

**QUALITY MANAGEMENT AND CUSTOMER VALUE: A CASE
OF NYERI AND NANYUKI WATER AND SEWERAGE
COMPANIES IN KENYA.**

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DECLARATION

This research project is my original work and has never been submitted for an award at any other university or institution of higher learning.



Signed

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

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DEDICATION

I wish to dedicate this work to Almighty Allah for granting me the ability to complete the course. I also dedicate it to all members of my family, my wife Fatuma, our sons Hamza and Bilal and our daughters Summeyyah and Nuseybah and my parents (Ingo and Hamma) for the enormous support and sacrifice they have made during my study period. Similarly, I appreciate the extend support provided by my colleagues and classmates during this period.

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LIST OF ACRONYMS

NWCPC	: National Water Conservation and Pipeline Corporation
NWMP	: National Water Master Plan
QM	: Quality Management
SDGs	: Sustainable development goals
SPSS	: Statistical Package for Social Sciences
TQM	: Total Quality Management
TQS	: Total Quality Services
WASPA	: Water Services Provider Association
WASREB	: Water Services Regulatory Board
WSTF	: Water Sector Trust Fund
WSP	: Water Service Provider
WUA	: Water Users Association

ABSTRACT

Adoption of Total Quality Management principles are very essential in enhancing profitability, growth and driving customer satisfaction at either firm or institutional level. Creation of customer value in service delivery is very dependent on adoption of total quality management principles. This research proposal examined the extent to which total quality management principles have been adopted at Nyeri and Nanyuki Water and Sewerage Companies. Additionally, it assessed the relationship between quality management principles of top leadership and team commitment, continuous improvement and customer focus and customer value operationalized through service reliability, quality of services and level of satisfaction. The research had a total sample size of sixty consumers with thirty consumers being interviewed at each company. Research data was further collected through, self-administered questionnaires with 9 top managers of the two companies and in-depth discussions with selected managers.

The research determined that the two companies have different levels of appreciation of total quality management principles with Nyeri Water having a strong inclination and understanding of the concept. Additionally, adoption of total quality management principles was more evident in Nyeri than in Nanyuki water. The principle of continuous improvement was noted to be weak in both companies. However, from observation, the adoption of continuous improvement was highly evident. The research found that there is a significant relationship between quality management and customer value. The study also establishes that the two companies are faced with challenges such as financial limitations, supply constraints and heterogeneous natures of customers that hinder effective delivery of total quality management.

In conclusion, the study recommends the incorporation of total quality management in management training at the water companies, the development of guidelines for adoption of total quality management by the Water Services Regulatory Board(WASREB) and county and national water departments support of the water companies in the ISO certification process.

Key Words: continuous improvement, customer, customer focus, customer value, level of satisfaction, service reliability, total quality management, quality of service and water

CHAPTER ONE: INTRODUCTION

1.1. Background

“Customers play a crucial role in businesses and customer satisfaction is at the heart of any business”. Therefore, understanding the needs, preference, and expectation of these groups is very critical in defining appropriate and relevant products and services. However, heterogeneity in terms of preference, expectation, perception informed by cultural, religious, geographical, gender and behavioral diversity makes it difficult for service industry players to develop a homogenous set of service qualities applicable for all customers.

Despite all these diversities, the most important element is to get value for money for the services or products they purchase. According to Gandhi (1890), a customer is the most significant individual in a business premises. All businesses depend on the customers. As such, he or she cannot be viewed as an interruption to the business for he/she is the reason for a business’s existence. Gandhi (1890) also asserted that no business should consider the customer an outsider or think they are doing him/her a favour by providing the necessary service. In fact, the customer is the one doing the favour by giving the business an opportunity to serve him/her.

Customers are co-creators in service provision. Co-creation at some point is a necessity to ensure proper service delivery and product innovation. In majority of the cases, customers, staff members, and other personnel involved in providing a service, interact to yield the ultimate results of a service. Due to their participation, customers are critical components of the production process in many service firms and they have an important role in ensuring the satisfaction of other consumers. This makes understanding consumer expectations very critical in achieving and maintaining a competitive edge in a service industry ((Wilson, et al, 2012).

One sector that has not been adequately addressed despite its importance is water provision. Inefficient water provision is rightly considered a huge contributor to the increasingly stagnant poverty levels in developing countries as most economic activities are hugely dependent on the availability of clean and sufficient water.

A thorough analysis of the Kenyan water sector reveals inefficiencies in water service provision characterized by, among many other constraints, unreliable quantity and

quality of water supply to the urban poor (Lindsay,2002). Before the year 2002, water service provision was under the Central and Local authorities, which due to their lack of adequate skill in water supply management led to the deterioration and near collapse of the water sector. However, following the enactment of Water Act 2002, the water sector was devolved and commercialized using the framework of “socially responsible commercialization” heralding a new paradigm that put the customer at the centre of service provision as demonstrated in the figure 1.1 below (MEWNR, 2004).

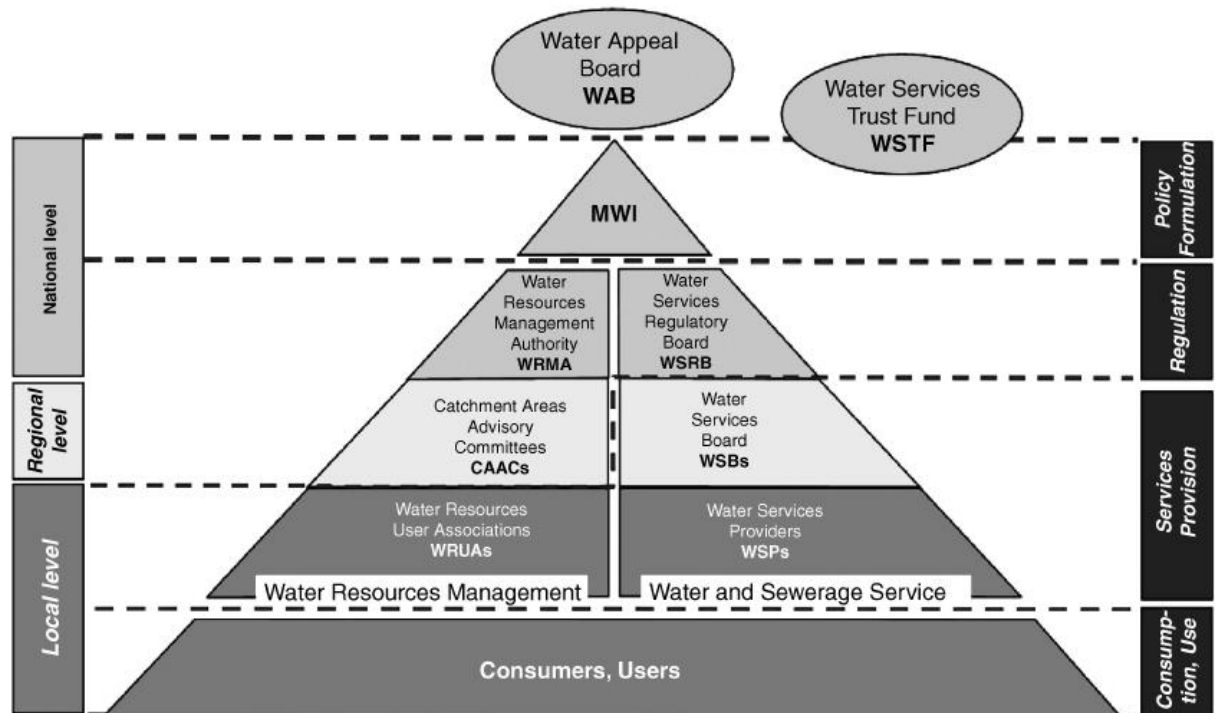


Figure 1.1: Water Services Management Framework in Kenya

Source: MEWNR, 2004

The new paradigm called for the provision of quality water, continuous engagement of the customer and provision of reliable and consistent services in a sector riddled with inefficiencies, limited service delivery, consumer apathy and dwindling water resources. The commercialization of the water industry coincided with the proliferation of technology across the country which brought about more value conscious and sophisticated customers due to increased access to information and enhanced awareness.

Water consumers developed sensitivity to price, quality and demand for consistent supply forcing water utilities to shift their service provision model from an organizational-centric to a customer-centric approach. This research proposal,

therefore, seeks to understand how quality management practices at these water utilities have informed the creation of customer value and whether customers have a role in defining these practices (MEWNR, 2004).

1.1.1. Quality Management

Quality does not just happen; but has to be managed. The commitment and understanding of the senior management, as well as their leadership and teamwork are fundamental recipes to the production of quality and success. Product and service quality management is paramount to creating a competitive advantage for an organization. The notion of Quality Management is an organization approach, which depends on the fundamental principles that focus on the; customers, people's contribution, leadership process strategies, systems techniques to management, factual procedures to decision-making, continuous improvement, and the mutual beneficial relationship with suppliers. The principles, which are self-reinforcing, are embodied in organizational activities known as "practices" (Okwiri, 2012).

Quality has evolved over the time from inspection and assurance control, to total quality management (TQM). According to Barnes (2008), TQM is a philosophy for quality improvement based on the principle of elimination of waste, continuous improvement and the implement of all employees (Barnes, 2008). A key challenge in basing the description of quality on consumer expectations is that different consumers/customers have variable expectations and definition of quality. Often, the aspects such as past experiences, personal preference & knowledge, and history shape their expectations of consumers. Additionally, after receiving a service or product different consumers may perceive it differently. Nevertheless, a simple customer-based definition of quality is still popular today.

1.1.2. Customer Value

Hoang et al. (2010) defines customer value as the customer's thinking decisions on products or services which is largely based on assessment of comparison between benefits and what they have to forego. Businesses exist to serve the customer and make them happy and satisfied. This is very critical for the existence and prosperity of a firm. Each customers' interaction with the firm is called a moment of truth and a

firm has the ability either to satisfy or dissatisfy the customer when in contact. Dissatisfying the customer can result in numerous opportunity costs and jeopardize the existence and prosperity of the firm. Reacting and anticipating customer desires and needs requires complete understanding of their behaviors (Hawkins et al., 2011)

Customer service has developed into a distinct aspect in both the service and product sectors. It also affects information technology development, as businesses encounter the modern consumer, who is very knowledgeable. In the 1880s, business stakeholders initiated the concept of service quality management, which set the trend that is used today. This occurred after organizations realized that competitive advantage cannot be guaranteed by the quality of a product alone. (Van der Wal et al., 2002). Firms, whether in manufacturing or service, are driven by the urge to satisfy their customers by provision of maximum value at the lowest cost (Barry & Gerstman, 2007). The rise of inter-firm rivalry, as well as standardization of commodities has increased the challenge of acquiring customers. This is compounded by the fact that the contemporary customers are well informed. Hence, they are discrete when making choices.

Technology has enabled customers to choose the best. Scholars understand the term customer value from a variety of perspectives. All of the perspectives tend to focus on the customer or the firm. Based on the customer's perspective, value is cost or expense that a customer is willing to incur. Therefore, the customer value is the perceived value of a product or services in relation to the customer's offer. In other words, customer value is the level at which, the consumer will view a commodity as superior and relevant to him/her. As such, he/she is willing to pay that amount to acquire and consume the products/services. From the firm perspective, customer value is the cost of the service/product and strategy used to develop and deliver value to the consumer (Saxena, 2009).

It is worth noting that value is very critical in organizational competitiveness. The concept of value creation lies at the heart of competitive advantage. The customer's perspective of value is the relationship between the usefulness, satisfaction or benefit to the price or sacrifice the customer incurs for products or services. Driving customer value proposition requires firms to determine what is important for the customer, identify customer value adding processes, meet conflicting customer demands,

increase product/service awareness by the customer and establish a value chain. The value chain should clearly define the key primary activities and support activities appropriate for attaining and sustaining customer value.

1.1.3. Relationship between Quality Management and Customer Value.

(Setijono, 2008) argues that the purpose of quality management is creating value for the customer. However, from the lens of suppliers, customer value creation seems to be lacking as a result of limited understanding of customer value, lack of tools and methods to facilitate value creation and incompetence among suppliers. Lapierre (2000) posits that the importance of creating value has been provided by quality management, but there is need for more development to reduce the gap and minimize the difference between strategic and tactical imports of customer value.

The development of quality management entails an insightful awareness of Customer Value, which is a paramount guideline that empowers organization to gain customer-related knowledge to take necessary actions in order to create, deliver, and optimize customer value (Setijono, 2008). These principles include; appreciation for a value-creating system, familiarity on customer value modes, theory of improvements, and perceptions.

To this end, it is quite evident that this interconnection depicts customer value beyond goals/needs/product-related concept, but also as competence-related. As a result, customer value is a combination of input and output of a value-creating system, thus revealing a bi-directional relationship between quality improvements and customer value. Customer value measurements may therefore reveal opportunities for further improvement, and suppliers' efforts in improving quality may influence customers' perceptions regarding the value of the product (Lapierre, 2000).

1.1.4. Water Services in Kenya

According to Sammy (2004) and Nyagena (2008), despite huge efforts and investments in the construction of water supply infrastructure, 63% of the rural population rely on unsafe water in Kenya (Kenya Census, 2010). A study by (Price Waterhouse Coopers, 2007) states that 57% of the entire investment in the rural water sector of Kenya is unproductive, as the constructed infrastructure is not functional. This is despite the focus of the Water Act 2002 on sustainable water services delivery.

The post-independence history of water in Kenya can be roughly divided into three distinct phases: transition period (1980–1992); commercialization of local utilities (1992-2001); reorganisation of water institutions (2002–present).

From independence until the early 1990s, central government was the only official provider of water services and infrastructure (although informal private providers still existed in urban areas). The services were generally provided for free but coverage was inadequate. As a result, in June 1988 the National Water Conservation and Pipeline Corporation (NWCPC) was established, in line with the structural adjustment paradigm. Its role was to operate water supply systems under state control on a commercial basis.

However, decentralisation and commercialisation was limited to urban centres, leaving rural water service provision to water users' associations (WUAs) which were set up by villages independently, by NGOs, or by local governments. The Water Act (2002) triggered a wide-ranging restructuring of the sector and led to the creation of new institutions including the Water Services Regulatory Board (WASREB) and the Water Sector Trust Fund (WSTF). There was also a provision for the introduction of commercial providers but, in retrospect, this appears to have been too ambiguous (Sammy, 2004; Nyangena, 2008).

The third and present phase of water service delivery in Kenya has emerged as a result of the devolution of power to county governments, through the new constitution of 2010. After the violence following the election in 2008, Kenya pursued an ambitious agenda of decentralisation of power to newly formed county governments. As part of this, there is an increased impetus for counties to set their own course for the provision of water services, developing regional acts to complement the national Water Act (2016) including further commercialisation.

Since the enactment of Water Act 2002, the country has made substantial progress in increasing access and accelerating investment in the sector. The reform process embraced “socially responsible commercialization” which was anchored on running the water utilities as business entities and ring-fencing revenue for the sector growth. However, despite the progress in the urban areas, rural water services continue to struggle under inefficiencies and stagnated growth. The drinking water sector in Kenya has received increased attention from government as well as donors. As such,

the total approved water sector budget has grown more than six fold over the last nine years from 2004/05 to 2012/2013. In Kenya, water coverage stands at 54% for urban areas and 51% for rural areas.

The investment required to achieve the universal access of water supply by 2030 is approximately Kshs 1,287.9 billion. This is against the budgeted Kshs 561.5 billion prescribed by the National Water Master Plan (NWMP) 2013. It is evident that there is insufficient resource allocation to the sector, thus making it improbable to achieve the target. Proper resource allocation would be attained through the improvement of sector efficiency, maximization of consumer contributions, and utilization of private sector funding. If the policy makers intend to improve access to water services, they should focus on the best strategies to achieve this. The solution to this problem is not homogenous. To improve access would require partnerships, which maximize resource utilization from the public and private sectors, customer engagement and improved management of existing utilities (MEWNR 2013).

1.2. Research Problem

Developing urban areas are faced with the challenge of delivering water services, particularly due to the rapid population increase in cities and towns. The providers of the necessary infrastructural services, like sanitation, water, and roads encounter significant challenges in attempting to provide such services to the high-density or unplanned settlements. These challenges can fall under physical, economic, institutional, technical, or legal constraints (Kayaga et al., 2014)

The concept of quality management and customer value is very critical to any firm or organization more so to water services providers in Kenya who rely on their customers to sustain their operations. Water services providers provide both a physical product (treated water) and other auxiliary services to the customers. The physical product provided by these utilities is critical to human health and underpins the other activities undertaken by the consumer of the product. Therefore the product must meet the highest international/national benchmarks to ensure good health of consumers and the prosperity of the nation (Okwiri, 2012). The auxiliary services include billing, revenue collection, customer complaint handling, responding to customer queries and providing water services which have the dimensions of

reliability, empathy, assurance, tangibility, responsiveness, courtesy, time and timeliness, accuracy, accessibility and reliability.

The national regulator i.e. the Water Services Regulatory Board, measures the performance of 91 licenced water services providers on nine key performance indicators that largely focus on operational and technical performance as opposed to quality management and customer service improvement. The nine key performance indicators assessed by the regulator are; water coverage (%), sanitation coverage (%), water quality (residual chlorine%), hours of supply (hrs/day), Non-revenue water (%), metering ratio (%), staff productivity, revenue collection efficiency (%) and O&M cost coverage (%). Only two out of the nine key performance indicators highlighted above, drinking water quality and hours of supply, focus on measuring quality while there is no indicator measuring customer satisfaction with the services provided. This proposed study therefore seeks to assess the tools, procedures, and systems used by water utilities to drive quality management and customer value creation in service provision. In particular the study will focus more on continuous improvement, customer focus and top leadership commitment principles.

Despite the significance of the concept of quality management with respect to customer value, the existing research stream on this thematic area is still limited. It is for this reason that the proposed study seeks to address the followings questions:

1. What is the relationship between quality management and customer value in Nyeri and Nanyuki Water and Sewerage Companies in Kenya?
2. What are the quality management principles adopted by the two services providers?
3. What are the challenges encountered by the two water services providers in promoting customer value in service provision.

1.3. Research Objectives

In order to adduce empirical evidence on the above research problem, the proposed study will be guided by the following objectives:

1. To determine quality management principles adopted in Nyeri and Nanyuki Water and Sewerage Companies in Kenya

2. To determine the relationship between quality management and customer value in Nyeri and Nanyuki Water and Sewerage Companies in Kenya;
3. To assess challenges encountered by Nyeri and Nanyuki Water in promoting customer value in water services provision.

1.4. Value of the Study.

The results of this study will be of much interest to senior management of the two water utilities since it will provide useful insights into the relationship between quality management and perceived value from the consumers. In this regard, it will help them understand the prevailing configuration of those parameters, and make meaningful operational adjustments where deemed necessary.

From a theory perspective, the study will add value to the on-going theoretical discussions in the field of quality management by testing the relationship between each of the independent variables and the dependent variable; a significant contribution to knowledge in the thematic area. The academic fraternity will hence find this study useful as an underpinning for the ongoing debates on the concepts of quality management and value creation; an existing puzzle.

In terms of policy, the findings of this study will be important to various stakeholders involved in charting policy directions in water management and the economy as a whole. The policy makers in general will particularly find the findings a valuable input. The findings of the study will provide baseline information upon which policy formulation will be founded.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction.

This chapter presents a critical review of theoretical and empirical literature on quality management and customer value. In this regard, it presents the theoretical underpinning of the study as well as empirical studies on the variables under investigation, on the local and global contexts. The chapter ends with the presentation of the knowledge gaps, and the conceptual framework upon which this proposed study is grounded.

2.2. Theoretical Literature.

Several theories in the area of customer value and quality management have an association on the variables in the proposed study. Deming's and Crosby's theories of quality management have a strong implication on this study.

2.2.1. Deming's Theory of Quality Management

Bowen (2013) posits that Deming's postulation of Quality Management is dependent on fourteen key issues of management. Deming formulated the concepts of profound knowledge, as well as the Shewart Cycle also referred to as the Plan-Do-Check-Act. Furthermore, he identified the fundamental guiding principles upon which the fourteen points are founded. The theory asserts that if an organization focuses on cost-related issues, the challenge is that costs would increase, while the quality deteriorates.

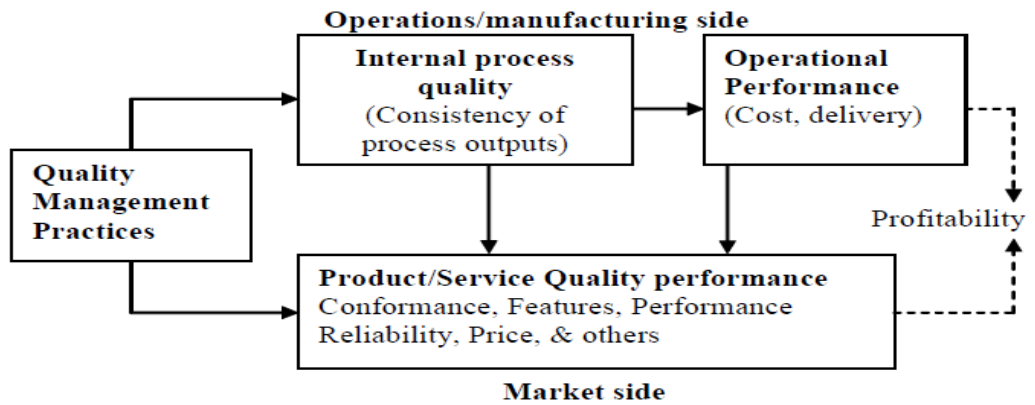
According to Deming's concept of profound knowledge, four key points are critical. These include system appreciation, which is the intrinsic knowledge and understanding of an organization's processes and systems operation. The second critical point is variation knowledge, which entails understanding of organizational variation and the sources of the variation. The third critical point is Knowledge Theory, which focuses on understanding the known issues. The last critical point is Psychology Knowledge which encapsulates the understanding of human nature. Therefore, awareness of the different types of organizational knowledge can ensure quality is broached as a significant topic. (Bowen, 2013).

According to Bowen (2013), quality entails tweaking procedures and utilization to achieve specific standards. This aligns to the fourteen principles of Deming's postulation of total quality management. These fourteen principles include the creation of constancy of purpose; adoption of new and relevant philosophy; stopping the dependence on mass inspections; not allocating based on the price; aiming for continuous improvement of services and products; and ensuring a cutting-edge is present during on job training.

Bowen (2013) continues to argue that the following are equally important points in the process. Implementing a cutting-edge approach to leadership; eliminating any instances of from the firm; deconstructing barriers between departments; eliminating quantity-based work metrics/goals; eliminating standards and quotas systems; supporting good craftsmanship; ensuring the personnel is properly trained and educated; and making sure that top leadership and management structure are in alignment with the other thirteen points.

Bowen (2013) further identifies “Plan-Do-Check-Act (PDCA)” as a key component in the cycle of continuous improvement. He asserted that it is equally an important component of the quality management process. According to the model, the planning phase entails the outlining of objectives. The next step is taking actions and implementing the essential procedures that would allow improvements. Next, the company has to conduct checks to determine whether the quality matches the original standards. Finally, the organization has to determine where changes are necessary to ensure continuous improvement before going back to the planning phase.

Firms in manufacturing and services, recognize the importance of quality and drive toward meeting the quality dimension in their product and services. It is important to note that organizations profitability cannot be driven solely by operational excellence/performance but through a combination of product/service quality performance and operational performance as demonstrated by the figure 1 below.



Source: Sousa and Voss (2002) – an adaptation

Figure 1.2: Quality & Operational Performance Framework

Quality management is therefore, a key function in driving organizational profitability and promoting customer satisfaction that ultimately results in customer retention and loyalty. In the realm of service provision Total Quality Services (TQS) is very critical in enhancing the realization of customer satisfaction. (Sureshchandar et al., 2003) argues that TQS has a long-range dimension and doesn't provide a quick fix but delivers productive quality improvement after many years of hard work and due diligence.

2.2.2. Philip Crosby's Theory of Quality Management

Another scholar credited with pioneering the concepts of TQM is Philip Crosby (Bowen, 2013). He asserted that resources incurred in improving quality are properly utilized. Crosby grounded his work on four absolutes of quality management. Additionally, he advanced his own fourteen steps of quality improvement. Crosby's four absolutes include, defining quality as the process of adhering to specific requirements; ensuring quality through prevention; the standard for quality should be based on zero defects; the price of nonconformity is the measure of quality.

The Crosby's theory further includes fourteen steps to continuous quality improvement (Bowen, 2013). These include attaining the full commitment of the managers; creation of a quality improvement team; developing metrics for each activity; and determining the cost of attaining quality as well as showing how improvement could contribute to gains. In addition to these steps, the other steps are training and educating supervisors appropriately; encouraging staff members to deal or fix any defects and keep issues logs; creating a zero-defects tolerance; and ensuring

that the supervisors and employees have a clear understanding of the steps to quality. Further steps entails demonstrating the organization/company's commitment through a zero defects day; finding out the root causes of errors, eliminating the errors from critical processes; developing incentive programs for staff; holding regular meetings and creating a quality council; and finally repeating the whole process from step one.

2.2.3. Disconfirmation Theory

It is argued that satisfaction is associated with the scope and the path of disconfirmation experience resulting from a comparison of service performance and expectations. According to Ekinçi *et. al.* (2004) related to Oliver's updated definition on disconfirmation theory stating, "Satisfaction is the guest's fulfilment response. It is a judgement that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfilment, including levels of under- or over-fulfilment".

Mattila, A & O'Neill, J.W. (2003) acknowledge that satisfaction arises from direct experiences with products or services, which occurs by likening discernments against the ordinary standards. Furthermore, research shows that the mode of delivering a service is more critical than the outcome. On the same note, it is evident that a customer is often dissatisfied when their perceptions towards a service or product expectations fail to be met.

2.3. Quality Management Variables

In a study on total quality management (TQM) strategy and organizational characteristics: evidence from a recent WTO member, Hoang et al. (2010) used customer focus, continuous improvement, and top management team commitment to operationalize the concept of quality management. The variables used in the study by Hoang et al. (2010) are essentially a section of the fourteen principles of quality management. From the foregoing prologue, the researcher in this study has opted to use the same variables to operationalize the concept of quality management (Ekinçi et al., 2004).

2.3.1. Customer Focus.

Understanding customers quite well is very critical in developing or making any change in the systems and processes that deliver greater quality products for enhanced

customer satisfaction. To increase customer base, retention and customer satisfaction organizations resort to adoption of total quality management or other quality improvement systems. According to Ekinici et al., (2004), increasing customer loyalty and growth of the business would require the customers themselves and indeed any sound growth is dependent on broad-based loyal customers. According to Ekinici et al (2004) customer's inclusive experience with the organization is very critical in defining quality of a product along with other parameters such as reliability, durability, time delivery and packaging. It is worth noting that customer unhappiness leads to loss of business. In service industry, there is need for the employees need to relate with the customers wisely and with extreme caution and competence.

2.3.2. Continuous Improvement.

The constant advancement of products or services is what is referred to as continuous improvement. It employs incremental and innovative improvement of products and services. This principle is a very important component of quality management and also new quality management principles incorporated in the revised ISO 9000 family of standards, which were officially released on 15th December 2000. It promotes organizational objectives of promoting and sustaining competitiveness. According to Ekinici *et. al.*, (2004), many companies emphasizing on continuous improvement have managed to grow faster than their competitors.

Continuous improvement is defined as part of quality management, fixated on enhancing the capabilities to accomplish quality requirements (ISO/FDIS 9000, 2000). Improvement activities are very similar to the problem solving activities. The main difference between improvement and problem solving activities lies on the fact that improvement activities are planned and usually organized as part of larger program, whereas problem solving often is deemed reactive and unplanned (Ekinici et al., 2004).

2.3.3 Top Management Team Commitment.

Leadership commitment is paramount for implementing a quality management system. Many scholars and advocates of quality management emphasize on the need for proactive participation and commitment from the top leadership of an organization. According to Lee & Ritzman (2005) they argue that the question of how

to involve top leadership has often attracted less interest or completely been ignored. Thus, this calls for developing an elaborate process of bringing, implementing, measuring and meeting the management commitment.

The components that constitute top management commitment may include spending resources, time and concern for quality management. Indeed the principle of continuous improvement which was mentioned earlier as very critical in promoting competitiveness requires top-level engagement. Individuals in the organization acknowledge the importance of quality as an integral part of doing business. To assure commitment from the top management, it is therefore crucial to align TQM process with management strategic business (Omar, 2015).

2.4 Customer Value Variables

Omar (2015) studied the effect of service reliability on perceived customer value. Agbor (2011) also studied the customer satisfaction and service quality. It is on the foregoing basis that this study has adopted service reliability and customer satisfaction as plausible variables for the concept of customer value.

2.4.1 Level of Satisfaction

Lee & Ritzman (2005) provides evidence on the importance of the customers role in the organization process. They argue that management has to prioritize customers' needs while developing organization strategy and structure. Thus businesses design products and services with their customers in mind and with proper knowledge of where they are located, how the product/services will reach them and the demographics. It is therefore important to address issues such as product design, market differentiation and segmentation in order to develop targeted messages and to drive customer satisfaction.

Customers are conscious of the price they pay for products and services and they strive to get best value out of it. Therefore, to win in the ever-changing market place, there is need to develop robust relationships with customers and not just develop products and services. According to Kotler et al (2002), delivering superior value over your competitors is the way to create better customer relationship. Customer feedback in terms of satisfaction with product and services is very important in helping

organizations to deliver quality since higher levels of quality lead to higher levels of customer satisfaction (Kotler & Keller. 2009).

2.4.2 Service Reliability

The psychological reaction, perception and evaluation to service quality is what is termed as service reliability. The relationship between expectation, perceived service quality and customers satisfaction have been investigated in a number of researches (Zeithaml, et al., 1988). They found that, there is very strong relationship between quality of service and customer satisfaction.

Increase in service quality can satisfy and develop attitudinal loyalty which ultimately retains valued customers. When perceived service quality is less than expected service quality customers will be dissatisfied (Jain and Gupta, 2004). According to Zeithaml, et al. (1988) satisfaction super ordinate to quality-that quality is one of the service dimensions factored in to customer satisfaction judgment.

2.3. Empirical Literature

Various practical studies have been conducted on the variables of interest in this proposed study. Some of the studies are local while others are foreign in context. Locally, Alima (2014) conducted a study on the relationship between ISO 9001:2008 Certification and operational performance in the water sector. The study established that 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.

Okwiri (2012) conducted a study entitled “quality management core practices”. The study established that information-based quality management practices revolve around enforcing process compliance, reducing incidence of mistake, reduction in document preparation time and reduced required entry. Globally, Kayaga and Kingdom (2014) conducted a study under the general question: “Can ISO 9001 certification of water utilities in developing countries be used to evaluate institutional sustainability?”

The conclusion of the study was that the quality management principles advanced by ISO 9000 series of standards are manufacturing-centric; need to possess threshold levels of performance as well as provide sufficient attention to aspects of the external environment that are essential for water utilities in developing nations. In addition, the level to which ISO 9001 certification can be utilized effectively to guide resources use towards the improvement of the firm is largely dependent on whether the certification is the main objective, or an added benefit in the bid to attain continuous improvement.

Evans and Lindsay (2002) in their study of quality management concluded that the major causes of failure to achieve benefits from application of quality management practices are deficits in the practices relating to top management, management style, customer orientation, people management and empowerment issues may appear to suggest an integrated implementation is mandatory to achieve benefits. Samson and Terziovski (1999) and Brah et al. (2000) conducted separate studies on quality management core practices. The findings of both studies contradicted those of Okwiri (2012) above.

After elaborate literature review on the variables on interest, the researcher concludes that the local studies on application or adoption of quality management in the water sector is remains quite limited. The researcher also observes that global studies leave contextual gaps. In addition, conceptual and methodological knowledge gaps still exist in the thematic areas of quality management and customer value.

Table 2.1: Summary Research and Knowledge Gaps

Researcher(s)	Focus of Study	Study Variables	Methodology	Findings	Research Gaps	Proposed Study to Fill Gaps
Kayaga and Kingdom (2014)	ISO 9001 certification of water utilities in developing countries and institutional sustainability	ISO 9001 certification and Institutional sustainability	Cross sectional Survey	The quality management principles as advanced by ISO 9000 series of standards are manufacturing-centric; require threshold performance levels	The study context was broader; all developing countries.	Replication of the study to a Kenyan context.
Evans and Lindsay (2002)	Quality management core practices: A conceptual study	Quality management practices and Organizational Performance	Conceptual Study; exclusive use of secondary sources	Major causes of failure to achieve benefits from application of quality management practices are deficits in the practices relating to top management, management style, and customer orientation.	Secondary sources have weaknesses of bias hence compromised reliability	Empirical study and use of primary data
Samson and Terziovski (1999); and Brah et al. (2000)	Quality management practices and Organizational Performance in developed country context.	Quality management practices and Organizational Performance	Cross-sectional Survey	Information-based quality management practices have little influence on enforcing process compliance, reducing incidence of mistake, reduction in document preparation time and reduced required entry.	Developed country context; hence contextual gaps.	Replication of the study to a Kenyan context.

Table 2.1 Continued

Okwiri (2012)	The state of Quality management core practices.	Quality management practices and Organizational Performance	Cross-sectional Survey	Information-based quality management practices revolve around enforcing process compliance, reducing incidence of mistake, reduction in document preparation time and reduced required entry.	The concept of customer value not investigated	Inclusion of customer value as dependent variable
Alima (2014)	ISO 9001:2008 Certification and operational performance in the water sector. on change implementation	ISO 9001:2008 Certification and operational performance	Cross-sectional Survey	Management of water sector institutions are faced with the dilemma of having effective and efficient systems to achieve operational performance in order to satisfy the customers and the regulator in the water sector.	The concept of customer value not investigated.	Inclusion of customer value as dependent variable.

2.6 Conceptual Framework

The conceptual framework presented, captures the relationships between the variables of quality management, and customer value.

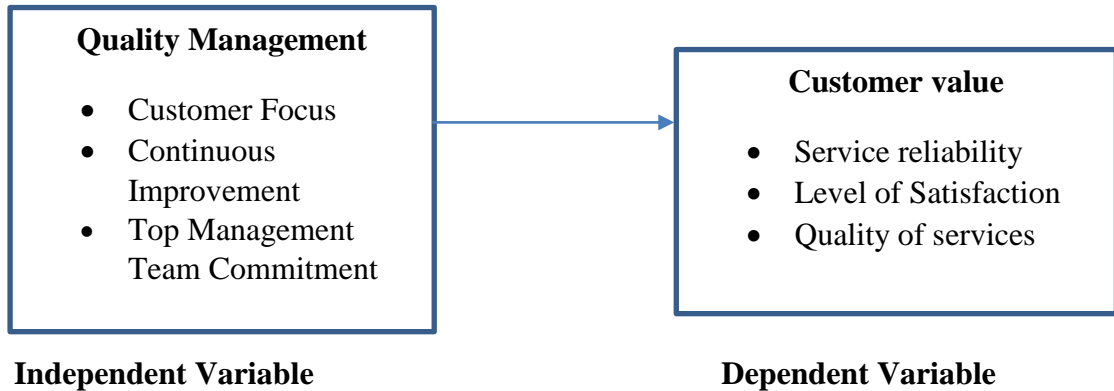


Figure 2.1: Conceptual Framework

The Conceptual framework above envisages a relationship between quality management (independent variable) and the customer value (dependent variable). Customer focus, continuous improvement, and top management team commitment have been used to operationalize the independent variable, while service reliability, level of satisfaction and quality of services have been used to operationalize the dependent variable. This relationship has been assumed to have no mediation or moderation effects, an ideal situation.

CHAPTER THREE: METHODOLOGY

3.1. Introduction

The chapter discusses research design, population and sample frame, sample and sampling procedures, data collection and data analysis techniques.

3.2. Research Design

This study used comparative descriptive survey research design and it was cross-sectional in nature. Comparative descriptive design enabled the researcher to identify best practices used at the two utilities and made an inference to the larger water service provision sector. On the other hand, cross-sectional design allowed the researcher to collect data on the sample population at a single point (Nyeri and Nanyuki water and sewerage companies) in time to examine relationship between the proposed variables.

3.3. Target Population and Sample Frame

The target population of the study was nine managers of Nyeri and Nanyuki Water and Sewerage Companies. The sampling frame was a list of all senior managers of the target companies. Similarly sampled sixty customers from the two water services providers were sampled.

3.4. The Sample and Sampling Procedure

The study used clustered sampling design where one respondent was sampled from every department, a department constituting a cluster. Each element in a cluster (department) had an equal chance of being sampled since the design was random (probability) in nature. Sixty customers paying their bill were randomly selected in Nyeri and Nanyuki.

3.5. Data Collection

The study used primary data collected from the respondents using a questionnaire. The researcher employed the drop and pick technique of questionnaire administration for convenience. The questionnaire was pre-tested for any unforeseen technicalities in both administration and content.

3.6 Data Analysis Technique

Objectives	Description/Outputs	Data analysis method
Objective 1: To determine the relationship between quality management and customer value in Nyeri and Nanyuki Water and Sewerage Companies in Kenya	✓ Relationship between quality management principles (continuous improvement, customer focus and top leadership commitment) and customer value creation	Linear regression and correlation analysis
Objective 2: To determine quality management principles adopted in Nyeri and Nanyuki Water and Sewerage Companies in Kenya	✓ Existing quality management principles/practices adopted in the water utilities ✓ Existing TQM systems in the water utilities ✓ Existing TQM tools in the water utilities	Descriptive statistics (Frequency tables, Cross tabulations)
Objective 3: To assess challenges encountered by Nyeri and Nanyuki Water in promoting customer value in water services provision.	✓ Challenges faced by water utilities in promoting customer value	Descriptive statistics (Frequency tables, Cross tabulations)

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1. Introduction

This chapter deals with presentation of findings and discussion of the same. Overall, the purpose of this study was to undertake an assessment of the total quality management principles that have been adopted in Nyeri and Nanyuki water and sewerage companies and how they link to customer value. To this end, two sets of data collected from the water consumers across the two water utility service areas and utility management were merged and analysed.

This study aimed to determine total quality management principles adopted in Nyeri and Nanyuki water companies, which then would enable the determination of the relationship between the adopted total quality management principles and customer value and finally assess challenges encountered in promoting customer value in water service provision. Results presented henceforth have been generated using IBM SPSS statistics analysis software version 23.

4.2. Reliability Statistics

Before getting into the detail of the findings, its important to assess the inter-rater/observer reliability, which refers to the degree to which different raters or observers give consistent answers or estimates. This calls for testing of internal consistency among the variables of interest using the cronbach's coefficient alpha. Cronbach's alpha can be described as a function of the number of test items and the average inter-correlation among the items.

Table 4: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.989	.992	69

The value of cronbach alpha in the study was estimated to be 0.989 (**Table**). In most social sciences, a reliability coefficient of 0.70 or higher is deemed acceptable(Lanceet. *al.*, 2006). We are therefore certain that data obtained from the survey reliably addressed objectives of interest.

4.3. General customer profile

A total of sixty consumers randomly sampled from Nanyuki and Nyeri water and sewerage companies were interviewed of whom majority were aged between 20 to 39 years. Additionally, most of these consumers from both water utilities, can be

considered to be literate having acquired at least a secondary level of education. With regard to the type of settlement, it was realized that majority of the consumers are in permanent settlements, which is an indication that they do own the water connections in both water companies under assessment. Further, results revealed that majority of the water consumers in Nyeri and Nanyuki water companies are either in formal employment or run enterprises. The insinuation of this is that it would be considered likely for the water consumers to be able to meet water related costs and therefore an opportunity for the water utilities to connect more consumers and increase revenue collection.

In summary, understanding the customer dynamics is a special component towards developing a rigorous Know Your Customer (KYC) principle. It is believed that when water companies have a better understanding of the nature of their consumers, they are better placed to design products and services that best suit their target customers. In this study, given the interest in understanding customer value creation, it was impossible to ignore the need for KYC which plays a huge role towards enhancing customer value creation. A detailed analysis of the respondents' demographic characteristics is well summarized in **Error! Reference source not found.**

Table 4.1: Consumer profile

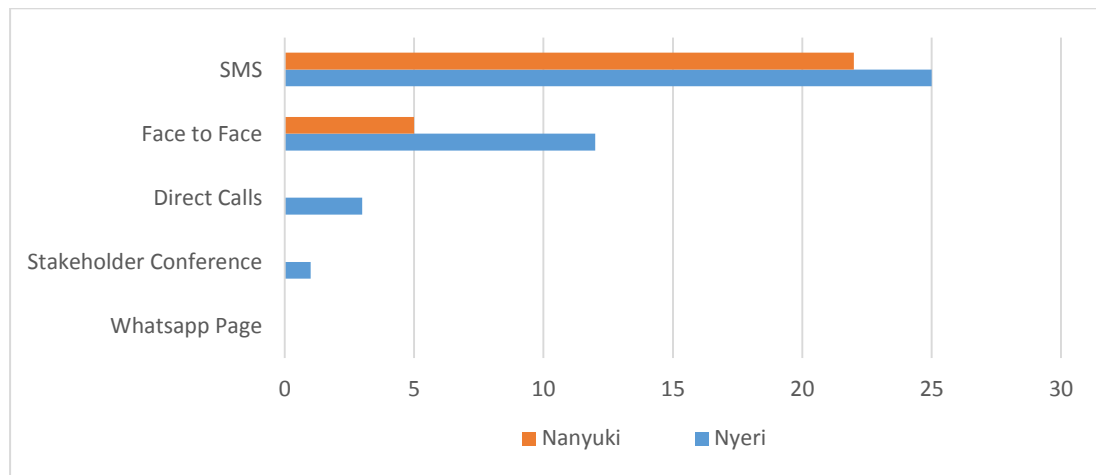
		Nyeri	Nanyuki
Age	<20	0%	0%
	20-29	30%	27%
	30-39	53%	50%
	40-49	0%	17%
	50-59	13%	7%
	>60	3%	0%
Occupation	Formal employment	33%	20%
	Informal employment	17%	30%
	Enterprise owner	43%	40%
	Subsistence farmer	3%	0%
	Commercial farmer	0%	0%
	Dairy farmer	3%	0%
	Farm worker	0%	10%
Education level	None	0%	0%
	Adult education	0%	0%
	Primary incomplete	0%	0%
	Primary complete	7%	0%
	Secondary incomplete	3%	37%
	Secondary complete	40%	0%
	Tertiary	37%	50%
	University graduate/Post graduate	13%	13%

Type of settlement	Permanent	100%	87%
	Temporary	0%	13%
Sex	Male	37%	43%
	Female	63%	57%
Consumer receives water consistently	Yes	100%	83%
	No	0%	17%
The utility responds to consumer queries promptly	Yes	97%	53%
	No	3%	40%
There are existing platforms for consumers to raise issues with utility	Yes	97%	87%
	No	0%	7%
Satisfied with quality of services provided by water utility	Yes	97%	80%
	No	3%	20%
Consumer receives value from the services offered by the water utility	Yes	77%	73%
	No	23%	27%
How often are you consulted by the company	Weekly	0%	0%
	Monthly	100%	80%
	Quarterly	0%	0%
	Annually	0%	7%

In **Figure** , it is further observed that several platforms exist that consumers can use to interact with the water utility to address any concerns they may have. Often, this platform has been SMS based and face to face interactions across both utilities under review; even though it was evident some consumers in Nyeri prefer to make direct calls.

Our in-depth discussion with some consumers support this finding, with consumers indicating that they were quite satisfied with the communication platforms the two water utilities have put in place. For instance in Nyeri water company, a consumer indicated how contented she was with the customer service department. According to this consumer, it was quite impressive the way customer calls were being handled and how promptly concerns were addressed. On instances where a call would go unanswered, the utility would always call back.

Figure 4: Mechanisms for customer engagement



According to majority of the consumers, the utilities have adopted a customer interaction norm where they often consult with them on a monthly basis which as a result, has led to value addition in quality of services provided by the water utilities. As a result of continuous engagement with consumers and the need to improve service delivery, Nyeri water strategy on consumer interaction is quite strong. This is largely informed by the periodic consumer satisfaction survey and numerous stakeholder engagements.

4.4. Total Quality Management (TQM)

This section forms the introduction towards addressing these key objectives. To develop a better understanding of the TQM approaches across the water utilities, we interviewed key staff deemed to have the necessary information and understanding of the subject at hand such as the managing director, commercial/finance manager, technical managers, human resource managers and quality control managers.

Before assessing the facts of TQM adoption in the water utilities, it was deemed necessary to develop a broad picture of how water utilities perceive general TQM principles. To this end, respondents were required to rate their agreement levels on select TQM principles using a 5-likert scale. As observed in **Table 3.2**, it was quite inspiring that management and staff in the water utility companies have a high level of agreement in regard to various TQM principles. At least 80% of the respondents in each of the water utilities were in agreement with TQM principles, an indication of the fact that they do appreciate and understand various components of TQM.

Table 3.2: Total quality management principles

TQM Statement	Nyeri Water		Nanyuki Water	
	Agree	Strongly agree	Agree	Strongly agree
TQM is a management philosophy and practice to ensure effective and efficient use of all available resources	0%	100%	60%	40%
TQM aims to make customer satisfaction as focus of a business	0%	100%	20%	60%
TQM embraces factual decision making	33%	67%	60%	40%
TQM put emphasis on the use of statistical technical to ensure consistency of produce and process quality	33%	67%	60%	20%
Continues improvement is central to total quality management	0%	100%	40%	40%
Training and education are vital element with respect to TQM implementation	33%	67%	40%	60%
Good organizational culture in importance in driving quality management	33%	67%	40%	40%
Commitment and leadership from the top in critical in quality management	0%	100%	80%	20%
Proper supplier involvement is central in sustaining quality management	0%	100%	40%	20%

These results already depict diverse opinions across the two water companies under assesment on the need for TQM principles. Evidently, Nyeri water and sewerage company portrayed a much stronger understanding and appreciation of TQM in the water companies, whereas the same is not obvious in Nanyuki water and sewerage company. Perhaps this finding explains why Nyeri water and sewerage company is one of the top performing water utilities in Kenya. On the other hand, staff in Nanyuki water and sewerage company do not seem to have an aligned appreciation of TQM principles. Henceforth, these findings will be useful in relating the adoption levels of specific TQM principles across the water companies under assesment.

4.5. Adoption and application of TQM principles

It is believed that often, organizations and companies have different approaches and strategies which inform the type of TQM principles to adopt and implement. This is no different in the water utilities. This study aimed at assesing the percieved level of importance of TQM principles and the extent to which they have been adopted in each of the water utilities. This involved respondents rating on a 5 point likert scale TQM statements broadly evaluated into management leadership, staff involvement, customer focus, continuous improvement, supplier quality management, systems and

processes as well as the decision making process.

4.5.1. Adoption of TQM in Nyeri water and Sewerage Company

In Nyeri water and sewerage company, the adoption of some key TQM principles was observed to be somewhat high, despite the management appreciating a very high level of importance of these principles. Notably, a much lower adoption of staff involvement was observed especially with regard to offering staff training in TQM concepts, recognition against performance, and equipping staff with relevant and necessary tools that enable them perform effectively. Results revealed a very high level of adoption of TQM approaches in management and leadership.

There was noted commitment by top leadership towards promoting staff participation in quality management and improvement activities, staff empowerment, robust communication channels that enable employees openly communicate with management amongst others. This was further evidenced from the indepth discussions with selected staff working in the water utility, who observed that the existing management in the utility had an open door policy that created avenues for them to easily approach management with ease. As a result, the staff observed that they felt more empowered especially given the flexibility top leadership in the utility has demonstrated.

With regard to customer focus, results revealed a very high level of adoption on some key TQM principles. In particular, there is a very high level of monitoring and measurement of customer satisfaction levels and customer participation in product development. According to the customer relations manager, the adoption of continuous customer satisfaction level measurement was informed after the utility undertook a rapid customer survey which revealed perturbing issues that ideally could have been addressed in a timely manner. At the time of the survey, it was estimated that at least every 4 of 5 customers were extremely unhappy (20% satisfaction level) with the services offered by the water utility, in contrast to the current satisfaction rating where it is estimated that customer satisfaction level stands at 96%. However, a fairly high level of adoption exists for robust consumer feedback mechanisms as well as customer driven listening strategies.

Quite lagging in the water utility is the adoption of continuous improvement TQM approaches. It wasn't quite evident on the existence and adoption of quality

improvement tools and techniques. Moreover, there were no clearly set up teams or committees tasked with ensuring continuous improvement. According to the managing director, whereas the water utility was aware of the extreme importance in having such a team and tools in place, the utility was quite constrained in terms of availability of resources which has inhibited practical adoption. However, this was highlighted as a key priority in the next budgeting period. Results on adoption of TQM in Nyeri water and sewerage company are presented in **Table 4.3**.

Table 4.3: Adoption of TQM in Nyeri Water & Sewerage Company

TQM component	TQM Statement	Level of Importance		Level of adoption	
		Important	Very important	High	Very High
Management leadership	Top leadership ensures that every employee knows the company vision and objectives	0%	100%	33%	67%
	Top leadership strongly promotes staff participation in quality management and improvement activities	0%	100%	33%	67%
	Manager and supervisors empower employees	0%	100%	33%	67%
	Communication channels are established between employees and top management	0%	100%	0%	67%
	Company fulfils its social responsibilities	0%	100%	0%	67%
Staff involvement	Employees are given information and training they need to do the job effectively	0%	100%	67%	33%
	Employees are given the tools they need to do the job effectively	0%	100%	67%	33%
	Employees are recognized for their performance	0%	100%	67%	33%
	Employees are listened to and acted upon	0%	100%	33%	67%
	Employees are trained on total quality concepts	0%	100%	100%	0%
Customer focus	Customer satisfaction level are measured and monitored	0%	100%	0%	67%
	Information on quality and customers are collected and analyzed	0%	100%	0%	67%
	Customer given the opportunity to inform product development	0%	100%	0%	67%
	The company develops a customer driven listening strategies and measures effectively	0%	100%	33%	33%
	Company develop a robust consumer feedback mechanism	0%	100%	33%	33%
Continuous improvement	There is quality improvement committee	0%	100%	33%	33%
	Improvement teams are active in all department	0%	100%	33%	33%
	Quality improvement tools and techniques are widely used	0%	100%	33%	33%
	The company practices continuous improvement of all its products, services and processes	0%	100%	0%	67%
Supplier quality	Supplier are selected on the basis of quality aspect	0%	100%	33%	67%

management	Company ensures that suppliers can maintain high technical standard and meeting quality specification	0%	100%	33%	67%
	Company regularly conduct suppliers quality audits	0%	100%	0%	67%
	Company works closely with suppliers toward long term partnership and improvement	0%	100%	33%	67%
Systems and processes	System and procedure for quality assurance are implemented	0%	100%	33%	67%
	Internal data collection system is established	0%	100%	33%	67%
	Employees involved in different processes know how to evaluate them	0%	100%	33%	33%
Factual decision making process	Decision are made on facts and not subjectively	0%	100%	33%	67%
	Analyzed data informs decision making processes	0%	100%	33%	67%
	Organization uses data for proactive prevention rather than reactive correction	0%	100%	33%	67%

4.5.2. Adoption of TQM in Nanyuki water and Sewerage Company

In Nanyuki water and sewerage company, there were notable varying opinions on the importance of TQM principles and practices as well as the level of adoption. Under management and leadership, whereas majority of the staff appreciate that it is very important to have a top leadership which ensures every employee knows the company vision and objectives, the level of adoption and practice within the utility was rated as high against the expectation of a very high adoption. Moreover, promotion of staff participation in quality management and improvement activities by top leadership, empowerment of employees by management and supervisors, existence of communication channels between employees and management are not very important to the utility, even though some staff did appreciate a fair level of importance. Perhaps this rating explains why the adoption of these TQM practices is not very high.

With regard to staff involvement as a TQM principle, a very high level of importance is attached to enhancing employee effectiveness through training, information sharing and equipping them with relevant tools. However the level of adoption of these TQM related activities is not very high as one would expect. Moreover, employee performance recognition was not rated as a very a important principle which was further depicted on the extremely low rating on adoption of the same in the water utility. Whereas the utility appreciates a high level of importance in listening to employees and taking appropriate action, the level of adoption, on the other hand was

quite low. Discussions with select staff revealed existence of perceived silos which have contributed to perceived tension amongst junior and senior employees.

Results indicate a high level of importance for continuous improvement in Nanyuki water and sewerage company especially on the need to have an active team or quality improvement committee in place as well as use of quality improvement tools and techniques. However, the adoption of these TQM practices is not very high. According to the quality control manager, the water company has encountered several challenges from staffing limitations to prioritization given available resources which has contributed largely to delayed implementation of continuous improvement activities.

Enforcement of supplier quality management is vital for an effective supply chain and procurement system in any industry. In Nanyuki water and sewerage company, it was observed that the level of appreciation of this very important TQM principal was fairly low. In particular, selection of suppliers based on quality was not deemed as an important practice in Nanyuki, and consequently its level of adoption is very low. However, results indicate that the company ascribes a high level of importance on maintenance of high technical standards and meeting quality specifications from the engaged suppliers. The adoption of this practice is fairly high and thus there exists need to ensure full enforcement. Of vast concern was the realization that the company does not conduct regular supplier quality audits, despite demonstrating awareness on the high level of importance for this practice. Low level of interaction between the company and engaged suppliers, which could be vital in building a long term partnership and relationship was observed.

The implementation of systems and procedures for quality assurance is a very important aspect in Nanyuki water and sewerage company, and has a fairly high level of adoption and practice. Moreover, the water company demonstrated its high commitment towards adoption and establishment of internal data collection systems. On the other hand, despite the company revealing a low level of importance on the need for its employees who are involved in processes to develop an understanding on evaluation approaches, it was evident that the level of practice and adoption of the same is fairly high.

An assesment on the importance of factual decision making in Nayuki water and sewerage company revealed divergent opinions from respondents. According to majority of the staff, it is very important to ensure decisions are based on facts and not subjective, and thus need to use analyzed data to inform decision making and processes. However, adoption and practice was noted to be relatively low. According to indepth interviews with select staff, lack of relevant technical skills in data collection, data handling, analysis and overall data management approaches has slowed down a much important adoption and practice.

Results on adoption of TQM in Nanyuki water and sewerage company are presented in **Table .**

Table 4.4: Adoption of TQM in Nanyuki Water & Sewerage Company

TQM component	TQM Statement	Level of Importance		Level of adoption	
		Important	Very important	High	Very High
Management leadership	Top leadership ensures that every employee knows the company vision and objectives	40%	60%	60%	0%
	Top leadership strongly promotes staff participation in quality management and improvement activities	60%	40%	40%	20%
	Manager and supervisors empower employees	60%	40%	80%	0%
	Communication channels are established between employees and top management	40%	40%	60%	0%
	Company fulfils its social responsibilities	60%	40%	80%	20%
Staff involvement	Employees are given information and training they need to do the job effectively	40%	60%	60%	0%
	Employees are given the tools they need to do the job effectively	20%	80%	60%	40%
	Employees are recognized for their performance	40%	40%	0%	0%
	Employees are listened to and acted upon	80%	20%	40%	20%
	Employees are trained on total quality concepts	60%	40%	60%	0%
Customer focus	Customer satisfaction level are measured and monitored	40%	60%	20%	20%
	Information on quality and customers are	80%	20%	80%	0%

	collected and analyzed				
	Customer given the opportunity to inform product development	60%	40%	60%	0%
	The company develops a customer driven listening strategies and measures effectively	20%	60%	60%	0%
	Company develop a robust consumer feedback mechanism	60%	40%	80%	20%
Continuous improvement	There is quality improvement committee	100%	0%	20%	0%
	Improvement teams are active in all department	100%	0%	60%	0%
	Quality improvement tools and techniques are widely used	60%	40%	40%	20%
	The company practices continuous improvement of all its products, services and processes	20%	80%	40%	20%
Supplier quality management	Supplier are selected on the basis of quality aspect	20%	20%	20%	0%
	Company ensures that suppliers can maintain high technical standard and meeting quality specification	0%	100%	80%	0%
	Company regularly conduct suppliers quality audits	40%	60%	0%	0%
	Company works closely with suppliers toward long term partnership and improvement	60%	40%	40%	0%
Systems and processes	System and procedure for quality assurance are implemented	20%	80%	60%	0%
	Internal data collection system is established	20%	80%	60%	0%
	Employees involved in different processes know how to evaluate them	40%	40%	60%	0%
Factual decision making process	Decision are made on facts and not subjectively	40%	60%	40%	20%
	Analyzed data informs decision making processes	40%	60%	20%	40%
	Organization uses data for proactive prevention rather than reactive correction	60%	40%	60%	20%

4.6. Total Quality Management and Customer Value.

In this section, we present findings from the study on the relationship between TQM principles that have been adopted and customer value creation in Nyeri and Nanyuki water and sewerage companies. This involved fitting a multiple linear regression model, often used when the interest is to learn more about the relationship between several independent variables and a dependent variable. For purposes of clarity, total quality management was evaluated/operationalized in three broad categories of customer focus, continuous improvement and top management/team commitment and formed the predictors of interest to this study. Moreover, in assessing customer value, three indicators were considered namely service reliability, customer satisfaction level and quality of services.

Three sets of regression models were fitted for each of the water companies to measure the relationship of TQM against each of the customer value creation indicators. For ease of comparison, the same set of predictors of TQM principals were adjusted for in all the fitted models.

Coefficient of determination, (R^2) was used to establish goodness of fit for the fitted model. R^2 indicates the proportion of variance explained by a model. To establish the significance of TQM practices in each of the water companies, p-values evaluated at $\alpha=0.05$ level of significance were used.

It is also important to address the subject of auto correlation which is a very key assumption in regression modelling. To this end, the study evaluated the assumption based on Durbin Watson statistics, which is a test statistic used to detect the presence of auto correlation in the residuals obtained from regression analysis. The statistic is usually between 0 and 4, where a value of 2 means there is no auto-correlation. Values approaching 0 indicate positive autocorrelation and values towards 4 indicate negative autocorrelation.

4.6.1. Relationship between TQM Principles and Service Reliability.

It was earlier observed that consumers in both Nyeri and Nanyuki Water Company acknowledged a high level of reliability on the services provided to them. On the same note, we have observed the extent to which these water companies have adopted management and leadership, customer focus and continuous improvement TQM

principles. In this section, we provide results from the fitted regression models used to test for the relationship between adoption of TQM principles and service reliability in each of the water companies. Goodness of fit statistics for the models are provided in **Table .**

Table 4.5: Model summary for TQM and service reliability

Model Summary^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Nyeri Water	.850 ^a	.722	.632	3.834	1.851

a. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

b. Dependent Variable: Service reliability

Model Summary^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Nanyuki water	.918 ^a	.842	.703	1.312	1.798

a. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

b. Dependent Variable: Service reliability

The estimated R^2 values for both fitted models in Nyeri and Nanyuki water companies was 0.722 and 0.842 respectively, an indication that TQM principles adopted in each of these water companies contributed 72.2% & 84.2% of the variation observed in service reliability. This implies that the model used for this analysis was a good fit in assessing and drawing inferences related to the objective of interest. Additionally, the value of Durbin Watson statistics was obtained to be 1.851 and 1.798, which is very close to 2 and therefore the assumption of no auto correlations was not violated This provides us with certainty on the validity of the inferences we shall consequently draw from the models.

In **Table** , we present analysis of variance (ANOVA) results for the overall test of significance (omnibus tests) of TQM principles on service reliability. The p-values in this case are estimated from an ANOVA based F distribution.

Table 4.6: ANOVA test for overall significance on service reliability

		ANOVA ^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
Nyeri	Regression	6562.68	13	504.82	5.493	.000 ^b
Water	Residual	4135.80	45	91.907		
	Total	10698.48	58			

a. Dependent Variable: Service reliability

b. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

		ANOVA ^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
Nanyuki	Regression	9321.12	13	717.009	4.795	.000 ^b
Water	Residual	6729.39	45	149.542		
	Total	16050.51	58			

a. Dependent Variable: Service reliability

b. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

Based on the p-value obtained in both models which was less than 0.05, we conclude that overall, TQM principles adopted in the water companies statistically and significantly affect service reliability.

Finally, in **Table** , we provide individual parameter estimates for the model coefficients. Results revealed that the adoption of top management/employee commitment, customer focus and continuous improvement TQM practices were statistically significant (P-values<0.05) towards improved and better service reliability in Nyeri and Nanyuki water companies.

Table 4.7: Parameter Estimates of multiple regression model on service reliability:

		Coefficients ^a			
		Unstandardized Coefficients			
Model		B	Std. Error	t	Sig.
Nyeri	(Constant)	13.242	2.577	5.139	.000
	Customer focus	17.768	5.001	3.553	.008
	Continuous improvement	27.172	4.481	6.064	.000
	Top management/employee commitment	9.076	3.209	2.828	.011

a. Dependent Variable: Service reliability

Coefficients^a

Model		Unstandardized Coefficients			t	Sig.
		B	Std. Error			
Nanyuki	(Constant)	9.242	2.860	3.231	.000	
	Customer focus	11.213	4.320	2.596	.012	
	Continuous improvement	14.216	3.826	3.716	.002	
	Top management/employee commitment	8.539	2.087	4.092	.000	

a. Dependent Variable: Service reliability

These results infer that continuous improvement practices largely contribute to improved service reliability, followed by targeted customer focus and lastly having a top management with committed employees in place. This was further evidenced from the in-depth discussions held with select consumers and company staff. In Nyeri for instance, a consumer indicated that since the water company started paying genuine and prompt attention to its customers, the relationship with the company improved to a very large extent. Most of the issues she used to experience earlier ceased to exist after regular customer surveys were conducted, most of which she was a respondent. She noted that the company arranged for consumer forums where findings from the study were shared and action plans discussed with the consumers.

4.6.2. Relationship between TQM principles and customer satisfaction.

Results revealed an overall high level of customer satisfaction in Nyeri and Nanyuki Water Company. In this section, we provide results from the fitted regression models used to test for the relationship between adoption of TQM principles and overall customer satisfaction in each of the water companies. Goodness of fit statistics for the models are provided in **Table**

Table 4.8: Model summary for TQM and overall Customer Satisfaction

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Nyeri Water	.951 ^a	.904	.828	1.212	1.903

a. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

b. Dependent Variable: Customer satisfaction

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Nanyuki water	.965 ^a	.932	.880	2.901	1.931

a. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

b. Dependent Variable: Customer satisfaction

The estimated R^2 values for the fitted models in Nyeri and Nanyuki water companies was 0.904 and 0.932 respectively, an indication that TQM principles adopted in each of these water companies contributed 90.4% & 93.2% of the variation observed in overall customer satisfaction. This implies that the model used for this analysis was a good fit in assessing and drawing inferences related to the objective of interest. Additionally, the value of Durbin Watson statistics was obtained to be 1.903 and 1.931, which is very close to 2 and therefore the assumption of no auto correlations was not violated. This provides us with certainty on the validity of the inferences we shall consequently draw from the models.

In **Table** , we present analysis of variance (ANOVA) results for the overall test of significance (omnibus tests) of TQM principles on overall customer satisfaction. The p-values in this case are estimated from an ANOVA based F distribution.

Table 4.9: ANOVA test for overall significance on overall customer satisfaction

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
Nyeri	Regression	5309.24	13	408.40	5.732	.000 ^b
	Residual	3206.03	45	71.245		
Water	Total	8515.27	58			

a. Dependent Variable: Customer satisfaction

b. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
Nanyuki	Regression	4921.67	13	378.59	16.338	.000 ^b
	Residual	1042.73	45	23.172		
Water	Total	5964.40	58			

a. Dependent Variable: Customer satisfaction

b. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

Based on the p-value obtained in both models which was less than 0.05, we conclude that overall, TQM principles adopted in the water companies statistically and significantly affect overall customer satisfaction.

Finally, in **Table** , we provide individual parameter estimates for the model coefficients. Results revealed that the adoption of top management/employee commitment, customer focus and continuous improvement TQM practices were statistically significant towards better customer satisfaction in Nyeri and Nanyuki water companies.

Table 4.10: Parameter estimates of multiple regression model on overall customer satisfaction:

Coefficients^a

Model	Unstandardized Coefficients			t	Sig.
	B	Std. Error			
Nyeri (Constant)	8.210	.983		8.352	.000
Customer focus	17.034	1.215		14.02	.000
Continuous improvement	14.763	2.098		7.034	.000
Top management/employee commitment	12.672	2.002		6.323	.000

a. Dependent Variable: Customer satisfaction

Coefficients^a

Model	Unstandardized Coefficients			t	Sig.
	B	Std. Error			
Nanyuki (Constant)	3.098	.217		14.277	.000
Customer focus	21.032	3.021		6.962	.000
Continuous improvement	16.920	2.482		6.818	.000
Top management/employee commitment	15.092	1.053		14.332	.000

a. Dependent Variable: Customer satisfaction

These results infer that customer focus largely contributes to better and overall customer satisfaction while holding all other factors in top management and

continuous improvement constant. In other words, a utility with an extremely high level of adoption on customer focus practices is more likely to record a better overall customer satisfaction. Continuous improvement is the second largest contributor of better overall customer satisfaction while controlling for other factors.

4.6.3. Relationship between TQM principles and quality of services provided.

At least 97% of water consumers in Nyeri Water Company indicated that they were satisfied with quality of services they are receiving. In this section, we provide results from the fitted regression models used to test for the relationship between adoption of TQM principles and quality of services in each of the water companies. Goodness of fit statistics for the models are provided in **Table** .

Table 4.10.1: Model summary for TQM and quality of services

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Nyeri Water	.896 ^a	.803	.662	1.217	1.972

a. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

b. Dependent Variable: Quality

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Nanyuki water	.926 ^a	.857	.698	1.452	1.887

a. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

b. Dependent Variable: Quality

The estimated R^2 values for the fitted models in Nyeri and Nanyuki water companies was 0.803 and 0.857 respectively, an indication that TQM principles adopted in each of these water companies contribute 80.3% & 85.7% of the variation observed in quality of services. This implies that the model used for this analysis was a good fit in assessing and drawing inferences related to the objective of interest. The value of Durbin Watson statistics was obtained to be 1.972 and 1.887, which is very close to 2 and therefore the assumption of no auto correlations was not violated. This provides us with certainty on the validity of the inferences we shall consequently draw from the models.

In **Table**, we present analysis of variance (ANOVA) results for the overall test of significance (omnibus tests) of TQM principles on quality of services. The p-values in this case are estimated from an ANOVA based F distribution.

Table 4.10.2: ANOVA test for overall significance on quality of services

		ANOVA ^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
Nyeri	Regression	1007.23	13	77.47	4.021	.000 ^b
	Residual	867.02	45	19.27		
Total		1874.25	58			

a. Dependent Variable: Quality

b. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

		ANOVA ^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
Nanyuki	Regression	1209.84	13	93.06	3.519	.001 ^b
	Residual	1190.22	45	26.45		
Total		2400.06	58			

a. Dependent Variable: Quality

b. Predictors: (Constant), Customer focus, Continuous improvement, Top management/employee commitment

Based on the p-value obtained in both models which was less than 0.05, we conclude that overall, TQM principles adopted in the water companies statistically and significantly affect quality of service.

Finally, in **Table**, we provide individual parameter estimates for the model coefficients. Results revealed that the adoption of top management/employee commitment, customer focus and continuous improvement TQM practices were statistically significant towards improved and better service reliability in Nyeri and Nanyuki water companies.

Table 4.10.3: Parameter Estimates of multiple regression model on quality of service:

		Coefficients ^a			
		Unstandardized Coefficients			
Model		B	Std. Error	t	Sig.
Nyeri	(Constant)	6.215	1.233	5.041	.001
	Customer focus	10.442	1.402	7.448	.000

Continuous improvement	15.298	2.211	6.919	.000
Top management/employee commitment	13.382	1.980	6.759	.000

a. Dependent Variable: Quality

Coefficients^a

Model	Unstandardized Coefficients			t	Sig.
	B	Std. Error			
Nanyuki (Constant)	5.023	.933	5.384	.000	
Customer focus	9.667	1.066	9.068	.000	
Continuous improvement	13.956	2.061	6.771	.000	
Top management/employee commitment	13.210	2.005	6.589	.000	

a. Dependent Variable: Quality

These results infer that continuous improvement largely contributes to better and overall quality of service while holding all other factors in top management and customer focus constant. A water company that adopts and practices high level of continuous improvement practices is more likely to record a better overall quality of service. Top management and employee commitment practice is the second largest contributor for better quality service delivery while controlling for other factors.

4.7. Regression model diagnostics

Performing model goodness-of-fit and diagnostic checks are vital in order to know the reliability of the analysis and subsequently, the inference based on the model output. We have already performed and presented some of these diagnostics earlier. For instance, in our exploratory analysis, we introduced cronbachs coefficient alpha as a measure of internal consistency, whose value was 0.821.

Additionally, as a measure of regression model goodness of fit statistics, we have elaborately provided the coefficient of determination (R^2) for each of the fitted regression models. The value of R^2 is important as it helps explain how much of the variation in dependent variable is actually explained by the predictor variables.

To address and evaluate regression assumption of no auto correlations, we have used Durbin Watson statistic for each of the fitted models. Durbin Watson tests the null hypothesis that the residuals are not linearly auto correlated, and only analyses linear auto correlation and only between immediate neighbours, usually referred to as first order effects. A value of 2 (or a value approaching 2) is an indication that regression assumption has not been violated.

4.8. Challenges faced by water companies in promoting customer value.

The challenges faced by two water companies in promoting customer value were captured through qualitative analysis by posing the question “what challenges do you encounter in promoting customer value? The nine managers of the two companies alluded to the fact that sustaining customer satisfaction is an uphill task which requires constant engagement with the customer so as to address the ever changing customer needs. The nine managers at Nanyuki and Nyeri Water stated that tariff adjustment is one of key issues that irritate customers and this is a clear indication that customers at both utilities are price sensitive. Four managers at Nanyuki stated that, the issues of unreliable supply during dry season i.e. December-February presents a huge challenge of meeting the customer demands and this is the period where many customers’ complaints are recorded.

The nine managers at the two utilities unanimously suggested that the heterogeneous nature of the customers makes it difficult to design a singular product or services that can homogeneously address the needs of the diverse customers. The customers at these two utilities are segmented into five main categories i.e. institutional, commercial, affluent, middle-income and low-income and don’t essentially occupy exclusive areas except for the affluent and thus designing homogenous product then become a challenge. Five managers at Nanyuki Water noted that the low penetration and adoption of technology presents another challenge of promoting customer value. Although adoption of MPESA payment and SMS communication is highly witnessed, the company has not adopted technologies that can be deployed at ease to address customer needs.

Nyeri and Nanyuki Water and Sewerage companies are also faced with financial challenges in promoting customer value. The limited resources are directed to operation and maintenance and payment of crucial services and thus the two companies try to promote customer value by keeping good water quality and this reduces the opportunities to engage in frequent promotional campaigns and appropriate customer targeting.

4.9. Summary

This chapter has generated key results relevant and specific to the objectives of interest to this study. Data was collected from a random sample of sixty water consumers across Nyeri and Nanyuki water companies as well as sampled staff in the water companies. Moreover, in-depth discussions conducted during the data collection exercise added more rigor to the study thus enhancing the validity of the findings provided in this chapter.

The analysis in this study was based on a robust methodology which provides certainty and assurance that the findings are reliable. For instance, throughout this analysis, the study has leveraged on goodness of fit statistics to test on validity of the fitted models. Minimum regression model assumptions that ought to be met such as the assumption of no autocorrelation were tested and not violated.

It is quite evident from the results that varied sentiments exist on the importance of TQM principles across the two water companies. On the same note, the adoption of TQM practices is also observed to vary. Whereas it was not in the interest or scope of this study to compare application of TQM principles in the two water companies, Nyeri water and Sewerage Company is observed to have a much higher appreciation and adoption of TQM practices. On the other hand, Nanyuki water and Sewerage Company exhibited distinct variations in its staff appreciation of the importance of TQM and adoption at the company. Overall, the two water companies have adopted some TQM practices even though there exists an opportunity to perform better than the current state.

Further, this analysis has revealed an existing relationship between adoption of TQM principles and customer value in both water companies. It is evident that customer focus, continuous improvement as well as top management/employee commitment plays a crucial role in enhancing customer value. Moreover, results have revealed varying level of impact of TQM principles on each of the customer value indicators (Quality of service, Customer satisfaction and reliability of service), where some TQM principles have more impact on say quality of service compared to the rest.

With the appreciation of the fact that the water companies cannot be scored to have fully adopted TQM principles, which in effect implies customer value is yet to be fully achieved based on the already established relationship, this chapter has presented

challenges that are facing the water companies towards maximum possible adoption. To this end, results reveal that tariff adjustments by the water companies, fluctuations in water supply due to seasonality, heterogeneous nature of the water consumers, low adoption of technology as well as limited resources (financial and people) are some of the obvious challenges that water companies are continuously facing.

These findings provide us with very valuable and edifying insights which allow us to draw conclusions, recommendations and opportunities for further research in the next chapter.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter discusses the findings and conclusions of the research. It also includes recommendation with implications for water utilities and policy makers.

5.2. Summary of the Findings

The summary of the findings are discussed along the key objectives of the study;

5.2.1. Determine total quality management principles adopted in Nyeri and Nanyuki water companies.

From the research findings, Nyeri water strongly agrees to the importance of total quality management while Nanyuki Water has a varied agreement which ranged between agree to strongly agree. This clearly demonstrates why Nyeri Water has continued to occupy the apex of the water industry for many years (WASREB). However it is important to note that indepth discussion with several managers of the two utilities indicate that their level of understanding and comprehension of total quality management was limited. Indeed some stated that what they can recall on quality management is what they learnt at school. Similarly it is important to note that Nanyuki water does not have a quality statement while Nyeri has quality statement.

Results further revealed that the adoption of quality management at the two water utilities varies considerably. However, what was quite notable in the two utilities is the low adoption of continous improvement and staff engagement in quality management particulalry on training and limited understanding of what continuous improvement constitutes. However despite low adoption of the continous improvement principle, the level of customer satisfaction is very high at both utilities. It is also worth mentioning that a quick walk around the two utilities showed a number of tools that have been adopted and are currently in place to promote continuous improvement. In fact throughout the interview, the managers from the two utilities demonstrated how they have implemented best practices from other utilities across the globe to improve service delivery and management practices. However in filling the questionnnaire the adoption of continous improvement principle was scored low a clear indication of disconnect between practice and understanding.

5.2.2. Determine relationship between the adopted total quality management principles and customer value

It was further evident from the study that the principle of continuous improvement, customer focus, top management/employment commitment are very critical in driving service reliability, customer satisfaction and service quality. Therefore water utilities aiming to create customer value should give attention to these three quality management principles. The study further demonstrated that holding other factors constant i.e. top leadership/ employment and continuous improvement, customer focus plays a very critical function in promoting customer value.

5.2.3. Assess challenges encountered in promoting customer value in water service provision

The managers of the two utilities seems to read off the same script as they all alluded to the fact that tariff adjustment is a challenge faced by the utilities in promoting customer value. This could be indication of price sensitive consumers irrespective of their location and thus water pricing could be one single element that affects consumers across all the utilities. Additionally, financial constraint was mentioned as other challenge that hinders promotion of customer value as utilities are faced with the act of balancing between ever growing technical needs and promoting management practices that promote customer value.

5.3. Conclusion

The findings of this study shows that the two water utilities have demonstrated some level of adoption of quality management although not strategically embedded in the operations of the utilities. Simialrly it is evident from the study there is a strong relationship between customer focus and continous improvement with customer value. We therefore conclude that driving customer value is operationalized through service reliability, customer satisfaction and service quality.

Despite reported challenges encountered by the two water utilities in adopting qulaity management, there is evidence of willingness by the management to continue with improved water services. However, this can only happen in an environment where the top management will consciously commit to full implementation and monitoring of quality management practices.

With an overall customer satisfaction levels of 96%, the two water utilities should strive toward sustaining this gain to ensure customers continue to get better services and value for their money. The companies should avoid complacency that would relegate customer satisfaction to the lower levels since this component was noted to be very critical in promoting customer values.

5.4. Limitations of the Study

The study sampled only two water companies out of 91 licensed water companies and thus limiting generalization to the wider sector. Despite repeated assurance on confidentiality, it was observed during the data collection exercise that some staff in the water company were quite reluctant to share details especially in areas where the water company was deemed to perform poorly, perhaps due to perceived fear of intimidation, which may have contributed to some level of bias. The researcher believes that more rigor could have been achieved in this study had we further held key informant discussions with the water regulatory body, (WASREB), Water Sector Trust Fund, Water Services Providers Association and select informants from the ministry of water and irrigation.

5.5. Recommendations

Water utilities largely focus on the technical operation of water services delivery and have less focus on management of the entire processes and therefore the following recommendations are aimed at promoting and embedding management practices that would enhance effectiveness and efficiency in water services delivery:

The Water Service Provider association (WASPA) should introduce a thematic area around quality management practices in its benchmarking and peer learning programme. This would broaden the knowledge of utility managers on quality management and allow cross-fertilization of ideas.

Similarly the Water Services Regulatory Board (WASREB) should develop a guideline for adoption of quality management principles since most utility managers tend to focus on technical issues at the expense of managerial issues. The development and adoption of guidelines on quality management will address the inefficiencies that have plagued the sector for many years. Similarly the county government and state department of water could support the utilities to embark on certification processes

alongside implementation of quality management.

Additionally, Kenya Water Institute in collaboration with other universities should introduce a course on corporate government and quality management in its curriculum aimed at top managers of the water utilities. This would enable the managers of the utilities acquire necessary knowledge and skill on management practices and improve the running of the companies.

Nyeri and Nanyuki water companies should build the capacity of the team on quality management through training, benchmarking with other industries and develop a roadmap/strategy for full implementation of quality management. It was noted during the study, that some of the managers of the utilities were not familiar with the quality management concept and therefore improving managers' knowledge is very critical in adoption of the same.

5.6. Suggestions for further Study

Since this study sampled only two water companies, it would be prudent to expand the scope to a good sample that would allow generalization to the wider sector. It would be necessary to follow up this study with a longitudinal research where observation of the relationship between quality management and customer value in Kenya Water companies may be conducted. The concept of customer value was evaluated using three indicators. Whereas this is a good measure given the scope of the study, the researcher appreciates existence of many other customer value indicators that should interest future researchers to extend from this study. Additionally, given the range of services offered by water utilities including sanitation, future research should factor in such dynamics as opposed to a generalized approach.

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APPENDIX

RESEARCH QUESTIONNAIRE (Managers)

This questionnaire is part of a study on Quality management and customer value in Nyeri and Nanyuki water and Sewerage Services providers in Kenya for my partial fulfilment of the Requirements for the award of Degree of Master of Business Administration (MBA), University of Nairobi. The responses will remain anonymous and that the information that is provided will be treated as confidential at all times.

The questionnaire consists of three main sections. Please read the questions carefully before you answer.

Section 1: General Information

In this section I would like to know about your organization in general. Please tick (✓) in the appropriate boxes or fill in the blanks

1. What is your position in the company

Managing Director Commercial/finance Manager Technical manager
Human resource Manager Quality control manager Others (Please specify)

2. To which category (size) does your company belong/falls?

Small Medium Large Very large

3. What is the status of the ownership of your company

County owned privately owned Joint venture others (please specify).....

Section 2: Quality Management principle

In this section I would like to know your opinion on total quality management and which one have been applied by your company. Please circle the number of the response which best represents the level of agreement that indicate whether your

1=Strongly disagree 2=Disagree 3= Neutral 4= Agree 5=Strongly agree

Statement	Degree of agreement				
1. TQM is a management philosophy and practice to ensure effective and efficient use of all available resource	1	2	3	4	5
2. TQM aims to make customer satisfaction as focus of a business	1	2	3	4	5
3. TQM embraces factual decision making	1	2	3	4	5
4. TQM put emphasis on the use of statistical technical to ensure consistency of produce and process quality	1	2	3	4	5
5. Continues improvement is central to total quality management	1	2	3	4	5
6. Training and education are vital element with respect to TQM	1	2	3	4	5

implementation					
7. Good organizational culture in importance in driving quality management	1	2	3	4	5
8. Commitment and leadership from the top in critical in quality management	1	2	3	4	5
9. Proper supplier involvement is central in sustaining quality management	1	2	3	4	5

Section 3: Application of quality management principle

In this section, I would like to find out the level of TQM implementation. Please circle your perception on the importance of each statement listed below and the extent practice in your organization

A: Importance (The level of perceived importance of the factor)

1=Not important at all 2= Not important 3=Neutral important 4=Important 5=Very Important

B: Practice (the extent or degree of the practice in your organization)

1=Very low 2=Low 3=Moderate 4=High 5=Very high

Statement	Degree of agreement					Practice				
	1	2	3	4	5	1	2	3	4	5
Management leadership										
1.Top leadership ensures that every employee knows the company vision and objectives										
2. Top leadership strongly promotes staff participation in quality management and improvement activities										
3. Manager and supervisors empower employees										
4. Communication channels are established between employees and top management										
5. Company fulfils its social responsibilities										
Staff Involvement										
1. Employees are given information and training they need to do the job effectively										
2. Employees are given the tools they need to do the job effectively										
3. Employees are recognized for their performance										
4. Employees are listened to and acted upon										
5. Employees are trained on total quality concepts										
Customer Focus										
1. Customer satisfaction level are measured and monitored										

2. Information on quality and customers are collected and analysed	1	2	3	4	5	1	2	3	4	5
3. Customer given the opportunity to inform product development	1	2	3	4	5	1	2	3	4	5
4. The company develops a customer driven listening strategies and measures effectively	1	2	3	4	5	1	2	3	4	5
5. Company develop a robust consumer feedback mechanism	1	2	3	4	5	1	2	3	4	5
Continuous Improvement	1	2	3	4	5	1	2	3	4	5
1. There is quality improvement committee	1	2	3	4	5	1	2	3	4	5
2. Improvement teams are active in all department	1	2	3	4	5	1	2	3	4	5
3. Quality improvement tools and techniques are widely used	1	2	3	4	5	1	2	3	4	5
4. The company practices continuous improvement of all its products, services and processes	1	2	3	4	5	1	2	3	4	5
Supplier quality management	1	2	3	4	5	1	2	3	4	5
1. Supplier are selected on the basis of quality aspect										
2. Company ensures that suppliers can maintain high technical standard and meeting quality specification	1	2	3	4	5	1	2	3	4	5
3. Company regularly conduct suppliers quality audits	1	2	3	4	5	1	2	3	4	5
4. Company works closely with suppliers toward long term partnership and improvement	1	2	3	4	5	1	2	3	4	5
Systems and processes	1	2	3	4	5	1	2	3	4	5
1. System and procedure for quality assurance are implemented	1	2	3	4	5	1	2	3	4	5
2. Internal data collection system is established	1	2	3	4	5	1	2	3	4	5
3. Employees involved in different processes know how to evaluate them	1	2	3	4	5	1	2	3	4	5
Factual decision making process	1	2	3	4	5	1	2	3	4	5
1. Decision are made on facts and not subjectively	1	2	3	4	5	1	2	3	4	5
2. Analysed data informs decision making processes	1	2	3	4	5	1	2	3	4	5
3. Organization uses data for proactive prevention rather than reactive correction	1	2	3	4	5	1	2	3	4	5
What challenges do you encounter in promoting customer value										

Customer Value (Customer section)

2.0 Are you a customer/client of the WSP?

- Yes
- No

2.1 If yes, do you get water consistently?

- Yes
- No

2.2 Do you consider the services of the company reliable?

- Yes
- No

2.3 Does the company respond to your queries promptly?

- Yes
- No

2.3. Does the company has mechanism/platform to respond to your dissatisfaction

- Yes
- No

2.4. What mechanism does the company use to engage you as a customer

- Face to face
- SMS
- Stakeholder conference
- WhatsApp page
- Direct calls

Other_____

2.5. How often does the company consult with you as a customer

- Weekly
- Monthly
- Quarterly
- Annually

Other_____

2.6. Are you satisfied with the quality of the services provided

- Yes
- No

2.7. Do you feel appreciated by the company as a customer

- Yes

No

2.8. If No, what makes you feel unappreciated?

1.

2.

3.

3.0. Do you feel you are getting value for the water and sewerage services you are paying

Yes

No

3.1. If no what makes you feel, you are not getting value for your money. Kindly list the reasons.

3.2. Are you satisfied with the services provided by the company?

Demographics

<u>Sex</u>	<u>Age</u>	<u>Occupation</u>	<u>Education level</u>	<u>Settlement</u>
<input type="checkbox"/> Male <input type="checkbox"/> Female	<input type="checkbox"/> <20 <input type="checkbox"/> 20-29 <input type="checkbox"/> 30-39 <input type="checkbox"/> 40-49 <input type="checkbox"/> 50-59 <input type="checkbox"/> >60	<input type="checkbox"/> Formal employment <input type="checkbox"/> Informal employment <input type="checkbox"/> Enterprise owner <input type="checkbox"/> Subsistence farmer <input type="checkbox"/> Commercial farmer <input type="checkbox"/> Dairy farmer <input type="checkbox"/> Farm worker <input type="checkbox"/> Pastoralist <input type="checkbox"/> Herder	<input type="checkbox"/> None <input type="checkbox"/> Adult education <input type="checkbox"/> Primary incomplete <input type="checkbox"/> Primary complete <input type="checkbox"/> Secondary incomplete <input type="checkbox"/> Secondary complete <input type="checkbox"/> Tertiary <input type="checkbox"/> University/ Postgraduate	<input type="checkbox"/> Permanent <input type="checkbox"/> Temporary