality management has been taken as the approach to achieve this.

1.1.1 Quality Management

Quality Management is defined as a management approach based on the fundamental principles of focus on the customer, leadership, people involvement, process approach, system approach to management, continuous improvement, factual approach to decision

making, and mutually beneficial supplier relationship (Okwiri 2012). The principles are defined as rules that govern or guide actions in an organization (Okwiri 2012). The top management can use some of or all the eight quality management principles to continually improve performance while addressing the needs of the customers and other interested parties. An organization would focus on the customer by obtaining information of the current and future needs of the customer and designing products and services that can satisfy the customer requirement. Good leadership is necessary in an organization to establish unity of purpose, direction, create and maintain conducive internal environment necessary to achieve the goals and aspiration of the organization. People involvement is essential to tap on the abilities and competencies of the employees for the benefit of the organization. Similarly, process approach and system approach to management are important to an organization as operation performance would be achieved when activities are managed as a process in an interrelated manner (Okwiri 2012).

The principles of continual improvement, factual approach to decision making and mutually beneficial supplier relationships are important to an organization since; continual improvement is the ultimate goal of any organization, to be in business for a long period of time for the benefit of the interested parties. Factual approach to decision is based on the desire that all decisions are made on the foundation of sound data and information in order to avoid making mistakes which can be very costly to the organization and lastly mutually beneficial supplier relationships do recognize the interdependability of the organization and its suppliers and enhances ability by both parties to create value.

The principles are felt in an organization by actions that occur in organization infrastructure. These are referred to as practices. Achieving stakeholder needs requires integrated application of the practices that anchor all these principles. Practices are the activities that occur within the organization infrastructure so as to achieve the organizational goals. They can be classified as process based practices, information based practices, infrastructure based practices, customer based practices and supplier based practices (Okwiri 2012). Organizations normally adopt frameworks and models based on the fundamental principles and practices in order to focus on strategy planning and deployment in the whole organization. Examples of frameworks that organizations may adopt are ISO 9000 quality management system, total quality management, self assessment models and business excellence models (Okwiri inprint 2014). An organization can implement any of these frameworks and models so as to achieve greater effectiveness of organizational systems leading to greater productivity and stakeholder satisfaction. Quality Management System can provide a framework through which organizations can achieve the interests of its stakeholders (Okwiri 2013).

1.1.2 Quality Management System

Quality Management System is defined as a management system to direct and control an organization with regard to quality (ISO 9000:2005). The quality management system standard, ISO 9001:2008, was developed to help organizations enhance customer satisfaction. The model is built around the PDCA concept. The model provides structure for the organization to establish its objectives and processes necessary to produce and

deliver goods and sevices that satisfy customer requirement with emphasis on the overall process management rather than conformance to procedures (Okwiri inprint 2014).

The first phase of the P – D – C – A concept starts with the determination of the customer requirements and the processes necessary for achieving the requirements. This phase shape the activities of an organization and contribute meeting the needs of the interested parties. Document control and analysis of the information contained in the records constitute the check phase. It is necessary so as to prevent problems like defects, mistakes, errors, reworks and scrap leading to loss of revenue. The check phase may lead to planning for improvement and management review. The information from the management review must be applied in line with business process model (Okwiri 2013). The expected outcome is improved operational performance.

1.1.3 Operational Performance

Nigel, Stuart and Robert, (2010), describe operational performance as the degree to which an operation fulfills the four core service operation performance objectives of cost, quality, speed and flexibility. The four core service operation performance objectives can be regarded as the dimensions of overall performance that satisfy an organization's customers. The operational performance can be measured in terms of defects per unit, level of customer complaints, scrap level, mean time between failures, customer querry time, order lead time, throughput time, time to market, cycle times, product range, transaction costs, labour productivity and machine efficiency (Nigel, Stuart and Robert, 2010).

One of the problems of devising a useful performance management system is to try to achieve some balance between having a few key measures and many detailed measures. Broadly, a compromise is reached by making sure that there is a clear link between the operation's overall strategy, the most important performance indicators that reflect strategic objectives (Nigel, Stuart and Robert, 2010).

1.1.4 ISO 9001: 2008 Certification and Operational Performance

Organizations adopt Quality Management Systems and hence certification in order to better manage and synchronize operations through documentation of processes, clearing out ambiguities and clearly defining duties and responsibilities among employees. More importantly it introduces a preventive way of managing quality, focusing mainly on the prevention of errors (Gotzamani & Tsiotras 2001). The outcome ought to be reduced defects and products that are focused to satisfy customer.

Effective and efficient quality management system will lead to increased productivity, reduced operation cost, reduced wastes, reduced reworks, efficient deliveries of goods and services and customer satisfaction resulting into increased revenue and profitability (Nigel, Stuart, and Robert 2010). Certification may mean different things to different organizations. Some want to get certified as a marketing tool, while others want to improve on their processes in order to satisfy the customer requirements and remain competitive. Either of these objectives can be mediating the standard implementation and profitability. These objectives are relevant to either the public sector or private sector, the water sector in Kenya is included in this situation.

1.1.5 Water Sector in Kenya

Several public sector agencies in Kenya including those in the water sector have received ISO 9001:2008 certification. In Kenya the certifying bodies are Bureau Veritas Kenya, DQS-UL Group Kenya, SGS Kenya and Cotecna Kenya. They act as both the consultants and certifying agents for the same organizations which bring conflict of interest. The proposed reseach project will be conducted to determine the relationship between ISO 9001:2008 certification and the operational performance of the water agencies in Kenya.

Currently, the Kenyan water sector is characterized by low levels of access, in particular in urban slums and in rural areas, as well as poor service quality in the form of intermittent water supply. Only 9 out of 77 water service providers in Kenya provide continuous water supply. Seasonal and regional water scarcity exacerbates the difficulty to improve water supply (Ministry of Water strategic plan, 2009).

The regulated environment since 2002 has created a situation in which monopolistic operations are subject to some kind of performance review. An act of parliament (Water act 2002) created a national regulator that carries performance benchmarking and approves tariff adjustment. Nature of operation is such that loss of revenue through leakage losses account for 45% of the production. Climate changes impact the cost of production as the use of more raw materials mainly, water treatment chemicals is applied during rainy seasons. Long distances to transfer water through pipes normally results into high capital expenditure.

To meet these business challenges, the water agencies need to operate more efficiently in the current competitive environment so as to satisfy the customer demands and unpredictable costs. Performance contracting regime in Kenya now demands certification against ISO 9001:2008. This further excerbates capital cost.

1.2 Statement of Research Problem

ISO 9001:2008 quality management system standards are meant to enable organizations to set up effective and efficient management systems for them to meet the needs of interested parties including business goals, society, employees, customer and regulatory authorities and assure sustained success. It is expected to lead to reduced errors, mistakes, and defects in service provision. This in turn saves money on reworks and scrap, reduced cost, reduced cycle time leading to greater customer satifaction.

Organizations in the water sector like others certify due to external requirements. The aim is to get the certificate, the cost of such certificate itself affect the operating cost hence performance. But the stakeholders see certification as essential for assurance of services.

There is no known study on the subject matter in the water sector in Kenya. However, a case study done in North America construction company (McAdam, R. And Leonard D. 2005) found that effective cross mapping of strategic processes and quality processes can lead to more grounded and effective business strategies and quality management system effectiveness, resulting into operational performance. A cross sectional study from

multiple informant in Kenya (Okwiri 2013) found out that there is direct relationship between ISO 9001: 2008 certification status and operational performance.

The management of water sector institutions are faced with the dilemma of having effective and efficient systems in order to reduce capital cost, reduce water losses and provide services that can satisfy the customers and the regulator in the water sector. Achieving ISO 9001:2008 certification requires more money and yet systems must be implementated to improve service delivery. The proposed research sought to answer the research question; does certification help improve operational performance?

1.3 Research Objective

In order to answer the research question the study was meant to achieve the following research objectives:

i) Determine the certification status of the Water Sector Agencies in Kenya;

ii) Determine the relationship between ISO 9001:2008 certification and operational performance in the water sector in Kenya;

1.4 Value of the Study

The findings of this study are expected to generate knowledge and understanding of ISO 9001: 2008 certification and its effect on the water sector in Kenya. It would assist the water sector agencies appreciate the status of their quality management systems and the influence this has on operational performance and whether ISO 9001; 2008 certification is really necessary for provision of quality services. Moreover, this study would enable

decision makers in the water sector to make the right strategic decisions on the nature of quality management system to adopt in order to reap the operation performance benefits. The study would also be of great value to the customer(s) as its intention was to seek ways of improving reliability of water supply and reduce losses. The study would also be beneficial to the academic world as it was expected to add to the existing body of knowledge and understanding on ISO 9001;2008 Quality Management System and how it can be harnessed to improve performance. It would also form the basis for further study in the subject of Quality Management System.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this study, literature was reviewed under two themes namely:ISO 9000 certification process and ISO 9000 certification and performance. This is summarised at the end and conceptual frame work proposed.

2.2 ISO 9000 Certification Process

In this theme, accreditation and certification processes are described, certifying bodies and critical issues are identified. This is undertaken through analysis and critical review of requirements for bodies providing audit and certification of quality management sytems (ISO/IEC 17021) and requirements for accreditation bodies (ISO/IEC 17011).

The ISO/IEC 17021:2006, a standard publication, specifies requirements and roles of certification bodies, also sometimes referred to as conformance assessment bodies or registrars. The terms certification and registration are used interchangeably. Certification is defined as conformity to the requirements of ISO 9001:2008 (BS EN ISO 19001:2002). It is meant to provide confirmation that an organization has integrated a quality management system in the manageemnt of its activities in accordance with its policy. ISO / IEC 17021: 2006 sets out requirements for bodies providing conformity assessment and certification. They are required to operate management system in a way that is competent, consistent and impartial. The key tool used in certification process specified in ISO/IEC 17021:2006 is audit process. The audit process is meant to determine and

verify the structures, policies, processes, procedures, records and documents of the applicant organization relevant to the management system and confirm that they meet all requirements and are implementated and maintained.

ISO/IEC 17021: 2006 proposes two stages of initial audits, surveillance audits and re-certification audit. The first stage of initial audit involves establishment of the desired scope of certification, analysis of general features and information of the applicant organization. Auditing of the organization management system documentation, level of preparedness, analysis of information on the scope of the management system and evaluation of internal audits reports. The application is also supposed to be reviewed to confirm and determine its status and competences of the client organization.

The second stage of the initial audit is meant to evaluate effectiveness of the implementation of the client organization's management system. This audit should take place at the client site and include information and evidence about conformity to all requirements of the standards. Based on the findings of the second stage audit, certificate may be issued otherwise improvement action plan is to be given to the management for implementation. Once the certificate is issued, the certification body is required to develop surveillance audit plans to monitor on regular basis the activities of the certified organization in the first and second years. It is meant to help the certification body maintain confidence that the certified management system continues to conform to the requirements. Re-certification audit is done in the third year before the expiry of certification, and is suppossed to confirm continued conformity and effectiveness of the

management system. Conformance assessment bodies apart from certification also undertake calibration, inspection and testing.

ISO/IEC 17011: 2004, a standard publication, specifies requirements and roles of accreditation bodies which assesses and accredites certification bodies. Accreditation is the formal recognition that a certification body operates according to international standards. It is meant to give the certification bodies legitimacy. ISO/IEC 17011: 2004 outlines the accreditation process. The accrediation bodies are not supposed to be financially driven. The key tool identified in ISO/IEC 17011:2004 is evaluation and assessment. Conformance assessment bodies are required to make formal application for accreditaion by defining the scope and showing limits of conformance assessment body capability.

After the formal application, accreditaion bodies are required to do evaluation and assessment to confirm that the certification body has the necessary competence, impartiality and good governance. The evaluation is carried out through document and record review, onsite assessment and analysis of findings leading to assessment report.. Upon, accreditation, accreditation bodies are required make surveillance assessment plan for continuous monitoring of the performance of certification bodies.

Certifying bodies identified through the literature review are accreditation bodies, certification bodies and organizations. Many countries have formed their accreditation bodies to authorize the certification bodies. In United Kingdom, the United Kingdom

Accreditation Service is the sole national accreditation body recognized by the government. The various accreditation bodies have mutual agreements with each other through peer evaluation mechanism to ensure that certificates issued by one of the accredited certification body is accepted worldwide.. However, both accreditation and certification bodies charge fees for their services.

In Kenya, certification bodies include Kenya Bureau of Standards, SGS Kenya, Bureau Veritas Quality International, DGS UL Group Kenya, Cotecna and CVA International (Mwanaongoro & Guchu 2012). These certification bodies are accredited by different accreditation bodies. For example Kenya bureau of standards is accredited to ISO 17021:2011 by Dutch Accreditation Council, RVA while SGS Kenya is accredited by United Kingdom Accreditation Services, UKAS.

The critical issues identified are that certification bodies are not allowed to offer or provide management system consultancy. They are also not allowed to market their services, outsource audits to quality management system, yet they have been doing these. This might explain why some pre- certification audits are not effective. Also ISO 9001:2008 certification is meant to provide confirmation that an organization has integrated a quality management system in the manageemnt of its activities in accordance with its policy, regardless of the content and deployment of the policy. Certification bodies apart from certification also undertake other activities like caliberation, testing and inspection, it is mostly likely that bodies with little strength on certification actually does it. The ISO ISO/IEC 17011: 2004 and ISO/IEC 17021:2006 even though are made in

Europe are applicable to any sector and in any country with Kenya included since these are international publications.

2.3 ISO 9000 Certification and Performance

In this section the relationship between ISO certification and operational performance are examined. It is examined under certification and operational performance relationship (Nabulsi & Magd 2007), certification and marketing benefits (Terlaak el al & Heras el al). While Terlaak and King (2006) and Heras el al (2002) did not find any positive relationship between ISO certification and operational performance, Nabulsi and Magd (2007) found a positive relationship between them.

In a longitudinal empirical study on the effect of certification with the ISO 9000 Quality Management Standards, Terlaak and Kings (2006) finds that ISO 9000 certified organizations grow faster and that operational performance does not account for the growth. The study was conducted in North America private sector manufacturing facilities and focused on finding out whether certification with the ISO 9000 quality management standards can generate a competitive advantage and improve operational performance.

The authors' argue that certification communicate about the desirable organizational attributes to parties that cannot observe them directly hence provides a competitive advantage since the certification acts a market signal, signaling quality to the customers. The researchers undertook robustness tests to find out whether changes in operational

performance could have caused the facility growth and also analyzed the effect of ISO 9000 on operation performance but the results did not provide evidence that certification has significant effect in the facility's operational performance. Due to the geographical gap and since the study was conducted in a private sector; it cannot be assumed that the findings of the study can apply in a public water sector in Kenya.

The finding of the study supports the finding by (Heras et al 2002). The empirical study carried out on European manufacturing and service organizations using analysis of operation performance for 400 organizations before and after accreditation and finds that although the performance of the 400 certified organization was much superior to the uncertified organizations, there was no evidence of improved performance after certification.

However, this is contradicted by an exploratory study on ISO 9000 implementation in Asia (Nabulsi and Magd 2007). This study focused on the benefits and challenges of implementation of ISO 9000 certification. The study concludes that there are benefits associated with ISO 9000 certification which are operational and marketing related. The authors classifies them as internal and external benefits. Internal benefits are related to the internal functioning of the organizations. These are, for example, better information analysis that lead to more appropriate decisions, enhanced internal communication, enhanced abilities of eliminating the causes of potential non conformities, better identification of problems and effectively solving them, improving internal efficiency and reducing costs, improving employee productivity and enhancing human resource

competencies.. External benefits are benefits for the organisation in relation to its environment. Examples of external benefits are: improving customer service, improving customer satisfaction, getting more business, increasing market share, enhancing relationship with suppliers, improving supplier performance, and increase in company reliability and reputation.

However, (Okwiri Inprint) argues that certification and standards are distinct and the certification driven use of the standards has blurred the benefits of the standard. Many quality management systems have failed to lead to operational performance because of emphasis being on certification at the expense of establishing effective and efficient quality management systems. The paper argues that this is responsible for mixed customer satisfaction outcomes.

The missing gaps identified is that in all these studies there is none done purely on a public sector institution like the water sector. The geographical areas are also very different with Kenya. The findings cannot therefore be generalized to apply for the water sector in Kenya situation.

2.4 Summary and Conceptual Framework

The literature as reviewed is summarized as shown in table 1 below. The variables from the literature are certification and operational performance. The study is to find out whether ISO certification leads to operational performance. It has been identified in the literature that effectiveness of quality management system depends on deployment and

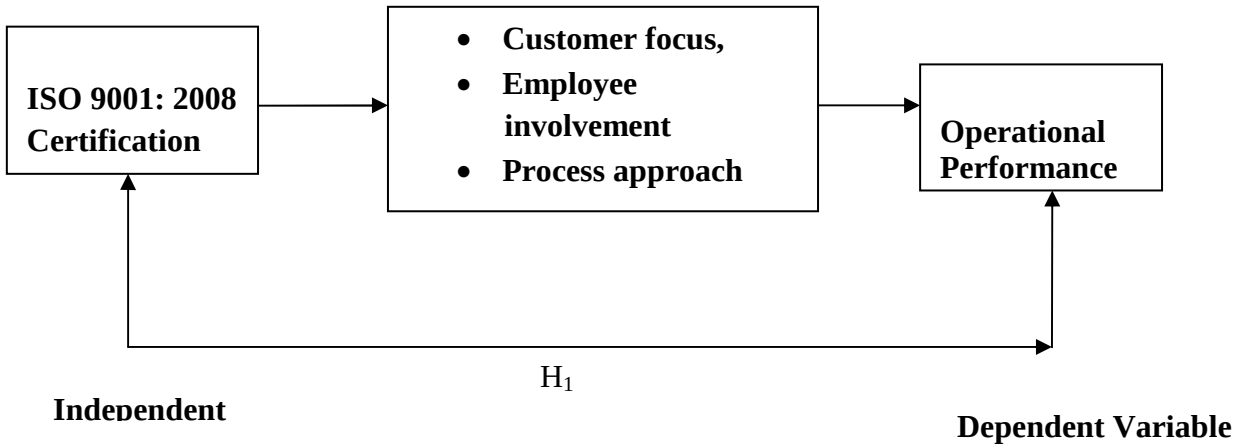
implementation of the organization quality manual, quality policy, quality objectives and management review.

Table 2.1: Summary of Literature Review

Study and Type	Focus area	Gap	Proposed Study
ISO/IEC 17021:2006 International Standard , conformity assessment requirements for bodies providing audit and certification of management systems	Conformity assessment	Formal publication concerned with certification process	Relationship between Certification and operational performance in water sector in Kenya
ISO/IEC 17011:2004 International Standard , conformity assessment requirements for accreditation bodies	Conformity assessment	Formal publication concerned with accreditation process	Relationship between Certification and operational performance in water sector in Kenya
Okwiri & Mbeche inprint Review paper	Futuristic aspects	Not emphirical,	Emphirical study
(Terlaak & Kings 2006) Longitudinal ue	Certification and performance	Geographical factors.	In the Kenyan context
(Heras et al 2002) Longitudinal	ISO certification and performance	Geographical factors	In the Kenyan context
(Nabulsi &Magd 2007) Cross sectional	ISO 9000 implementation issues related to certification	Geographical factors, relationship not causes.	The relationship between ISO 9001: 2008 Certification and operational performance

The independent variable in this case will be ISO certification with the dependent variable being operational performance measured in terms of Cost, productivity, profitability, reliability, water losses and customer complaint.

Figure 2.1: Conceptual Framework



This relationship can be tested using the hypotheses:

H1: There is a significant relationship between ISO 9001: 2008 certification and operational performance through customers focus, employee involvement and process approach.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design, population and sampling techniques. It also describes the procedures that was used to collect and analyze data, collected from the field, in order to determine the certification status, and the relationship between ISO 9001:2008 certification and operational performance in the water sector in Kenya.

3.2 Research Design

The study was carried out through a cross-sectional survey. This design was found to be suitable as it allows the objective of finding out the relationship between ISO 9001:2008 certification and operational performance in the water sector in Kenya to be determined at a fixed point in time and generalizability is applicable (Sekaran, 2010). It also allows part of the members of the population to be studied in order to make generalization about the phenomenon.

3.3 Population

The unit of analysis was the Water Services Providers in Kenya. Currently the water sector has 77 Water Service Providers which are spread throughout the country. Some of these institutions are ISO 9001:2008 certified. It was desired that a suitable sample was determined to represent the population. The aim was to collect data from the respondents with a view of establishing the relationship between ISO 9001: 2008 certification and operational performance in water sector in Kenya.

3.4 Sample Design

In order to achieve data handling accuracy, minimize research cost and finalize the project within the limited stipulated time frame, it was necessary to take a sample. Taking a sample provided a more reliable and speedy data collection with adequate accuracy of data analysis and processing. The sample size was computed based on Zikmund formula with a correction factor applied. This was compared with what is recommended in other literature. The accuracy level and confidence was taken as 5 percent and 95 percent respectively on a five point likert scale and adopting one sixth range in five- point as standard deviation. Zikmund formula (Okwiri 2013) thus,

$$n = (Z^2S^2)/E^2$$

Where n = sample size

Z = Z score, for 95 percent, Z = 1.96

S = estimated standard deviation, for the range of 1 to 5, S = 4/6

E = the accuracy

= 0.15,

Applying the Zikmund formula gave a minimum sample size of 76. Since the calculated sample was more than 5 percent of the population a finite correction factor $\sqrt{(N-n)/(N-1)}$ was applied giving a sample size of nine (9). However, according to Mugenda and Mugenda (2003), the sample size should be at least 30 of the expected respondents or 10% of the target population. In this study a sample size of thirty five (35) was adopted and was drawn using random sampling method.

3.5 Data Collection

The study used primary data which was gathered by means of a self-administered questionnaire issued to respondents. The respondents of the study were engineers, technicians and selected operation and maintenance staffs from the water sector institutions. Data was specifically collected from the operation managers of different fields and levels.

The information collected was aimed at measuring the relationship between ISO 9001: 2008 certification and the operational performance at the Water Service Providers. That type of information was found by testing the extent of deployment of quality management principles like customer focus, employee involvement and process approach in the organization. The other set of information gathered assisted in measuring the operational performance in terms of profitability, productivity and water loss among others.

3.6 Data Analysis

The statistical technique of regression analysis was used to determine the relationship between ISO 9001:2008 certification and operational performance. Once the data was received it was edited and checked for completeness and consistency. Response was required from the respondents on blank spaces. It was then coded, categorised and keyed in making data ready for analysis. The objective of the analysis was to get a feel of the data, test the goodness of data and test the hypotheses for the research.

Measures of central tendency were taken to get a feel of the data. It described how the data cluster together around a central point such as mean, median or mode while measures of dispersion such as the range and standard deviation were used to indicate whether the scores in a given condition are similar to each other or whether they are spread out. Factor analysis was undertaken to test the validity of data while reliabilty and consistency was also tested by measuring the cronbach's alpha coefficient. The regression model (Lucey, 2002) was used to determine the relationship between the variables. Coeffient of correlation was calculated to determine the strength of the association.

CHAPTER FOUR: RESULTS AND DATA ANALYSIS

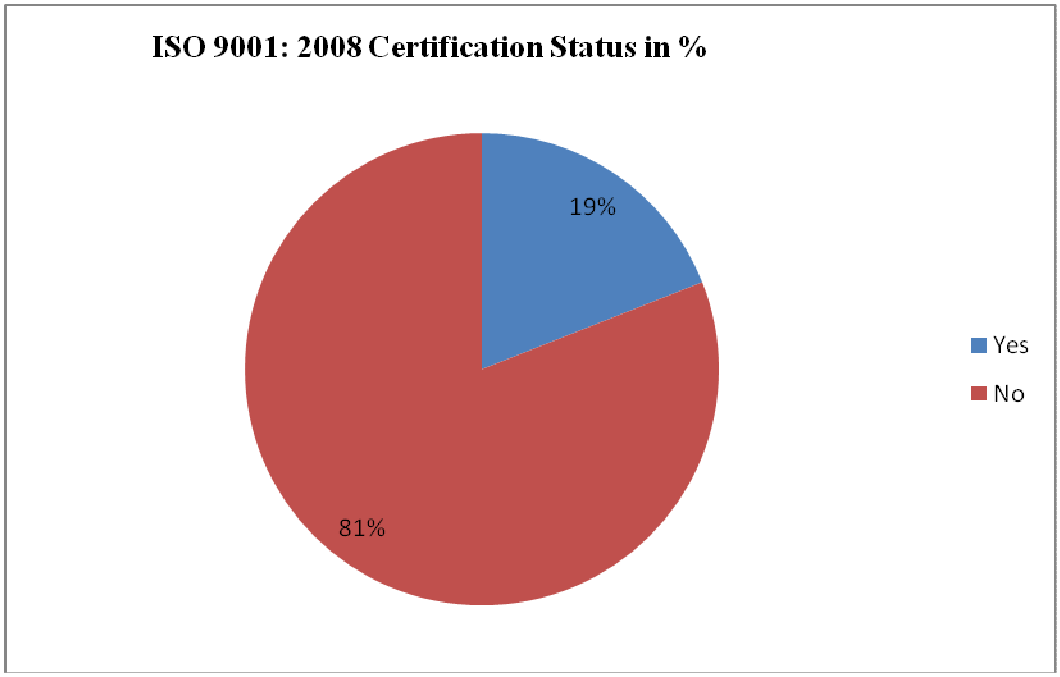
4.1 Introduction

In this chapter, results of study are presented, tables and charts are used to present the data. The findings and analysis of the collected data were processed with a view to respond to the research objectives presented earlier in chapter one. The first objective of the study was to determine the certification status of the Water Sector Agencies in Kenya. The second objective was to determine the relationship between ISO 9001:2008 certification and operational performance in the water sector in Kenya. The survey targeted thirty five (35) water service providers and the response achieved was thirty two (32) which represents 91% response rate.

4.1.1 Results

The study revealed that majority of the water service providers in Kenya have not been certified as represented by 81%. This could explain why there is low levels of access, particularly in urban slums and in rural areas, as well as poor service quality in the form of intermittent water supply. The sector, therefore, has not fully embraced quality management principles of customer focus, employee involvement, leadership, people involvement, process approach, system approach to management, continuous improvement, factual approach to decision making and mutually beneficial supplier relationship. Figure 4.1 illustrates the above results.

Figure 4.1: ISO 9001:2008 Certification Status



4.2 Reliability of the Survey

4.2.1 Reliability of Variables on Operational Performance

As a measure of internal consistency of the questionnaire used for this survey, the Cronbrach Alpha coefficient was established using the data coded into the statistical package for Social Sciences (SPSS) and used in the analysis. The 5 point Likert scale used was checked for consistency. Part of the questions that required Likert scale responses were coded, with the score of 5 accorded to “Much better than others” and 1 point accorded to where the response is “Much worse than others.” Table 4.1 on the Cronbach's Alpha and Appendix Two (2) give the result of reliability check on the Likert scale for the questions used in the survey.

Table 4.1: The Test for Reliability/Consistency in Operation Performance Variables

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.838	.843	7

The average alpha coefficient of the standardized items for questions used in the survey is r=0.843, which shows strong reliabilty and consistency of the data obtained from the survey. It is evident that there is a high level of internal consistency and reliability. The score of 0.843 can be interpreted to illustrate that the test is 84% reliable and consistent.

4.2.2 Reliability of Variables on Quality Management Principles

As a measure of internal consistency of the questionnaire used for this survey, the Cronbrach Alpha coefficient was determined using the data coded into the statistical package for Social Sciences (SPSS) and used in the analysis. The 5 point likert scale survey / questionnaire used was determined for consistency. Part of the questions that required Likert scale responses were coded, with the score of 5 accorded to “extremely agree” and 1 point accorded to where the response is “strongly disagree”. Table 4.2 on the Cronbach's Alpha and Appendix Three (3) give the result of reliability check on the Likert scale for the questions used in the survey.

Table 4.2: The Test for Reliability/Consistency on Quality Management Principles

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.790	.808	12

As shown in Appendix 3, the item which can be eliminated without influencing the consistency of the data is one where there is the lowest correlation coefficient and also the lowest 'Cronbach Alpha if item deleted. In this regard, Question 1, which refers to "We determine the requirements of the customer", with r = 0.206, lowest in column and correlation value if this item is deleted remaining highest r = 0.801. However, since the average alpha coefficient of the standardized items for questions used in the survey is r = 0.808, a high alpha value, it is evident that there is high consistency and hence reliability in the survey scale used for this study. The score of 0.808 can be interpreted to illustrate that the test is 80% reliable and hence 20% unreliable.

4.3 Validity of the Data in the Survey

4.3.1 Validity of the Data on Quality Management Principles

Factor analysis is intended to reduce the complexity in a set of data. Appendix 4 shows the validity of the data on quality management principles. The determinant in the Correlation Matrix is 0.002 which shows that multicollinearity is not a problem for these data. All questions correlate fairly well and none of the correlation coefficients are

particularly large (greater than 0.9). In Table 4.6, there were four (4) factors with Eigenvalues greater than 1. Percentage (%) variance shows how much of the total variability can be accounted for by each of the factors. Factor 1 accounts for 24.538%, factor 2 for 47.920%, factor 3 for 61.125% while factor 4 accounts for 72.924% of the variability in all the 12 variables. All the remaining factors are not significant. These results show that the validity of the data for the questions falling under the ISO certification is satisfactory.

4.3.2 Validity of the Data in Operational Performance Variables

Appendix 5 shows that all the questions correlate fairly well and none of the correlation coefficients are particularly large (greater than 0.9). It can be seen that there were two (2) factors with Eigenvalues greater than 1. Percentage (%) variance shows how much of the total variability can be accounted for by each of the factors. Factor 1 accounts for 34.421% while factor 2 accounts for 68.341% of the variability in all the 7 variables. All the remaining factors are not significant.

4.4. Quality Management Principles

4.4.1 Extent of Quality Management Principles Deployment

To investigate the extent to which water sector agencies in Kenya have deployed quality management principles in their operations, the questionnaire was administered to know the firm responses on the degree of emphasis given to quality management principles. The responses were captured via Likert scale ranging from 1 –“Extremely Agree” with a

score of 1 point to upper end of the scale as 5 – "Strongly Disagree," with a score of 5 points. Appendix 6 shows the findings of the captured information.

From Appendix 6, it can be seen that some of the water sector agencies have deployed quality management principles whereby they scored generally high with means of above 3.44, thus emphasis is to a great extent for each of the quality management principles. This proves that quality management principles are to a large extent followed by some of the water sector agencies. From the mean, one can conclude that the most important variables which impact on the operational performance in the organizations include "The organization has set up standard operating procedures" (highest mean of 4.80), "We have systems to analyse feedback from customers" (mean of 4.38) and "In our organization all people understand the importance of job role to the organization success" (mean of 4.31).

Water sector agencies take those actions in order to increase productivity, reduce operation costs and achieve customer satisfaction resulting into increased revenue and profitability (Nigel, Stuart, and Robert 2010). Others do so to adhere with the Water Act 2002 while others who are already ISO 9001:2008 certified aim to better manage and synchronize operations through documentation of processes, clearing out ambiguities and clearly defining duties and responsibilities among employees. More importantly, the ISO certification introduces a preventive way of managing quality, focusing mainly on the prevention of errors (Gotzamani & Tsiotras 2001). The outcome ought to be reduced defects and products that are focused to satisfy customer.

4.4.2 Extent of Perceptions on Operational Performance

To investigate the extent to which operational performance in the water sector agencies in Kenya is related to ISO 9001:2008 certification, the questionnaire was administered to know the agencies responses on the perceived operational performance. The responses were captured via Likert scale ranging from 1 –"much worse than others" with a score of 1 point to upper end of the scale as 5 – "much better than others," with score of 5 points. Appendix 7 shows the findings of the survey.

From Appendix 7, it can be seen that there are various water sector agencies which have achieved some level of operational performance. However, from the means, one can conclude that the most important variable which impacts on the sector is "Reliability of our services" (highest mean of 3.66). An organization would focus on the customer by obtaining information of the current and future needs of the customer and designing products and services that can satisfy the customer requirement hence reliablility. (Okwiri inprint). The rest of the variables, except for one "the water losses" with mean of 2.63 have higher means which indicate that the sector strive to achieve the needs of all its stakeholders or interested parties. There is a link between the operation's overall strategy, the most important performance indicators that reflect strategic objectives (Nigel, Stuart and Robert, 2010).

4.5 Correlation of Study

In order to determine the relationship between ISO 9001:2008 certification and operational performance in the water sector in Kenya, correlation is determined between

each of the ISO 9001:2008 certification constructs on both quality management principles and operational performance as shown in Appendix 8. The correlation in most of the cases is found to be statistically significant but weak where the Pearson product moment correlation has positive value for most of the agencies, pointing to a weak correlation between ISO 9001: 2008 certification and operational performance in the water sector in Kenya. A notable number of the Pearson product moment correlations have negative values for some of the agencies, pointing to absence of correlation.

For example, as seen from Appendix 8, the correlation between "In our organization managers are responsible for solving all problems" and "Rate of conversion of input into output" is negative hence not statistically significant ($r = -.108$, $n=15$, $p<.557$). Similarly the correlation between "In our organization all employees are considered very important"and "Profitability" is negative hence not statistically significant ($r = -.069$, $n=15$, $p<.708$). Other negative values of r are also observed in the correlation between "In our organization managers are responsible for solving all problems" and "Reliability of our services" ($r = -.051$, $n=15$, $p<.783$) and the correlation between "We determine the requirements of the customer" and "Profitability" ($r = -.023$, $n=15$, $p<.901$). Positive but weak values of r are also observed.

The outcome of ISO 9001:2008 certification ought to be products that are focused to satisfy customers. Some agencies may seek ISO 9001:2008 certification in order to improve on their processes so as to satisfy their customer requirements and remain competitive. However, most water sector agencies in Kenya have not obtained ISO

9001:2008 certification hence to a large extent do not apply quality management principles in their operations. It can be noted that some of the ISO 9001:2008 certification constructs are positively correlated with some of the constructs on firm operational performance where correlation is observed to be positive. The highest value of the Pearson product moment correlation is between “In our organization people are encouraged to use their skills and abilities to the most greatest extent possible” and “The water losses”, where r =0.538, N =15, *P*=0.001.

Another statistically significant positive correlation is observed between “In our organization people have authority to act so as to give out better work output without seeking permission” and “Handling of complaints from customers”, where r =0.519, N=15, *P*= 0.002. Thus, the data shows a mix of normality and linearity. There were both positive and negative correlations between ISO 9001: 2008 certification and operational performance. The correlations were generally tending towards the weak side. The weak or absent correlation between ISO 9001:2008 certification and operational performance in the water sector in Kenya can be attributed to low level of certification status of the water sector agencies in Kenya. However, the above results are best explained by Okwiris’s argument that certification and standards are distinct and the certification driven use of the standards has blurred the benefits of the standard. Many quality management systems have failed to lead to operational performance because of emphasis being on certification at the expense of establishing effective and efficient quality management systems (Okwiri Inprint). This is responsible for mixed customer satisfaction outcomes.

The findings indicate that most water sector agencies have not been involved in quality management principles. Thus there is a weak relationship between ISO 9001: 2008 certification and operational performance through customers focus, employee involvement and process approach.

4.5.1: SUMMARY OF DATA

The measure of central tendency (Mean) helps to get a feel of the data and describes how the data cluster together around a central point while the measure of dispersion (standard deviation) are used to indicate whether the scores in a given condition are similar to each other or whether they are spread out. Table 4.3 shows the summary of data on the relationship between ISO 9001:2008 certification and operational performance in the water sector in Kenya. The data shows that ISO 9001:2008 certified water sector agencies give more importance to the quality management principles such as Customer Focus, Employee involvement and process approach with mean of around 4.50.

These results show that ISO 9001:2008 certified water sector agencies put into practice the ISO 9001:2008 certification quality management principles more than the non certified water sector agencies. This is further evidenced by higher standard deviations in all the three quality management principles among the non certified water sector agencies.

Table 4.3 : Summary of Data on the Relationship between ISO 9001:2008 Certification and Operational Performance in the Water Sector in Kenya

ISO STATUS	Customer Focus		Employee involvement		Process approach	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Non Certified	4.08	.796	4.00	.849	4.00	.916
ISO Certified	4.50	.548	4.50	.837	4.44	.632

4.6 Regression Analysis of the Relationship between ISO 9001; 2008 Certification and Operational Performance

This section covers regression analysis of the data, discussions and interpretation. The first step in analysis of the data was through descriptive measures. This was followed by model building.

Table 4.4: Descriptive Statistics

	Mean	Std. Deviation	N
Operational Performance	3.22	.792	32
Customer Focus	4.16	.767	32
Employee involvement	4.09	.856	32
Process approach	4.03	.861	32

From Table 4.4 it can be seen that there are some impact of quality management principles on the operational performance. One can conclude that the most important variable which impacts on the organizations' Operational Performance is "Customer Focus" (highest mean of 4.16). Organizations focus on customers so as to increase market share, greater perception of value, productivity and financial performance (Okwiri inprint). The rest of the variables also have higher means which indicate that the organizations strive to achieve the needs of all its stakeholders or interested parties. These include Employee involvement and Process approach (means of 4.09 and 4.03 respectively).

Table 4.5: Model Goodness of Fit

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.445[a]	.198	.112	.747

a. Predictors: (Constant), Process approach, Customer Focus, Employee involvement

Regression analysis was used to establish the relationship between ISO 9001; 2008 Certification and Operational Performance. The results showed a correlation (R) value of 0.445 which depicts that there is a low linear dependence of Operational Performance through Customer Focus, Employee involvement and Process approach.

The coefficient of determination (R Square) equals 0.198 which shows that ISO 9001: 2008 certification explains only 19.8 percent of operational performance while 80.2 percent is explained by other factors not in the model.

Table 4.6: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.852	3	1.284	2.302	.099[a]
	Residual	15.617	28	.558		
	Total	19.469	31			

a. Predictors: (Constant), Process approach, Customer Focus, Employee involvement

b. Dependent Variable: Operational Performance

Analysis of Variance (ANOVA) statistics was conducted to determine the difference in the means of the dependent and independent variables to show whether a relationship exists between the two. Based on the findings of this study, the p-value for the model was determined to be 0.099 which implies that Operational performance does not have a significant relationship with Customer focus, Employee involvement and Process approach hence ISO 9001:2008 certification.

Table 4.7: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.448	.964		1.502	.144
	Customer Focus	.016	.186	.016	.086	.932
	Employee involvement	.398	.190	.430	2.094	.045
	Process approach	.019	.179	.020	.105	.917

The coefficients in Table 4.7 above were used to write the regression equation for the Operational Performance as follows;

Operational Performance = 1.448 + 0.016 Customer Focus + 0.398 Employee Involvement + 0.019 Process Approach

The data shows that compared to the rest of the variables, only Employee involvement was significantly related to Operational performance while Customer focus and Process approach had a very weak relationship to Operational performance. The p value of 0.932 implies that Employee involvement is significant at 5% level of significance. This also depited the significance of the regression analysis done to be at 95% confidence level.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses summary of the findings and conclusions. It also includes recommendation with implication for industry practitioners and policy makers.

5.2 Summary of the Findings

From the research findings, most of the water service providers in Kenya have not been certified. This may have been contributing to low levels of access particularly in urban slums and in rural areas, as well as poor service quality in the form of intermittent water supply. Even though achieving ISO 9001:2008 certification requires more money and systems must be implemented to improve service delivery.

The descriptive analysis also revealed that water sector agencies undertake quality management principles to a little extent, even though some of them are not ISO 9001:2008 certified. This is an indication that even non certified agencies implement quality management principles without necessarily being ISO 9001:2008 certified. In fact throughout the interview, the managers from the certified agencies commented that ISO 9001: 2008 certification has enabled respective agencies to remain focused on operational performance. Currently, the Kenyan water sector is characterized by low levels of access, in particular in urban slums and in rural areas, as well as poor service quality in the form of intermittent water supply.

Most of the water sector agencies have not received ISO 9001:2008 certification hence emphasis is not to a great extent for each of the quality management principles. This proves that ISO 9001:2008 certification is to a small extent implementated where the water agencies operate. A mix of most important variables which impact on the operational performance in the agencies were found to either tally or not tally with the dimensions of operational performance namely customers focus, employee involvement and process approach.

The above results show that the relationship between ISO 9001: 2008 certification and operational performance was mainly weak or absent in a few cases. Regression analysis also showed that only Employee involvement was positively related to Operational performance while Customer focus and Process approach were negatively related to Operational performance. Thus, ISO 9001: 2008 certification is related to only 39.5 percent of operational performance in the water sector in Kenya.

5.3 Conclusion

The research concluded that few water sector agencies have received ISO 9001: 2008 certification. Further, the study also concluded that there is a weak relationship between ISO 9001; 2008 certification and operational performance through customers focus, employee involvement and process approach.

5.4 Limitations of the Study

Though the study considered firms within the water sector whose response rate to the study questionnaire was 91%, few of them had received the ISO 9001: 2008 certification. Also, the research relied on mailed questionnaires due to the distance of most firms. As such, some respondents may not have interpreted the questions properly and this may have affected the results.

5.5 Recommendations

The State Department of Water needs to define policy process by engaging water agencies in the process of crafting policy frameworks for the industry. The disparity in numbers between agencies which have received the ISO 9001: 2008 certification and which have not is widening. Government through the State Department of Water could therefore intervene by funding the certification process. Water sector agencies need to implement quality management principles to improve operational performance and not just to receive ISO 9001: 2008 certification.

5.6 Suggestions for Further Study

From the above study limitation, questionnaires should be administered to respondents on face to face sessions to reduce problems brought about by self adminstered questionnaires such as those that are mailed to respondents. This will enable the researcher to obtain the right responses for the questions.

The study focused on the water sector in Kenya only. The same subject may be focused once again by widening the observation to include firms in the other sectors of the economy. It would be necessary to follow up this survey in future studies with a longitudinal research where observation of the relationship between ISO 9001: 2008 certification and operational performance in Kenya may be done.

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APPENDICES

APPENDIX 1: RESEARCH QUESTIONNAIRE

Introduction

This questionnaire is designed for the sole purpose of gathering information on the relationship between ISO 9001; 2008 certification and the Operational Performance in Water Sector in Kenya. The responses will remain anonymous and that the information that is provided will be treated as confidential at all times. Your organization will not be identified as only summaries will be used.

SECTION A

Please answer the following question by crossing with (x) or tick (√) the relevant box.

1. Is your organization ISO 9001: 2008 certified? (a) Yes. ☐ (b). No ☐

SECTION B

The following statements describe what may or may NOT be happening in your organization. Please tick appropriate column to indicate your opinion as regards each statement.

	Extremely Agree	**Somewhat agree**	**Neither agree nor disagree**	**Somewhat Disagree**	**Strongly Disagree**
1. We determine the requirements of the customer					
2. We seek frequently what the customer thinks of our supply					
3. We make it easy for the customer to provide feedback					
4. We have systems to analyze feedback from customers					
5. Our employees understand our organization strategy					
6. In our organization people have authority to act so as to give out					

better work out put without seeking permission					
7. In our organization all employees are considered very important					
8. In our organization people are encouraged to use their skills and abilities to the most greatest extent possible					
9. In our organization all people understand the importance of job role to the organization success					
10. The organization has set up standard operating procedures					
11. In our organization managers are responsible for solving all problem					
12. In our organization we measure output and use the measures for decision making					

SECTION C

Please indicate your perception of your organization performance relative to others in similar business as yours in each of the following dimensions by ticking appropriate column.

Operational Performance	Much worse than others	Somewhat worse than others	Just about the same	Somewhat better than others	Much better than others
1. Cost of providing services					
2. Rate of conversion of input into output					
3. Profitability					
4. Reliability of our services					
5. The Water losses					
6. Reliability in bills and invoices					
7. Handling of complaints from customers					

What suggestion would you give for the improvement of quality management in your organization?

……

Thank you for your participation

APPENDIX 2: RELIABILITY STATISTICS FOR OPERATION PERFORMANCE VARIABLES

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Cost of providing services	19.63	20.823	.564	.456	.821
Rate of conversion of input into output	19.78	21.402	.568	.449	.819
Profitability	19.94	21.480	.541	.495	.824
Reliability of our services	19.28	21.693	.621	.500	.812
The water losses	20.31	20.996	.558	.521	.822
Reliability in bills and invoices	19.44	21.931	.673	.633	.807
Handling of complaints from customers	19.25	20.903	.642	.531	.808

Source: Research Data

APPENDIX 3:THE TEST FOR RELIABILITY /CONSISTENCY ON QUALITY MANAGEMENT PRINCIPLES

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
We determine the requirements of the customer	44.88	45.790	.206	.454	.801
We seek frequently what the customer thinks of our supply	44.69	41.964	.552	.830	.763
We make it easy for the customer to provide feedback	44.72	43.628	.533	.721	.767
We have systems to analyse feedback from customers	44.50	43.419	.512	.564	.768
Our employees understand our organization strategy	44.91	42.604	.521	.578	.766
In our organization people have authority to act so as to give out better work output without seeking permission	45.44	41.802	.575	.696	.760
In our organization all employees are considered very important	44.81	42.415	.419	.651	.777
In our organization people are encouraged to use their skills and abilities to the most greatest extent possible	44.63	41.919	.633	.759	.756
In our organization all people understand the importance of job role to the organization success	44.56	43.996	.518	.415	.768
The organization has set up standard operating procedures	44.44	45.028	.317	.428	.786
In our organization managers are responsible fro solving all problems	45.44	44.448	.232	.249	.803
In our organization we measure output and use the measures for decision making	44.63	46.565	.395	.498	.780

Source: Research Data

APPENDIX 4: VALIDITY OF DATA TOTAL VARIANCE

EXPLAINED FOR QUALITY MANAGEMENT PRINCIPLES

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.051	33.755	33.755	2.945	24.538	24.538
2	2.104	17.537	51.293	2.806	23.382	47.920
3	1.380	11.501	62.793	1.585	13.205	61.125
4	1.216	10.130	72.924	1.416	11.799	72.924
5	.773	6.444	79.367			
6	.732	6.097	85.465			
7	.555	4.621	90.086			
8	.361	3.009	93.095			
9	.293	2.442	95.537			
10	.260	2.163	97.700			
11	.184	1.532	99.232			
12	.092	.768	100.000			

Extraction Method: Principal Component Analysis.

Source: Research Data

APPENDIX 5: VALIDITY OF DATA TOTAL VARIANCE

EXPLAINED IN OPERATIONAL PERFORMANCE

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.617	51.675	51.675	2.409	34.421	34.421
2	1.167	16.665	68.341	2.374	33.919	68.341
3	.839	11.979	80.320			
4	.454	6.490	86.810			
5	.359	5.133	91.943			
6	.326	4.659	96.602			
7	.238	3.398	100.000			

Extraction Method: Principal Component Analysis.

APPENDIX 6: EXTENT OF ORGANIZATION'S DEPLOYMENT OF MANAGEMENT PRINCIPLES

Deployment of Quality Management Principles	Mean	Std. Deviation
We determine the requirements of the customer	4.00	1.270
We seek frequently what the customer thinks of our supply	4.19	1.091
We make it easy for the customer to provide feedback	4.16	.920
We have systems to analyse feedback from customers	4.38	.976
Our employees understand our organization strategy	3.97	1.062
In our organization people have authority to act so as to give out better work output without seeking permission	3.44	1.076
In our organization all employees are considered very important	4.06	1.268
In our organization people are encouraged to use their skills and abilities to the most greatest extent possible	4.25	.984
In our organization all people understand the importance of job role to the organization success	4.31	.896
The organization has set up standard operating procedures	4.44	1.105
In our organization managers are responsible fro solving all problems	3.44	1.435
In our organization we measure output and use the measures for decision making	4.25	.718

APPENDIX 7: PERCEPTION OF OPERATIONAL PERFORMANCE

Operational Performance	Mean	Std. Deviation
Cost of providing services	3.31	1.176
Rate of conversion of input into output	3.16	1.081
Profitability	3.00	1.107
Reliability of our services	3.66	.971
The water losses	2.63	1.157
Reliability in bills and invoices	3.50	.880
Handling of complaints from customers	3.69	1.061

APPENDIX 8 : CORRELATION BETWEEN ISO 9001: 2008 CERTIFICATION AND OPERATIONAL PERFORMANCE

		Cost of providing services	Rate of conversion of input into output	Profitability	Reliability of our services	The water losses	Reliability in bills and invoices	Handling of complaints from customers
We determine the requirements of the customer	Pearson Correlation	.022	.047	-.023	.078	.044	.173	.263
	Sig. (2-tailed)	.907	.798	.901	.669	.811	.343	.145
	N	32	32	32	32	32	32	32
We seek frequently what the customer thinks of our supply	Pearson Correlation	.330	.248	.401*	.154	.058	.202	.415*
	Sig. (2-tailed)	.065	.171	.023	.399	.755	.268	.018
	N	32	32	32	32	32	32	32
We make it easy for the customer to provide feedback	Pearson Correlation	.311	.137	.380*	.387*	.057	.219	.449*
	Sig. (2-tailed)	.083	.455	.032	.029	.757	.228	.010
	N	32	32	32	32	32	32	32
We have systems to analyse feedback from customers	Pearson Correlation	.148	.187	.239	.209	.129	.263	.491**
	Sig. (2-tailed)	.420	.304	.188	.252	.483	.146	.004
	N	32	32	32	32	32	32	32
Our employees understand our organization strategy	Pearson Correlation	.137	.257	.192	.333	.489**	.190	.220
	Sig. (2-tailed)	.454	.155	.292	.062	.005	.298	.226
	N	32	32	32	32	32	32	32
In our organization people have authority to act so as to give out better work output without seeking permission	Pearson Correlation	.398*	.411*	.460**	.334	.343	.375*	.519**
	Sig. (2-tailed)	.024	.019	.008	.062	.054	.035	.002
	N	32	32	32	32	32	32	32
In our organization all employees are considered very important	Pearson Correlation	.095	.440*	-.069	.306	.456**	.347	.111
	Sig. (2-tailed)	.607	.012	.708	.088	.009	.052	.546
In our organization people are encouraged to use their skills and abilities to the most greatest extent possible	Pearson Correlation	.265	.326	.178	.397*	.538**	.335	.263
	Sig. (2-tailed)	.143	.069	.331	.025	.001	.061	.146
	N	32	32	32	32	32	32	32
In our organization all people understand the importance of job role to the organization success	Pearson Correlation	.119	.248	.000	.053	.428*	.409*	.276
	Sig. (2-tailed)	.518	.172	1.000	.772	.015	.020	.126
The organization has set up standard operating procedures	Pearson Correlation	.189	.184	.290	.115	.359*	.066	.148
	Sig. (2-tailed)	.300	.314	.107	.532	.043	.718	.419
	N	32	32	32	32	32	32	32
In our organization managers are responsible fro solving all problems	Pearson Correlation	.088	-.108	.244	-.051	.277	.204	.156
	Sig. (2-tailed)	.631	.557	.179	.783	.125	.262	.393
In our organization we measure output and use the measures for decision making	Pearson Correlation	.248	.073	.081	.312	.310	.204	.148
	Sig. (2-tailed)	.171	.693	.659	.082	.084	.262	.418

APPENDIX 9 : LIST OF WATER SERVICE PROVIDERS

S/No	NAME OF WATER SERVICE PROVIDERS
1	Eldama Ravine Water and Sanitation Co.
2	Nyandarua Water and Sanitation Co.
3	Ol-kalou Water and Sanitation Co.
4	Lodwar Water Services Sanitation Co.
5	Narok Water and Sewerage Co.
6	Naivasha Water & Sanitation Co.
7	Nakuru Water and Sanitation Co.
8	Nakuru Rural Water and Sanitation Co.
9	Iten Tambach Water and Sanitation Co.
10	Kapeguria Water and Sanitation Co.
11	Nyeri Water and Sanitation Co.
12	Embu Water and Sanitation Co.
13	Gatamathi Water and Sanitation Co.
14	Kahuti Water and Sanitation Co.
15	Murang'a South Water and Sanitation Co.
16	Kirinyaga Water and Sanitation Co.
17	Imetha Water and Sanitation Co.
18	Meru Water Services Co.
19	Nithi Water and Sanitation Co.
20	Mathira Water and Sewerage Co.
21	Othaya Mukurueni Water & Sanitation Co.
22	Tetu Aberdare Water and Sanitation Co.
23	Garissa Water & Sewerage Co.
24	Isiolo Water & Sewerage Co.
25	Nanyuki Water and Sewerage Co.
26	Nyahururu Water and Sanitation Co.
27	Maralal Water and Sanitation Co.
28	Mandera Water Sanitation Co.
29	Moyale Water Services Co.
30	Rumuruti Water and Sanitation Co. Ltd.
31	Liboi Water and sanitation company
32	Wajir Water and Sanitation Co.
33	Kiambu Water and Sanitation Co.
34	Gatundu Water & Sewerage Co.

35	Karimenu Water & Sewerage Co.
36	Gatanga Community Water & Sewerage Co.
37	Limuru Water & Sewerage Co.
38	Kikuyu Water & Sewerage Co.
39	Ruiru/Juja Water & Sewerage Co.
40	Githunguri Water & Sewerage Co.
41	Karuri Water & Sewerage Co.
42	Thika Water & Sewerage Co.
43	Nairobi City Water & Sewerage Co.
44	Nol Turesh Loitokitok Water Co.
45	Olkejuado Water & Sewerage Co.
46	Oloolaiser Water and Sanitation Co.
47	Loitokitok Water and Sanitation Co.
48	Kiambere-Mwingi Water and Sanitation Co.
49	Kitui Water and Sanitation Co.
50	Mavoko Water and Sewerage Co.
51	Machakos Water and Sanitation Co.
52	Kibwezi Mtito Water and Sewerage Co.
53	Namanga Community Water Trust
54	Kangundo-Matungulu Water and Sewerage Co.
55	Wote Water and Sewerage Co.
56	Mwala water and sanitation co.
57	Yatta Water and Sanitation Co.
58	Kapsabet Nandi Water and Sanitation Co.
59	Eldoret Water and Sanitation Co.
60	Kakamega-Busia Water and Sanitation Co.
61	Nzoia Water and Services Co.
62	Amatsi Water Services Co.
63	Kericho Water and Sanitation Co.
64	Gusii Water and Sanitation Co.
65	Kisumu Water and Sewerage Co.
66	Nyanas Water and Sanitation Co.
67	Sibo Water and Sanitation Co.
68	South Nyanza Water and Sanitation Co.
69	Tilibei Water and Sewerage Co.
70	Chemosit Water and Sanitation Co.
71	Kilifi-Mariakani Water and Sewerage Co.
72	Malindi Water and Sewerage Co.

73	Kwale Water and Sewerage Co.
74	Lamu Water & Sewerage Co.
75	Mombasa Water and Sewerage Co.
76	Tavevo Water and Sewerage Co.
77	Tana water and Sanitation Co.