QUALITY MANAGEMENT SYSTEMS AND PERFORMANCE OF SELECTED WATER SERVICE PROVIDERS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

The study on the influence of quality management systems on the performance of selected water service providers in Nairobi City County formulated four specific objectives. These included to determine the influence of relationship management, leadership, quality standards and process approach on the performance of selected water service providers. The current study was anchored on the following theories: commitment-trust theory, the path-goal leadership theory, Juran's theory of Quality, and the Six Sigma Model. This study adopted descriptive study design, the target population for this study comprised the five water service providers in Nairobi City County, Kenya. The sample size for the study was 60 purposively targeted respondents from the selected five water service providers (WSPs) in Nairobi City County, Kenya. The study used questionnaires to collect primary data, while secondary data was collected by use of secondary data collection sheet and analyzed using SPSS software version 26.0 which comprised inferential and descriptive data analysis techniques. From the inferential and descriptive statistics, the study found that, found that, there was statistically significant relationship between customer relationship management and quality standards and the performance while leadership and process approach had statistically insignificant relationship with the performance of selected water service providers in Nairobi City County. Therefore, quality management systems influenced the performance of selected water service providers in Nairobi City County, Kenya through customer relationship management and quality standards and these findings were compatible with findings by Masinde & Simba (2017) and Agus et al (2020). Also, the study recommended a future quantitative study on the impact of leadership strategies on Nairobi Water.

Key words: Relationship Management, Leadership, Quality Standards, Performance.

INTRODUCTION

Due to the increase in competition in almost all aspects and fields, including in the business environment, quality management systems (QMS) have grown and gained traction across the world (Zaharias & Pappas, 2016). This is because achieving quality policies, objectives, and offerings is fundamental for competitiveness, and these are all results of QMS. QMS entails the formalized system that documents processes, responsibilities and procedures for accomplishing

objectives, policies and, eventually, offerings (goods and services) (Chen et al., 2020). Besides, QMS assist in the coordination and direction of a firm's activities to meet client and regulatory requirements and enhance its efficiency and effectiveness continuously, which subsequently results in improved organizational performance. The concept of quality rose in medieval Europe in the later 13th century when the artisans started organizing into unions known as guilds (Alauddin & Yamada, 2019). Besides, during the inception of the industrial revolution, the ancient QMS were used as standards for controlling process and product outcomes (Keinan & Karugu, 2018). Besides, the QMS has grown to incorporate modern industrial processes and customers' requirements. Currently, there are four types of QMS, including AS9100, CMMI, ISO 9001 and Six Sigma (Alauddin & Yamada, 2019). Besides, there are various principles that govern the QMS and quality management, including improvement, customer focus, and engagement of people, relationship management, process approach and leadership (Keinan & Karugu, 2018).

On the other hand, performance in the water service industry in Nairobi City County, use various indicators, including increased repeat business figures, revenue generation, production, customer referral numbers, high marks on customer feedback, customer focus and satisfaction and effectiveness among others (Alnachef & Alhajjar, 2017). According to Díezet al. (2020), QMS and a firm's performance are related. This is because the implementation of QMS leads to the improved operational performance of businesses and institutions, which impacts the other dimensions of performance, including customer satisfaction, financial performance and other stakeholders' performance (Alghamdi, 2018). However, there exist research gaps and specific constructs of QMS and performance of water service providers, and thus, this study seeks to investigate dimensions of QMS and performance of the selected water service providers.

Global Perspective of Performance of Water Service Providers

Globally, according to McBride and Berman (2023) the total size of the water market is estimated to be $500 billion. In the US, the total size of the water market is approximately to be $100 billion and the water industry is made up of numerous sub-sectors, the most prominent of which include water utilities, water treatment technologies, water infrastructure, water efficiency enhancements, and water monitoring. Besides, in the US, the Environmental Protection Agency (EPA) classifies these water systems according to the number of people they serve, the location from which their water comes, and whether or not they maintain the same clientele year-round. According to Salas (2023) in 2022, these American water and sewer systems were the most profitable in the country because for the fiscal year ending in 2022, American Water Works reported earnings of $3.8B. As alluded by Environment Agency (2020), the American Water is the largest publicly traded corporation in the water and wastewater utility market in the US and the transportation of the 39 billion gallons of water used daily by the public in the country requires more than 2 million miles of pipes. Regarding the performance of water service providers in the UK, there are 21 regional water and wastewater corporations and further 6 water-only companies in England and Wales.

Enterprise value, a popular metric for measuring company worth, considers both the water firms' market capitalization and their individual net debt levels (UK Parliament, 2022). All of England's water companies with regulated operations have a total enterprise value of £80 billion.

Ibis World (2023) reported that, over the five years through 2022, the Water Supply industry in China increased sales by 3.3% annually, to a total of $32.0 billion. This expansion was fueled by both rising demand and tap water prices. Also, with a growing population and a fixed supply of water, the price of water was rising steadily. Xu et al., (2019) added that, China was one of 13 countries the UN has classified as having a water issue and the country's dilemma was exacerbated by the country's large landmass, varied geography, and unequal distribution of water resources (Collins & Reddy, 2022). However, Ibis World (2023) claimed that, nearly half of China's aquifers were too filthy to be used in industry or agriculture, and 80-90% of the country's groundwater was deemed unfit for human consumption. Also, large-scale depletion of groundwater resources was ongoing across China, maybe to the tune of 60 billion cubic metres annually, despite efforts to transfer water supplies to high-stress areas like the North China Plain (Collins and Reddy, 2022).

Regional Perspective of Water Service Providers

A new World Bank analysis found that while some African water utilities were making significant efforts to provide water access, the vast majority have failed to keep up with rising demand or maintain their ageing infrastructure. As a result, only approximately a third of city dwellers had access to municipal water mains serving their dwellings (AFD, 2023). In Nigeria, only 33% of the population who had access to proper sanitation facilities, whereas 48% had ready access to potable water. The 2023 USAID reported highlights that, despite its economic might, Nigeria ranked towards the bottom in water service outcomes among West African countries since access to safe drinking water and sanitary facilities was a constant struggle for many people in Nigeria.

In regard to performance of water service in Tanzania, there was a 9% increase in annual water abstraction, up to 33.3 million cubic metres, and a 6% increase in annual water production, up to 30.3 million cubic metres (Ewura, 2023). In addition, there was a 16% increase in the overall number of water connections, which was 140,446. Also, total revenue increased by 21% to 14.9 billion Tanzanian shillings and in the 2020/21 fiscal year had seen a rise in staff productivity from the previous year's (The World Bank, 2023). Also, according to the SDGs' definitions, 61% of Tanzanian households had access to a basic water-supply, while only 32% had access to adequate sanitation and 48% had access to basic hygiene (Global Waters, 2022). Besides, only 38% of the people in Tanzania used water that came directly from a pipe, but another 34% used water from improved, non-piped sources. Also, 13% of people used surface water for drinking, 15% used water from unimproved sources, 11% used water from scarce sources, and 61% used water from basic sources (Musonge et al., 2022). The World Bank (2023) added that 60% of the water supply in urban areas comes from pipes, with three in 10 homes (31% of all homes) having their own

piped water supply, 2 in 10 homes (21% of all homes) getting their water from a neighbor's piped supply, and 1 in 10 homes (9%) getting their water from a public tap.

In Uganda, from June 2019 to June 2020, the share of urban residents using an upgraded water supply fell from 79% to 70.5%. The percentage of persons who had access to safe, regulated water that was provided on the premises had remained stable in urban areas (Global Waters, 2020). Also, the 531 unnumbered neighborhoods in large cities and small towns that received service were all within the city limits. According to Global Waters (2020) the majority of Uganda was covered with an abundance of surface water, with the White Nile and Lake Victoria accounting for the majority of the country's renewable surface water resources. Additionally, there were 45 million people in this country, but 38 million of them (or 83% of the population) lacked access to a safe, properly managed water supply, and 7 million (or 17% of the population) lacked access to modern sanitary facilities. Also, smaller towns and rural growth areas saw a decline in piped water supply system functionality from 94.3% in June 2019 to 81.23% by the end of the same month (Global Waters, 2020).

Local Perspective of Water Service Providers

In Kenya, service providers are responsible for developing, maintaining, and improving the water supply system, which includes but is not limited to water collection, water treatment, water distribution, water quality management, water sewage treatment, and water reuse (Wasreb, 2022). After the law was passed, 91 separate WSPs across the country began taking on the role of service delivery. Also, since 85% of Kenya was considered arid or semi-arid, the country's water supplies were under strain and are not distributed fairly. Also, according to Awwda.go.ke (2022) Kenya relied on water supplies that originated from far beyond its borders. Besides, nearly two-thirds of Kenyans had access to safe drinking water and only 29% of Kenyans used the most up-to-date toilets available (Wasreb, 2022).

Additionally, for the 16 years in a row, Water Services Regulatory Board (WASREB) recognized NYEWASCO as the nation's top-performing utility provider in 2020/2021 (Wasreb, 2022). Also, the Kenyan WSPs faced challenges including; high rates of non-revenue water, low rates of metering of connections, low rates of efficiency in revenue collection, high rates of operation and maintenance costs, governance concerns, limited finances, and low levels of service quality. Also, other emerging issues in Kenya’s WSP were population expansion, droughts, deforestation, floods, and insufficient management of the country's water supply (Awwda.go.ke, 2022). This made the urban slums of Kenya particularly at risk for water contamination.

Statement of Problem

From the past theoretical and empirical literature, service providers are responsible for developing, maintaining, and improving the water supply system (Wasreb, 2022). In order to meet many

customers and to get water into as many homes as possible, these WSPs in Nairobi City County partner with the other water service providers and water sources such as Ndakaini Dam which also draws its water from Kakuyu, Thika and Githika rivers. Both the operational and financial performance of these WSPs in Nairobi City County have been low or declining due to various aspects such as high rates of non-revenue water, low rates of metering of connections, low rates of efficiency in revenue collection, high rates of operation and maintenance costs and so on (Awwda.go.ke, 2022). The decline in operational and financial performance of these WSPs in Nairobi City County is due to 60% of the population not having access to a consistent supply of clean water (Jefford, 2020). Also, due to financial constraints, WSPs were unable to fill the deficit of 260 million litres per day since the city of Nairobi requires 810 million litres of water per day but only produces 550 million litres (Nairobiwater.co.ke, 2022). Since these issues were largely related to quality management systems and the performance of selected water service providers, the study sought to investigate the relationship management, leadership, process approach and quality standards on the organizational performance of the five selected water service providers in Nairobi City County.

Additionally, there exist research gaps because the research focused on limited constructs of QMS and or on performance, as shown above, and the study was carried out in the five selected water service providers in Nairobi City County. Additionally, according to Nairobiassembly.go.ke, (2022), the financial performance of NCWS Company Limited which is the biggest water service provider in Nairobi County, declined in the recent years from total revenue of Kshs 9.30 billion to Kshs 9.18 billion despite a grant income of Kshs 5.32 million from 2019 to 2020. Besides, the company's other expenses rose by approximately Kshs 62 million leading to a deficit of around Kshs 850.82 million in 2020 from net surplus of Kshs 61.20 million as also net assets declined from Kshs 2.61 billion to Kshs 2.47 billion during the same period (Nairobiassembly.go.ke, 2022). In this regard, this study sought to investigate the relationship management, leadership, process approach and quality standards on the organizational performance of the five selected water service providers in Nairobi City County.

Research Objectives

General Objective

The main purpose of the study was to assess the influence of quality management systems on the performance of selected water service providers in Nairobi City County, Kenya

Specific Objectives

i. To determine the influence of relationship management on the performance of the selected water service providers in Nairobi City County, Kenya.
ii. To assess the influence of leadership on the performance of the selected water service providers in Nairobi City County, Kenya.

iii. To determine the influence of quality standards on the performance of the selected water service providers in Nairobi City County, Kenya.
iv. To assess the influence of process approach on the performance of the selected water service providers in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Framework

A theory is an organized description of the link among phenomena that offers a generalized explanation to an occurrence and, as a result, provides the researcher with a framework for the study. According to Holbert, (2018), a theoretical framework is a description of a phenomenon that systematically explains the link among provided phenomena with the aim of explaining, anticipating, and managing such a phenomenon. In this regard, this study has been hinged on theories including; commitment-trust theory, the path-goal leadership theory**,** Juran's theory of Quality, and the Six Sigma Model as follows:

Commitment-Trust Theory

Morgan and Hunt developed the theory in 1994 considering two factors that were paramount for a successful relationship (Jeong & Oh, 2017). For the theorists, relationship management include creating relationships with customers and by fulfilling their needs and honoring obligations. This is based on the fact that long-lasting relationships with customers is more important than short term profits. According to the theory, trust is the confidence that both the business and their customers had that none of them harmed or endanger the other (Ashraf et al., 2017). Besides, trust and commitment can be done through follow-ups after purchase or providing feedback channels, and as a result, both parties will cooperate in ensuring that their needs are well fulfilled. In such a relationship based on trust and commitment, the customer gets all they expect to get from the business and at the same time they feel valued (Caldwell & Holloway, 2017). This leads to customer loyalty which is a very important aspect of any business that is determined to grow. Relationship management is essential for any organization; therefore, it is essential that the organization under review creates and maintains effective relationships with their customers to enable customer loyalty which results from effective fulfillment of customer needs. This in turn increases the overall productivity of the company.

To build customer loyalty in organizations, the commitment-trust theory has been widely used across the world and this means it can be also applied in this research to better explain the research objective to ascertain the influence of relationship management on the performance of water service providers. This is because commitment-trust theory argues that, long-lasting relationships with customers is more important than short term profits and in such a relationship based on trust and commitment, the customer gets all they expect to get from the business and at the same time they feel valued (Caldwell & Holloway, 2017). Besides, according to the theory, effective relationships with their customers creates customer loyalty which results from effective fulfillment of customer needs, and in turn increases the overall productivity of the company. This means that, by establishing long-lasting relationships with customers than short term profits, water service providers create customer loyalty, and in turn increases its overall performance.

The Path-goal Leadership Theory

This theory was developed by House in 1971 as a version of contingent theory of leadership. This theory suggests that leaders are the most effective when there is a high degree of synergy between themselves and their subordinates in terms of the conditions under which workers are expected to thrive and excel (Bans-Akutey, 2021). To be successful, a leader needs to display all four of the following characteristics: focus on the end result, be directive, provide assistance, and encourage teamwork and participation. Furthermore, it is generally accepted that a leader's style of operation significantly affects the degree of productivity reached by employees, which in turn has a direct consequence on the performance of the business as a whole. An increase in production is a direct result of an effective leader's approach. Leadership that inspires followers to work toward organizational objectives is also crucial (Davis, 2017).

According to Davis (2017) path-goal leadership theory has been widely applied in various fields and this makes it relevant to this study. Besides, the theory relates to the research objective to determine the influence of leadership on the performance of water service providers. This is because according to the path-goal leadership theory, leaders' effectiveness is related to the degree of complementation between leaders and followers to encourage good performance levels (Makori & Kinyua, 2019). Furthermore, the Path-Goal theory of leadership suggests that leaders will need to engage in a wide range of leadership behaviors based on the circumstances of the situation they are in and the demands imposed upon them (Alsarrani et al., 2021). Consequently, managers are accountable for removing roadblocks, managing situations as an ongoing process to ease the way toward goals, and making sure that their direct reports' individual objectives align with those of the organization. Developing a supportive environment, setting clear goals, and offering consistent reinforcement can all help achieve this (Odollo, 2019). This theory relates to the research objective on leadership because it argued that, an effective quality management process depends more on the organizational leaders that is, how they behave and how they structure and guide their employees. Great leadership in an organization helps followers to own the organizational goal and pull forces in achieving goals related to quality and global quality standards (Rahman et al., 2020).

Juran's Theory of Quality

This theory was developed by Juran in 1980s to mean quality is oriented to income hence it suggests that for an organization to effectively manage the quality of their goods and services, they must do that through three main processes including quality planning, control and improvement (Dönmezer, 2020). These three elements of quality management serve different purposes to obtain varying objectives in the process and they should all be incorporated for a successful quality management strategy. Quality planning according to the theory is the initial process of quality management where a strategy is developed bearing in mind the needs of the end-user of the good or service as well as the objectives and goals of the organization (Handoyo et al., 2021).

Besides, during the quality control stage, which happens during the production processes, frequent inspections and checks have to be conducted and metrics tracked. This is to ensure that process meet the specifications and set targets (Madar, 2019). The processes should be audited and any deviation identified should be corrected in order to meet the expectations set. The final aspect in

the process is quality improvement which is a continuous process. This is based on the assumption that the final product may, for some reason, fail to meet the expected requirements and intended features. This may result from system alterations, change in customer preferences or other market changes which may require improvements (Curpănaru, 2021). The theorist holds that all these processes are interconnected and each is separately improved to enable an effective quality management process. The theory is effective in ensuring the quality of services provided by the company under review in order to reduce costs associated with poor quality. According to Nnadi et al (2018), the theory needs special skills to be implemented and may not be applicable in companies without strict policies. In this regard, the Juran's theory of quality can be used to explain the research objective to assess the influence of process approach on the performance of water service providers better.

The Six Sigma Model

The model was proposed by Bill Smith and Mikel Harry in 1986 as a measurement-based approach for process improvement in an organization (Sodhi et al., 2019). Besides, the six sigma processes therefore enable an organization to measure faults in any given process and helps in getting rid of them in order to attain zero faults (Kartika et al., 2020). In process improvement, six sigma employs the DMAIC model of defects reduction and quality improvement, which involves well defined process approaches; define, measure, analyze, improve and control. The first phase is the definition which involves specifying the problems in the processes as well as process improvement objectives. Measuring involves gathering information relevant to the process improvement plan (Sodhi, 2020). The information collected is then analyzed through frequency distribution to identify its features. The analysis phase seeks to identify the cause of process inefficiency by defining the difference between the set goal and what is actually being achieved (Dogan & Gurcan, 2018).

The above discussion on Six-Sigma is relevant to the last research objective on determining the influence of quality standards on the performance of water service providers. This is because the quality standards can be better explained through process improvement, where six sigma employs the DMAIC model of defects reduction and quality improvement, which involves well defined process approaches; define, measure, analyze, improve and control (Ponsiglione et al., 2021). In pursuit of this, the water service providers uses DMAIC model as a framework for setting quality objectives at various functions and levels as established and communicated (Patil, Balakrishna & Nayak, 2020). According to Girmanová et al., (2017) this enables quality objectives set to be implemented, monitored, measured and reviewed regularly.

Conceptual Framework

A conceptual framework is a representation of the relationship the researcher anticipates finding between the study's variables, or the characteristics or traits intended to be examined (Gornik-Tomaszewski & Choi, 2018). Besides, the conceptual framework helps the researcher to better understand how these study's factors relate to one another and to the larger context of the research (Awunyo-Vitor, 2018). In this regard, the study variables include; relationship management,

leadership, process approach, and quality standards and performance of the selected five water service providers.

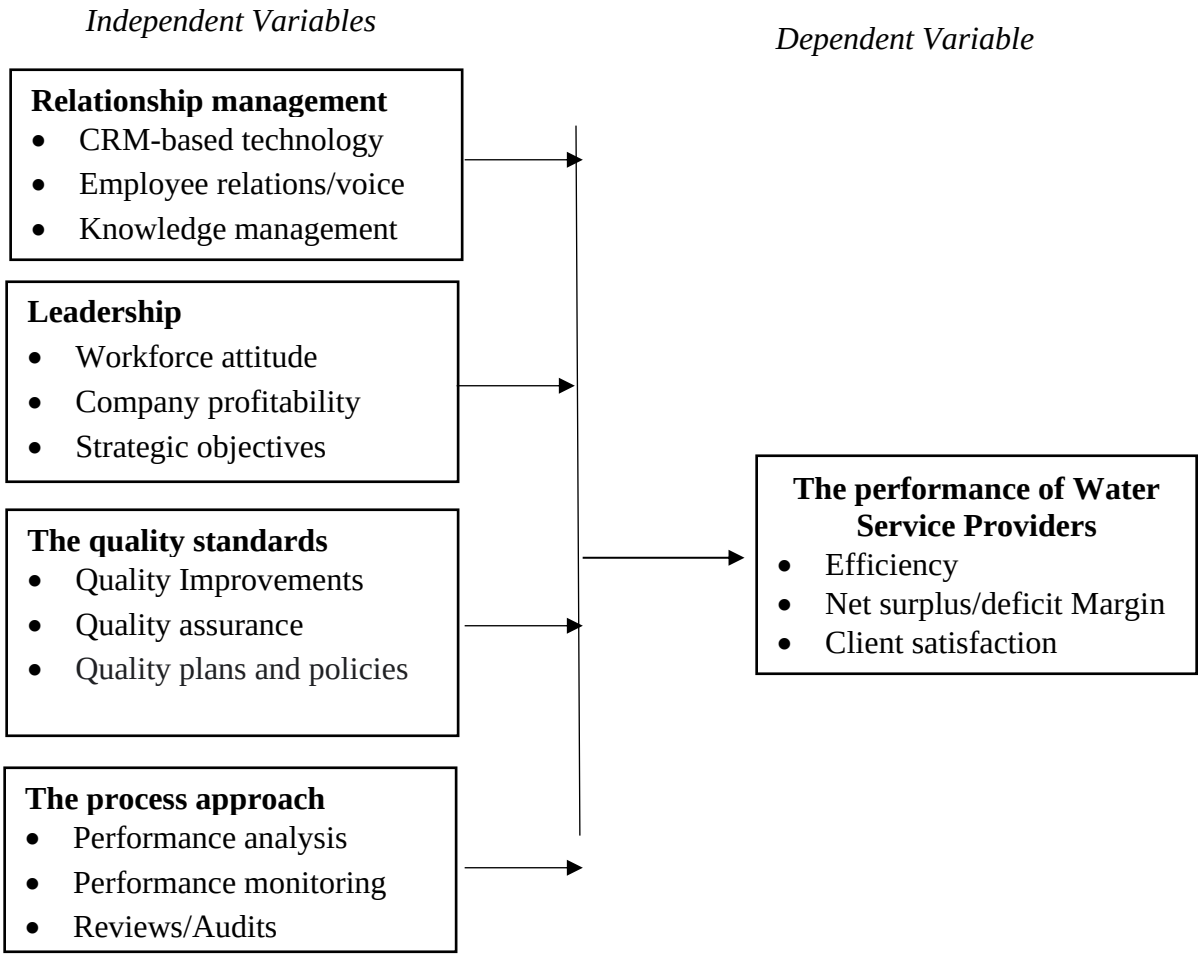


Figure 2.1: Conceptual Framework of study variables

Relationship Management

This entails creating and maintaining a good relationship between all the partners, including suppliers, employees and other stakeholders (Juanamasta et al., 2019). These partners play a role in improving the quality of products or services as they provide the feedback that the organization can rely on in improving their processes and the entire quality management system. Therefore, when an organization maintains a good relationship with all these parties, they will positively influence performance and success (Aljawarneh & Al-Omari, 2018).

Academic investigation has revealed that quality of service can be improved through better relationship management. Furthermore, four factors of relationship management, namely, customer focus, knowledge management, organization and relationship management -based

technology have been examined in various study (Sofi et al., 2020). Moreover, a study by Foltean, Trif & Tuleu (2019) on how a company's success might be affected by its use of social media and customer relationship management tools, examined the literature on the role that CRM capabilities serve as a mediator between social media technology (SMT) use and business outcomes. Based on the data, it appeared that company size, the company's level of innovation, the industry, and the market in which the company played all play a role in determining whether or not it uses SMT. A study by Soltani et al (2018) examined how many elements, including technological proficiency, organizational strength, customer focus, and customer knowledge management, affected CRM's effectiveness, employing PLS-SEM to test the hypothesis. The results indicated that "information technology use" had a considerable effect on the success of customer relationship management (CRM). In addition, "customer orientation," "organizational capability," and "customer knowledge management" were all linked to CRM achievement.

A study by Suoniemi et al (2022) on the roles of consultant facilitation and user participation in the implementation of a customer relationship management system and its impact on business performance. Accordingly, research hypotheses were put to the test empirically through the use of a quantitative field study methodology. Using customer relationship management tools, Suoniemi et al (2022) surveyed 126 of the most valuable clients and used partial least squares structural equation modelling to estimate the key parameters of the underlying structure. According to Suoniemi et al (2022)’s findings, user experience (UI) played a crucial role in determining how much CRM consultants improved CRM system quality (SQ) and, by extension, how much of an impact they had on company performance. In regard to the study objective on relationship management, Suoniemi et al (2022) affirmed that, relationship management impacted performance, though there existed research gap since, the study used customer relationship management tools. In this regard, this study was hinged on the following hypotheses;

Leadership

Jumady (2020) defines a leader as any person who motivates and guides followers towards achieving a common goal. In an organizational context, a leader is anyone who inspires and directs others in working towards achieving the objectives and goals of the organization. These can include directors, managers, supervisors or even team leaders (Nguyen & Ninh, 2017). An effective quality management process depends more on the organizational leaders that is, how they behave and how they structure and guide their employees. Great leadership in an organization helps followers to own the organizational goal and pull forces in achieving it (Rahman et al., 2020). The leadership position in quality management is a cornerstone of every effective strategy for advancement. A leader's job is twofold: first, to foster a unified vision among their followers; second, to drive the organization in that direction (Sfakianaki et al., 2018).

A qualitative study by Tewari, Gujarathi & Maduletty, (2019) on leadership styles and productivity in India administered questionnaires to 50 sampled respondents using random sampling method, and the data was analyzed statistically. The study found a direct association of leadership with organizational performance and besides, the leadership style or approach directly impacts the organizational performance. Al Khajeh (2018)'s study assessed the effect of various leadership styles on the efficiency of a company or other organization. The primary research was conducted using a survey questionnaire and other survey instruments in accordance with the quantitative research approach. Secondary research, which involved a study of relevant literature, was conducted so that the project's aims could be realized (Al Khajeh, 2018). The study found a positive impact of leadership on the performance of organizations. Furthermore, the study revealed a negative correlation between charismatic, bureaucratic, and transactional leadership styles and organizational performance. However, there was a positive correlation between leadership styles including transformational, authoritarian, and democratic and how well an organization did. The study hence, concluded that, businesses and other organizations might benefit from adopting a leadership style that focused on developing their employees' and members' abilities. In regard to the study objective, Al Khajeh (2018) provided mixed results and there existed research gap since Al Khajeh (2018) focused on specific leadership styles unlike this study.

Para-González et al., (2018) examined the relationship between transformational leadership and organisational performance. Using data from two hundred Spanish manufacturing enterprises, this study applied partial least squares to explore the interrelationships between the variables. Also, only a select group of scholars the research showed that when certain systems of human resource management practises, learning, and innovation were developed, transformational leadership styles contributed to gains in an organization's performance (Para-González et al., 2018). In respect to study goal to determine the impact of leadership on an organization's performance, Para-González et al., (2018) transformational leadership styles contributed to gains in an organization's performance. However, Para-González et al., (2018)'s had research gap since it narrowed to one leadership style.

Quality Standards

According to Khawaldeh (2017), quality standards can be defined as a document that guide organizations in terms of specifications, methods, practices or specific characteristics that should be consistently used across a given industry to ensure consistency and quality in production or service delivery. Quality standards are set to ensure safety and help organizations meet the expectations of their customers and the entire market (Salvat & Cervio, 2017). Effective quality standards such as the ISO 9001, ISO 14001or ISO 27001 forms the basis for all businesses and enable companies to meet quality as perceived by the intended market as well as define specific organizational vision. (Nyaga & Gakobo, 2017). The Quality Policy Statement for Nairobi City Water and Sewerage Company which is the biggest water service provider in Nairobi City County,

Kenya, states that it is committed to providing quality water and sewerage services that meet and exceed the needs and expectations of its customers, as envisaged in their Strategic Business Plan for FY2019/20 to 2023/24. In pursuit of this commitment, a framework for setting of quality objectives at various functions and levels have been established and communicated.

A study by Ong et al., (2020), on whether or not quality management system influenced firm's performance in Indonesia used online questionnaires to collect data through Google form. Besides, the 342-tourism industry management were added into the study using snowball sampling technique and the data collected was analyzed using partial least square. The study showed that meeting and exceeding the quality standards is a source of company's competitiveness which translates to more revenues, reduced costs and higher customer retention. Also, Patyal & Koilakuntla (2017) examined the relationship between quality management (QM) and performance in Indian manufacturing businesses, with an emphasis on the impact that QM infrastructure and fundamental QM practices had on quality and business outcomes. In this study, empirical data was gathered from 262 separate Indian manufacturing firms and the study model was validated using a structural equation modelling strategy. Empirical analysis revealed that infrastructure quality management practices positively influenced both core quality management and, consequently, quality performance. In addition, superior performance positively affected the bottom line.

Additionally, Guo, Jong and Yeung (2018)'s study on the institutionalization of quality standards and performance outcomes in China used fresh information from China's publicly traded companies. According to the study findings, the time spent on obtaining quality certifications in China reduced the effectiveness with which standards can cut costs. However, the study by Guo, Jong and Yeung (2018) did not find a similar dampening effect on sales performance. In general, Guo, Jong and Yeung (2018) discovery proofed that quality management certifications' effects had diminished over time.

Process Approach

According to ISO 9001, process approach is a management approach which comprises of a cycle that involves planning, doing, checking and acting as well as risk management (Ralea et al., 2019). It involves managing processes and their relationship in order to achieve the expected results based on the organizational quality standards and strategy. This means that all organizational processes are controlled and managed and analyzed to ensure they are effectively interlinked to bring out the expected outcome (Baker, 2018). Process approach focuses on all elements of the quality management system and thus it is essential in ensuring quality. Process management can be measured through monitoring and evaluation, audits and analysis of the general performance (Demyanova et al., 2017). Process approach generally, focuses organizational efforts on effectiveness and efficiency by ensuring quality of the output and customer satisfaction. It is therefore an important aspect of quality management systems.

According to Nordin, (2017) on study on the best two approaches, the author used literature review from product, process, and genre approaches to provide empirical background of the process approach among others. He acknowledged that, process approach is a management approach which comprises of a cycle that involves planning, doing, checking and acting as well as risk management. Besides, process approach is meant to understand and plan the interactions and sequences of processes in a system and is vital because it places an entire focus on all processes of QMS (Nordin, 2017). Process approach focuses on all elements of the quality management system and thus it is essential in ensuring quality. Process management can be measured through monitoring and evaluation, audits and analysis of the general performance. Process approach generally, focuses organizational efforts on effectiveness and efficiency by ensuring quality of the output and customer satisfaction. It is therefore an important aspect of quality management systems.

Besides, Khalil et al (2021)'s research aimed to quantify the improvements in job satisfaction and productivity brought about by process approach and knowledge management strategies. Using survey data collected from staff members at the King Fahd National Library in Jeddah, Saudi Arabia. Khalil et al (2021)'s results suggested that process approach and knowledge management strategies had a positive effect on workers' happiness and productivity on the workplace. Also, work pleasure was significantly influenced by knowledge sharing, knowledge retention, knowledge codification, and personalisation, but not by knowledge acquisition, knowledge creation, or a social network approach (Khalil et al., 2021). When relating the process approach to performance Khalil et al (2021)'s results affirmed that, process approach contributed to higher performance, despite the study being broad by focusing on other aspects such as knowledge management strategies.

Organization Performance

According to Muiruri (2016) previous studies have established a positive relationship between quality management systems and organizational performance which in most cases is measured by turnaround time for product and service delivery, quality of products and services and the ability of organizations to comply with the local and international quality standards. Further studies have also indicated that international quality standards clearly define specifications and processes, which in turn improves communication and process integration leading to high performance. It has also established that good leadership is essential in ensuring quality and customer satisfaction since effective leaders empower and motivate employees to work towards organizational quality objectives (Keinan & Karugu, 2018).

Generally, organizations adopt and implement management systems to direct all the attention and effort towards quality and error-free processes which reduces costs, increases productivity, consumer satisfaction and ultimately the general performance of any given organization. It

therefore follows that a good quality management system should incorporate all the principles to ensure a holistic organizational performance improvement. Lastly, the organizational performance will be measured by cost of operations, revenue collection, and customer satisfaction on the services rendered by the water service providers.

RESEARCH METHODOLOGY

Research Design

This constitutes the blueprint for the collection, measurement, and analysis of data, and it is the overarching plan that the researcher chooses to combine the many components of the study in a consistent and logical method, and this guarantees that the research problem was solved effectively (Asenahabi, 2019). This study adopted descriptive study design which aims to gather data to precisely define a phenomenon, situation, or population. Additionally, a descriptive research design can be used to investigate numerous variables including quality management systems and the performance of water service providers for this study, and it is flexible enough to accommodate a variety of research methods (Rahi, 2017). In conducting qualitative research, the descriptive design approach is an adaptable and inquisitive method. On the other hand, descriptive research resign is quantitative research where it is used to collect quantifiable data for the purpose of doing statistical analysis on samples drawn from populations. Besides, it is a common tool in market research because it lets the researcher gather information on a certain demographic and define its make-up in detail (Talis, Akib & Baso, 2018).

Target Population

This refers to the group of people who were the subject of any studies or analyses conducted as part of the intervention. Also, detailed details of the characteristics of the target population and any subgroups should be provided when conducting a cost-effectiveness analysis (Iliyasu & Etikan, 2021). In this regard, the target population for this study comprises the five selected water service providers in Nairobi City County, Kenya which includes, NCWSC, Runda water, Kiambu water, EPZ and Ruiru water due to their larger capacity and are the largest in terms of supplying water to the clients (Wasreb, 2022).

Sample and Sampling Techniques

Sampling is a technique used in statistical research to select a subset of data points that are meant to be indicative of the whole (Sharma, 2017). Each candidate is chosen using a predetermined algorithm, and the methodology used to sample from a larger population is determined on the sort of analysis being conducted (Bujang & Baharum, 2017). In this study Customer Relationship manager, Human Resources manager, technical director, ISO manager, Finance manager as well as Commercial director were purposively sampled per the five firms, yielding a total sample of sixty (60) respondents for the study. These are deemed knowledgeable enough to offer information

regarding the strategies that are useful as part of management systems crafted and adopted by these water service providers.

Data Collection Tools

The study used both questionnaire and secondary data collection sheet. A questionnaire is used to gather information because its main purpose is to glean data from those who fill it out (Marchal-Bertrand et al., 2017). Also, questionnaires are quick and effective way to obtain a lot of data, even if the researcher cannot be there in person to collect the responses. Survey questionnaires are a valuable tool for gathering information from a wide range of people quickly and easily, and the common perception that conducting a survey is easy belies the fact that much time, work, and planning are needed to generate reliable results (Rominger, 2020). On the other hand, secondary data is information that is obtained by a source other than the data's primary consumer. It comprises already published data. In this respect, information regarding profits shall be sourced from the published books of accounts of these selected water service providers. The information from such sources like books, personal sources, published journals and company documents and records including annual reports and press releases shall be used to validate the primary sources of information (Rahi, 2017). The secondary data collection sheet is shown on Appendix 4.

Pilot Study

A well-designed research investigation always includes doing pilot experiments. The success of primary research cannot be guaranteed, but the likelihood of success is increased if a pilot study is conducted first (Liao et al., 2016). Numerous important functions are served by pilot studies, and other researchers may gain valuable insights from them. In this regard, the research involved a pilot test comprising five individuals in order to assess the reliability and validity of the data collection tools (Alown, Mohamad & Karim, 2020).

Reliability of Data Collection Tools

Reliability is used to describe the consistency with which an evaluation technique rates an item. In order for a measurement to be considered trustworthy, it must be possible to reliably replicate the obtained result using the same procedures and initial conditions (Clemente et al., 2017). In order to assess the degree of inter-rater reliability, multiple researchers perform the same set of measurements or observations on the same sample. Researchers rely on Cronbach's Alpha because it reveals whether or not the instruments utilized yield reliable and consistent responses even when the questions being asked are modified. The Cronbach's Alpha statistic provides a precise measure of the reliability of the 'base' or 'underlying' construct. An overarching concept or area of study is what is meant by the term "construct," as defined by Ravinder and Saraswathi (2020). Any value between 0 and 1 can make up the real score and it can be used to indicate trustworthiness on rating scales and dichotomous questions. Alpha values of 0.7 or above have been accepted as being adequate for indicating reliability. A high rating signifies dependability and dependability implies a high rating.

Validity of Data Collection Tools

Validity is crucial because it enables the researcher determine which survey questions are appropriate, and to ensure that researchers are using questions that appropriately reflect the

significance of the issues being examined (Kliemann et al., 2016). The study used both content and construct validities to measure whether the working explanation of variables really reflects the true theoretical meaning of a concept. To measure content validity, the questionnaire measurement items were generated from the questionnaire sub-contract items as contained in the conceptual framework (figure 2.1). Equally, the study supervisor was able to assess and review the extent to which the study variable measurement items cover and measure what they are purported to cover on the study variables (Yusoff, 2019). To measure construct validity, component factor leadings shall be used to assess the level of importance of each measurement item to the variable under study. The study used factor loadings with a minimum expected factor loadings set at 0.4. Any measurement item that failed the minimum threshold will either be revised appropriately or deleted altogether.

Data analysis and Processing

Data analysis refers to the systematic use of statistical and/or logical procedures for the purpose of describing and displaying, compressing and summarizing the data (Mezmir, 2020). Besides, data analysis is vital in academic research because it the process of drawing conclusions about relationships and trends in the data via the application of analytical and rational reasoning (Pluye et al., 2018). Qualitative data was analyzed through content analysis by grouping together the information into related sub-themes and reported in a narration form. This represented the voice of the respondent and was incorporated in the quantitative information so reported. Quantitative data collected was analyzed by use of SPSS version 26.0, and was done both descriptively and inferentially. Descriptively, means and standard deviation was used to assess the patterns of association between and amongst the study variables. Inferentially, the study used both correlation and regression analyses. Before subjecting data to inferential analysis, diagnostic testing was done to validate the assumptions of the regression model adopted. The study adopted coefficient of determination (R^2) to assess the percentage effect of independent variables (QMS)on the dependent variable (performance) (Darlington & Hayes, 2017).

The study adopted a generic regression model in the form:

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + Ɛ$

Where:

Y = Performance of water service provider

a = Y Intercept

X1 = Relationship Management

X2 = Leadership

X3 = Quality Standards

X4 = Process Approach

Ɛ= Error margin.

DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4Demographic Information

Response Rate

Out of 70 questionnaires administered, a total of 60 were completely filled and returned consisting a response rate of 85.71%. The rest of the questionnaires (10) were rejected and barred from further evaluation and use since did not meet the data collection requirements such as being complete, readable and clear as shown on Table 4.1 below; According to the study by Mugenda & Mugenda (2003) the study's response rate was sufficient since the researchers argued that, the response rate of above 50% is adequate, above 60% is good and above 70% is very well.

Table 4.1: Response Rate

	Freq.	**Percentage**
Issued questionnaires	70	100%
Completely filled questionnaires	60	85.71
Not filled questionnaires	10	14.29

Gender

The data collection exercise involved five selected water service providers in Nairobi City County, Kenya from various departments including; customer relations office, human resource office, technical department, ISO department, Finance department and the commercial department and their gender is presented in Table 4.2 below. As shown on the table below, there were 34 females and 26 males summing up to 60 participants which comprises 56.70% and 43.30% of the total population size respectively. According to Al Khajeh (2018) biological and social gender must be considered together when studying from a gender perspective. Diversity, including gender balance and gender perspectives, has been shown in an increasing number of studies to increase the research's scientific rigour and social relevance. In this context, Al Khajeh (2018)'s study had similar findings on gender, and meant that, male were more willing to partake academic studies compared to female.

Table 4.2: Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	26	43.3	43.3	43.3
	Female	34	56.7	56.7	100.0
	Total	60	100.0	100.0	

Duration of service

Further the researcher also enquired about the duration of service for respondents and in this regard, Figure 4.3 below revealed that, majority of the participants (38.30%) have been working for 1 to 5 years, followed by less than a year which had 20% of the participants, and then 6 to 10 years comprised 18.30% of the participants. Others were 11 to 15 years and above 15 years which comprised 13.30% and 10.0% of the participants respectively. Despite these findings contradicting with Suoniemi et al (2022), the different duration of service meant that, the data collected was balanced by having employing with short, medium and long terms of service.

Table 4.3: Duration of service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 Year	12	20.0	20.0	20.0
	1- 5 Years	23	38.3	38.3	58.3
	6 - 10 Years	11	18.3	18.3	76.7
	11-15 Years	8	13.3	13.3	90.0
	Above 15 Years	6	10.0	10.0	100.0
	Total	60	100.0	100.0	

Descriptive analysis

Relationship Management and the Performance

The study sought to ascertain whether the relationship management impacted the performance of selected water service providers in Nairobi City County, Kenya. As shown on Table 4.4, the relationship management construct that emerged top in influencing organizational performance was CRM-based technology with a mean of 4.5500 compared to the others. This was followed by the employee relations with a mean score of 3.9667, employee voice and knowledge management with a mean of 3.8167 each and lastly customer orientations with a mean of 3.1833 and the aggregate mean was 3.8667, meaning that generally respondents agreed with this variable. Besides, the aggregate standard deviation was below 1.0 at 0.9722, then the dispersion was close to the mean and hence the general inference was that the data was normally distributed. These findings were supported by Suoniemi et al (2022)'s findings that, CRM consultants improved CRM system quality (SQ) and, by extension, how much of an impact they had on company performance, affirmed that, relationship management impacted performance, though they were disputed by Soltani et al (2018).

Table 4.4: Descriptive Statistics: Relationship Management

Descriptive Statistics

	N	Sum	Mean	Std. Deviation
The employee relations strategy as an aspect of relationship management influence organizational performance	60	238.00	3.9667	.91996
The employee voice as an aspect of relationship management influences organizational performance	60	229.00	3.8167	.92958
The knowledge management as an aspect of relationship management influences organizational performance	60	229.00	3.8167	.96536
The CRM-based technology as an aspect of relationship management influences organizational performance	60	273.00	4.5500	.67460
The customer orientations as aspect of relationship management influences organizational performance	60	191.00	3.1833	1.37152
Valid N (listwise)	60		3.8667	0.9722

Leadership and the Performance

Regarding the leadership strategies, the researcher had five constructs including the competency, honesty and integrity, influence, initiative and responsibility and accountability and their mean and standard deviations were discussed herein. From Table 4.5, the responsibility and accountability emerged as the top leadership construct that influenced organizational performance by having a mean of 4.5500, then competency with a mean of 4.5167, influence with a mean score of 4.3000, honesty and integrity with a mean of 3.2000 and lastly initiative with a mean score of 3.0833. Besides, the aggregate mean was 3.9300, meaning that generally respondents agreed with this variable, similar to a study by Al Khajeh (2018) and Para-González et al., (2018) who concluded that, businesses and other organizations might benefit from adopting a leadership style that focused on developing their employees' and members' abilities. Also, the aggregate standard deviation was below 1.0 at 0.9180, then the dispersion was close to the mean and hence the general inference was that the data was normally distributed. However, in latter findings, Al Khajeh (2018)'s findings narrowed to specific leadership styles and this led to adverse findings that, a negative correlation between charismatic, bureaucratic, and transactional leadership styles and organizational performance.

Table 4.5: Descriptive Statistics- Leadership

	N	Mean	Std. Deviation
The competency as an aspect of leadership influences organizational performance	60	4.5167	.65073
The honesty and integrity as aspect of leadership influence organizational performance.	60	3.2000	1.33785
The influence as an aspect of leadership influences organizational performance	60	4.3000	.74333
The initiative as an aspect of leadership influences organizational performance	60	3.0833	1.29263
The responsibility and accountability as aspect of leadership influence organizational performance	60	4.5500	.56524
Valid N (listwise)	60	3.9300	0.9180

Quality Standards and the Performance

The researcher formulated five constructs of quality standards that affected the performance of the selected water service providers in Nairobi City County, Kenya including; quality planning, quality control, quality assurance, quality improvement, and quality policy and objectives and the responses from the questionnaires are as shown on Table 4.6 below. Also, quality improvement was supported by the highest number of participants which represented a mean score of 4.5667. The other aspects of quality standards that affected the performance of the selected water service providers in Nairobi City County were using quality assurance, quality planning, quality policy and objectives and quality control which had a mean score of 4.3167, 3.6000, 3.3667 and 3.2500 respectively. In regard to the standard deviation, most of the quality standard's aspects had standard deviation of above or close to 1 meaning, the data was normally distributed. Regarding the aggregate mean and standard deviation, they were 3.8200 and 1.0414, which meant that,

generally the participants agreed, though the dispersion was away from the mean. The majority of the participants' findings were aided by Ong et al., (2020) and Patyal & Koilakuntla (2017), though they were incompatible with Guo, Jong and Yeung (2018)'s results that revealed that, obtaining quality certifications in China reduced the effectiveness and hence, had negative impact on performance.

Table 4.6: Descriptive Statistics- Quality Standards

	N	Mean	Std. Deviation
The quality planning as an aspect of quality standards influences organizational performance	60	3.6000	1.13794
The quality control as an aspect of quality standards influences organizational performance	60	3.2500	1.40971
The quality assurance as an aspect of quality standards influences organizational performance.	60	4.3167	.83345
The quality improvement as an aspect of quality standards influences organizational performance	60	4.5667	.64746
The quality policy and objectives as an aspect of quality standards influence organizational performance	60	3.3667	1.17843
Valid N (listwise)	60	3.8200	1.0414

Process Approach and the Performance

The researcher formulated the measures or constructs of process approach that affected the performance of water service providers including; measurement, monitoring, reviews, audits and performance analysis as shown on Table 4.7 below. Also, performance analysis and monitoring were the top constructs of process approach with means of 4.5500 and 4.4500 respectively. Others were reviews and measurements and audits that had mean values of 3.4333, 3.2167 and 3.2167 respectively. According to Conner & Johnson (2017) when the standard deviation is below 1.0, then the dispersion is close to the mean and from Table 4.7, the findings showed that all the respondents scored close to the mean with a standard deviation below 1.0 (0.3031, 0.7686, 0.3450, 0.1512 and 0.6490) indicating that the respondents scored close to the mean and the aggregate mean was 3.7733, meaning that generally respondents agreed with this variable. Besides, the aggregate standard deviation was below 1.0 at 0.4434, then the dispersion was close to the mean and hence the general inference was that the data was normally distributed. This meant that, managers ought to ensure improved performance through performance analysis and monitoring as constructs of process approach. When relating these process approach's findings to the past studies, Khalil et al (2021)'s results affirmed that, process approach contributed to higher performance.

Table 4.7: Descriptive Statistics- Process Approach

	N	Mean	Std. Deviation
The measurement as an aspect of process approach influences organizational performance	60	3.2167	.30308
The monitoring as an aspect of process approach influences organizational performance	60	4.4500	.76856
The reviews as an aspect of process approach influence organizational performance	60	3.4333	.34501
The audits as an aspect of process approach influence organizational performance	60	3.2167	.15115
The performance analysis as an aspect of process approach influences organizational performance	60	4.5500	.64899
Valid N (listwise)	60	3.7733	0.4434

Quality Management Systems and the Performance

The study was to assess the influence of quality management systems on the performance of selected water service providers in Nairobi City County, Kenya and the independent variable was made up of four variables including relationship management, leadership, quality standards and process approach as shown on Table 4.8 below. Besides, the leadership as part of the quality management system was the aspect that significantly affected the performance of selected water service providers in Nairobi City County with the mean score of 3.9300. This was followed by relationship management and quality standards which had mean scores of 3.8667 and 3.8200 respectively. In addition, process approach as the aspect of quality management system least affected the performance of selected water service providers in Nairobi City County. Also, as shown on Table 4.8 below, the dispersion was close to the mean because the standard deviation was below 1.0. Besides, the aggregate mean and standard deviation were 3.0780 and 0.4709 and hence, most of participants agreed that, quality management systems including relationship management, leadership, quality standards and process approach influenced the performance of selected water service providers in Nairobi City County, Kenya. Multiple regressions on organisational performance indicators on explanatory variables defining TQM were undertaken by Ngambi & Nkemkiafu (2017). The outcomes demonstrated the significance of leadership dedication, quality control, and inspection in achieving cost savings. Although TQM practises were implemented, it appeared that none of them significantly improved customers' happiness. Hence, Ngambi & Nkemkiafu (2017) had mixed findings regarding quality management systems influenced the performance.

Table 4.8: Descriptive statistics: Quality management systems and performance

Descriptive Statistics

	N	Mean	Std. Deviation
Relationship Management	60	3.8667	.61027
Leadership	60	3.9300	.47845
Quality Standards	60	3.8200	.68860
Process Approach	60	3.7733	.57692
Valid N (listwise)	60	3.0780	0.4709

Financial Performance of NCWSC and other Branches

As shown on Table 4.9 below, the financial performance in terms of revenue rose consistently (except for 2019/2020) from Ksh. 8.48 billion to Ksh. 10.76 billion while its net income fluctuated over the last five years from 2018 through 2022. NCWSC made profits only in 2018/19 of Ksh. 62.20 million while the other years, it made loss but since the losses were declining from 2019/20 to 2021/22 from Ksh. -850.82 million to Ksh. – 463.75 million. Therefore, it terms of net profitability, the water company's bottom line performance is improving. From the descriptive statistics, the improving financial performance of NCWSC from 2018/19 to 2021/22 can be attributed to the leadership and relationship management among others. There are similar to a study by Al Khajeh (2018) and Para-González et al., (2018) who concluded that, businesses and other organisations might benefit from adopting a leadership style.

Table 4.9: Financial performance for NCWSC for the past 5 years

Year	Total revenue	Performance (Net Income)
FY 2017/2018	8,478,139,252	-634,895,405
FY 2018/2019	9,299,430,987	62,200,388
FY 2019/2020	9,182,551,889	-850,815,607
FY 2020/2021	10,353,656,563	-463,748,345
FY 2021/2022	10,758,838,364	-105,345,232

Regarding the other branches of NCWSC including Kiambu, Ruiru, EPZ and Runda, their average's financial performance including revenue and profit is presented in Table 4.10 below. As shown on Table 4.10 below, on average Ruiru Water had the highest revenue of Ksh. 623.98 million as well as highest net income of Ksh. 26.88 million, largely due to huge population of the residents that the Ruiru Water serves. Besides, Kiambu Water was second in terms of revenue of Ksh. 88.75 million though due to inefficiencies, the realized net income was the lowest at Ksh. 423,573.80 and then Runda Water came third in terms of revenue and net income of Ksh. 67.47 million and Ksh. 827,029.40. Lastly, EPZ has the lowest revenue on average for the 5 years of Ksh. 56.37 million but very efficiency since it made the second highest profit of Ksh. 5.33 million.

Table 4.10: Average financial performance for Water Service Providers for the past 5 years

NCWSC's Branches	Revenue	Net income
Kiambu Water	88,748,433.00	423,573.80
Ruiru Water	623,984,503.40	26,877,065.40
EPZ Water	56,368,548.80	5,325,591.20
Runda Water	67,465,960.60	827,029.40

Diagnostics Tests

Reliability and Validity Tests

According to Table 4.11 below on reliability of the research instrument, the data collection instrument was reliable by demonstrating its consistency and ability to yield the same results and the possibility of reliably replicating the obtained result using the same procedures and initial conditions. In this regard, all the research variables produced a Cronbach's Alpha of above 0.70 which were within and above the "acceptability" criteria. On the other hand, on validity, the communality values/factor loadings were above 0.40, hence, significant degree of correlations were observed. In a nut shell, the set of the questionnaire items were reliable and valid, hence, the questionnaire was suitable for the study.

Table 4.11: Reliability Test

Variables	Reliability (Cronbach's Alpha)
Relationship management	0.738
Leadership	0.777
Quality standards	0.762
Process approach	0.905

Normality Test

Result in the Table 4.12 indicated that the data plotted was normally distributed as tested using the Skewness and Kurtosis where the criteria require these two to be zero or close to zero for the data to be normally distributed. In this regard, the Skewness and Kurtosis were 0.061 and -0.868 respectively and hence, the data was normally distributed.

Table 4.12: Normality test

		Statistic	Std. Error
Performance	Mean	3.0667	.15195
	Variance	1.385	
	Std. Deviation	1.17699	
	Skewness	.061	.309
	Kurtosis	-.868	.608

Autocorrelation

This refers to what extent the same variables are associated across two consecutive time intervals and the study used Durbin Watson test as shown on Table 4.13 below. Generally, for the independence of observations, the Durbin Watson results should not be less than 1 (< 1) and more than 3 (> 3) and as shown above the study's Durbin Watson result was 2.523 and thus there was independence of observations (autocorrection).

Table 4.13: Autocorrelation Test

Change Statistics			
R Square Change	F Change	Sig. F Change	Durbin-Watson
.009	11.225	.000	2.523

Multicollinearity

The study results were presented in the Table 4.14 below. In this regard the study employed collinearity statistics that comprised tolerance and variance inflation factor (VIF). Generally, for the multicollinear test, the tolerance should not be less than 0.1 (<0.1) and the VIF should not be greater than 10 (>10). In this context, the tolerance for research variables were less than 1 where relationship management, leadership, quality standards and process approach had 0.615, 0.495, 0.591 and 0.453 respectively. On the contrary, the VIF for relationship management, leadership, quality standards and process approach was also not more than 10 for being 1.626, 2.020, 1.691 and 2.208 respectively. This meant that, there was no issue of multicollinearity among the predictors or independent variables.

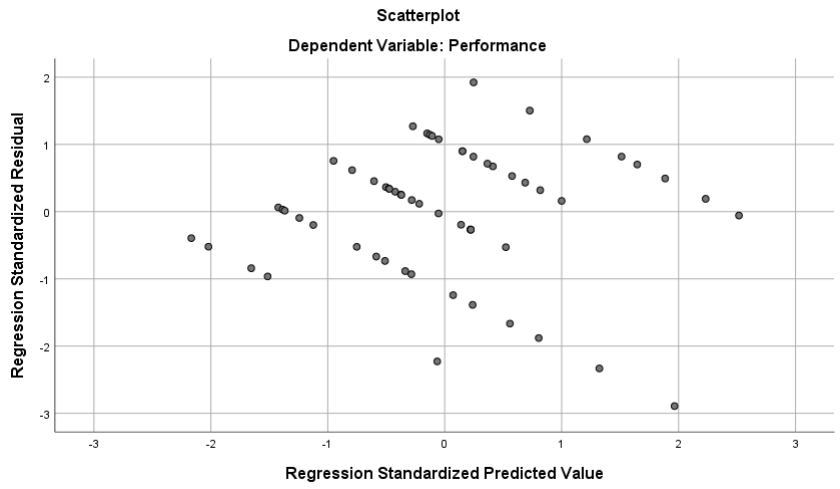
Table 4.14: Collinearity Statistics

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Relationship Management	.615	1.626
	Leadership	.495	2.020
	Quality Standards	.591	1.691
	Process Approach	.453	2.208

Homoscedasticity

The statistical condition of homoscedasticity describes a situation in which the error term is the same for all potential values of the independent variables. In this regard, the researcher employed scatterplot to evaluate whether the collected data had errors with constant variance. According to Yang & Mathew (2020) the data exhibits homoscedasticity because the dots did not go beyond the extremes of Y and X axes respectively and the scatterplot has zero pattern. In this regard, the Figure 4.2, shown below the data exhibited homoscedasticity because the dots did not go beyond the extremes of Y and X axes respectively.

Figure 4.1: Scatterplot



Inferential Analyses

Correlations

The Table 4.15 below on correlations, showed that the variables exhibited relatively strong correlation between and among themselves. This improves the knowledge of the linear relationship between and among the variables. In this regard, the strongest positive correlation of 0.696 as shown on Table 4.15 below was between leadership and process approach and the weakest positive correlation of 0.060 was between quality standards and leadership.

Table 4.15: Correlations

		Performance	Relationship Management	Leadership	Quality Standards	Process Approach
Pearson Correlation	Performance	1.000				
	Relationship Management	-.002	1.000			
	Leadership	.159	.079	1.000		
	Quality Standards	.513	.615	.060	1.000	
	Process Approach	.172	.254	.696	.285	1.000
Sig. (1-tailed)	Performance	.	.495	.113	.000	.094
	Relationship Management	.495	.	.274	.000	.025
	Leadership	.113	.274	.	.325	.000
	Quality Standards	.000	.000	.325	.	.014
	Process Approach	.094	.025	.000	.014	.

Model Summary

As shown on Table 4.16 below, the Pearson's correlation coefficient (R) of 0.670 indicates a strong positive correlation between quality management systems and the performance of selected water service providers in Nairobi City County, Kenya. The coefficient of determination (Adjusted R-Square of 0.409) indicated that quality management systems explained 40.90% of the variations in the performance of selected water service providers in Nairobi City County. This is supported by the p-value (Sig. F change) of 0.000 which is less than 0.005 (p-value < 0.05) and it meant that, the link between the independent variable and dependent variable was significant and the model worked.

Table 4.16: Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.670[a]	.449	.409	.90451	.009	11.225	4	55	.000

ANOVA

As shown below on Table 4.17 above, the p<0.05 (p=0.000), hence an indication that the model overall was a good fit. The findings above indicated that quality management systems had a significant effect on the performance of selected water service providers in Nairobi City County. Similar to past studies by Ngambi & Nkemkiafu (2017) who after using multiple regressions on organisational performance indicators on explanatory variables on defining TQM demonstrated the significance of leadership dedication, quality control, and inspection in achieving cost savings.

Table 4.17**: ANOVA**

Model		Sum of Squares	Mean Square	F	Sig.
1	Regression	36.736	9.184	11.225	.000[b]
	Residual	44.998	.818		
	Total	81.733			

Coefficients

The Table 4.18 below, the results indicated leadership (β=0.499, p=0.159), and process approach (β= -0.990, p=0.606) do not seem to be statistically significant or significantly contributing to the dependent variable (the performance of selected water service providers in Nairobi City County, Kenya). This is because their p-value as represented by Sig. on Table 4.18 above, is greater than 0.05 (p>0.05) and thus, the leadership and process approach were not making any significant value to the dependent variable and can be removed from the model. According to Zulfikar & Stp (2018) for the independent variables to be making significant contribution or value to the dependent variable, the former should have a p-value less than 0.05 (p<0.05). Thus, the relationship management (β=-0.990, p=0.000) and quality standards (β=1.432, p=0.000) significantly contributing to the performance of selected water service providers in Nairobi City County, Kenya by having a p-value of p<0.05. According to the researcher, with model averagely being statistically significant, the regression function is hereby formulated with two variable. Also, the regression of coefficients results in Table 4.18 above indicated that relationship management and quality standards were statistically significant at 0.05. Hence, they had significant effect on the performance of selected water service providers in Nairobi City County and leadership and process approach had not effect.

Additionally, the rejection and acceptance criteria for null hypotheses ($H_0$1) is that; when p-value ≥ 0.05, the $H_0$1 is accepted and if p-value ≤ 0.05, the $H_0$1 is rejected. In regard to the study objective and $H_0$1 that the relationship management do not influence the performance of selected water service providers in Nairobi City County. The results from Tables 4.18 indicated that p-values of relationship management was p<0.05 in performance of selected water service providers in Nairobi City County. This indicated that there was statistically significant relationship of relationship management with the performance of selected water service providers in Nairobi City County. Hence, $H_0$1 that the relationship management did not influence the performance was rejected at the significance level of 0.05.

Regarding, the study objective and $H_0$2 that the leadership did not influence the performance was tested. The results from Tables 4.18 indicated that p-values of leadership was p=0.159>0.05 in performance of selected water service providers in Nairobi City County. This indicated that there was statistically insignificant relationship of leadership with the performance of selected water service providers in Nairobi City County. Hence, $H_0$2 that the leadership did not influence the performance was not rejected at the significance level of 0.05. Furthermore, the third research objective and $H_0$3 that the quality standards did not influence the performance was tested. The results from Tables 4.18 indicated that p-values of leadership were p=0.000<0.05 in performance of selected water service providers in Nairobi City County. This indicated that there was statistically significant relationship of quality standards with the performance of selected water service providers in Nairobi City County. Hence, $H_0$3 that the quality standards did not influence the performance was rejected at the significance level of 0.05.

Lastly, regarding, the study objective and $H_0$4 that the process approach did not influence the performance was tested. The results from Tables 4.18 indicated that p-values of process approach was p=0.606>0.05 in performance of selected water service providers in Nairobi City County. This indicated that there was statistically insignificant relationship of process approach with the performance of selected water service providers. Hence, $H_0$4 that the process approach did not influence the performance was not rejected at the significance level of 0.05.

Table 4.18: Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.054	1.211		.044	.965	-2.373	2.481		
	Relationship Management	-.990	.246	-.513	-4.022	.000	-1.483	-.496	.615	1.626
	Leadership	.499	.350	.203	1.427	.159	-.202	1.200	.495	2.020
	Quality Standards	1.432	.222	.838	6.441	.000	.987	1.878	.591	1.691
	Process Approach	-.158	.303	-.077	-.519	.606	-.765	.450	.453	2.208

a. Dependent Variable: Performance

Regression Analysis

The regression model

$Y = 0.054 + -0.990X_1 + 1.432X_3 + Ɛ$

Where:

Y = The performance of selected water service providers in Nairobi City County

a = Y Intercept

X1 = Relationship Management

X3 = Quality Standards

Ɛ= Error margin

The above regression model meant that, for every one unit increase in relationship management and quality standards, the impact of the performance of selected water service providers in Nairobi City County improved by -0.990 and 1.432 respectively. Also, regarding the Beta column under the standardized coefficient, where the values reveal how much contribution each predictor or independent variable is making to the model. Therefore, as shown on Table 4.18 above, quality standards is making the highest contribution of 0.838 to the model, followed by leadership by making a contribution of 0.203. Besides, regarding the t-statistics, as shown on Table 4.18 above, quality standards made the highest contribution of 6.441 to the model, followed by leadership of 1.427. In regard literature review on relationship management, the Beta and t-statics were supported by Foltean, Trif & Tuleu (2019) who argued that, CRM indirectly impacted business outcome and Patyal & Koilakuntla (2017)'s empirical analysis which revealed that infrastructure quality management practices positively influenced both core quality management and, consequently, quality performance. In addition, superior performance positively affected the bottom line.

On the contrary, relationship management and process approach made no contribution at all because of negative values of -4.022 and -0.519 (t-statistics) and -0.513 and -0.077 (Beta column under the standardized coefficient) respectively. However, the aspect of p-value overshadows the argument presented by values on Beta column under the standardized coefficient. From the literature, these findings were against some studies such as Suoniemi et al (2022) who affirmed that, relationship management impacted performance, though Soltani et al (2018) did not link relationship management to performance. In addition, the t-statistics and Beta column under the standardized coefficient's output on process approach was in contrary to Khalil et al (2021)'s results which affirmed that, process approach contributed to higher performance.

Summary, Conclusions and Recommendations

Summary of the Findings

This study objective was to determine the influence of relationship management on the performance of the selected water service providers in Nairobi City County, Kenya. The researcher found that, there was statistically significant relationship of relationship management with the performance of selected water service providers in Nairobi City County. the relationship management construct that emerged top in influencing organizational performance was CRM-based technology with a mean of 4.5500 compared to the others including employee relations, employee voice and knowledge management.

The second study objective was to determine the influence of leadership on the performance of the selected water service providers in Nairobi City County, Kenya where the researcher had five constructs including the competency, honesty and integrity, influence, initiative and responsibility and accountability. According to the data analysis, the responsibility and accountability emerged as the top leadership construct that influenced organizational performance then competency, influence and honesty and integrity. However, the study found that, there was statistically insignificant relationship of leadership with the performance of selected water service providers in Nairobi City County. These negative findings were in contrary to path-goal leadership theory by House 1971 that posits that it was generally accepted that a leader's style of operation significantly affects the degree of productivity reached by employees, which in turn has a direct consequence on the performance of the business as a whole (Bans-Akutey, 2021). Hence, in regard to the respective research question; what is the influence of the leadership on performance of the selected water service providers in Nairobi City County, Kenya, the influence was insignificant.
In relation to the third research objective to determine the influence of quality standards on the performance of the selected water service providers in Nairobi City County, Kenya, the investigator found that, there was statistically significant relationship of quality standards with the performance. The quality standards were measured by the use of quality improvement, quality standards and assurance, and quality planning and policy and quality improvement was supported by the highest number of participants which represented a mean score of 4.5667. The positive link between quality standards and organizational performance was supported by Juran’s theory of quality that suggested that for an organization to effectively manage the quality of their goods and services, they must do that through three main processes including quality planning, control and improvement (Dönmezer, 2020). These three elements of quality management serve different purposes to obtain varying objectives in the process and they should all be incorporated for a successful quality management strategy. Hence, in regard to the respective research question; what is the influence of the quality standards on performance of the selected water service providers in Nairobi City County, Kenya, the influence was significant.

This study objective was to determine the influence of process approach on the performance of the selected water service providers in Nairobi City County, Kenya where the researcher found that, performance analysis and monitoring were the top constructs of process approach with means of 4.5500 and 4.4500 respectively and others were reviews and measurements and audits. This was according to Six Sigma Model as a measurement-based approach for process improvement in an organization, and which is a set of management tools and techniques designed to improve business by reducing the likelihood of error (Sodhi et al., 2019). However, from the inferential statistics, the researcher found that, there was statistically insignificant relationship of process approach with the performance of selected water service providers in Nairobi City County. About the research question on what is the influence of the process approach on performance of the selected water service providers in Nairobi City County, Kenya, the influence was insignificant.

Conclusion

The study to assess the influence of quality management systems on the performance of selected water service providers in Nairobi City County, Kenya formulated four specific variables in a bid to achieve the main or general research objective. After descriptive and inferential statistics and use of secondary data on performance, the investigator achieved these specific research objectives by findings that, there was statistically significant relationship between relationship management and quality standards and the performance while leadership and process approach had statistically insignificant relationship with the performance of selected water service providers in Nairobi City County. Therefore, quality management systems influenced the performance of selected water service providers in Nairobi City County, Kenya through relationship management and quality standards. These findings were compatible with findings by Masinde & Simba (2017) and Agus et al (2020) who found that, it was evident that a QMS had a substantial and positive impact on an organization's performance by enhancing service delivery and product quality, which in turn gave Kenya Ports Authority an edge in the marketplace and that the examined quality management practises had a favourable correlation with Indonesian food industries' organization competitive performance.

Recommendations

The study to assess the influence of quality management systems on the performance of selected water service providers in Nairobi City County found inconsistent between the leadership and the performance with the past studies. This was because according to this study, there was statistically insignificant relationship of leadership with the performance of selected water service providers in Nairobi City County while majority of past studies including Tewari, Gujarathi & Maduletty, (2019), Bans-Akutey (2021) and Al Khajeh (2018) had contrary findings. Therefore, the study recommended a future quantitative study on the impact of leadership strategies on Nairobi Water

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