

**INNOVATIVE PRACTICES AND PERFORMANCE OF NZOIA
WATER SERVICES COMPANY LIMITED, KENYA**

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DECLARATION


I declare that this research project is my original work and it has not been submitted for examinations in this or any institutions for academic purposes.

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This research project has been submitted for examinations with my approval as University supervisor.

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DEDICATION

I dedicate this research paper to my lovely wife Rahab Nasimiyu and my children Carl, Karen and Errol. You were source of inspiration to me throughout this academic journey. I am lucky to have you as my family and my love.

ABSTRACT

There is increasing need of adopting innovative technologies to curb challenges facing organizations, exploit opportunities and enhance performance as well . The intertwined and multifaceted water linked problems facing developing countries require innovative and sustainable practices. This makes it necessary for authorities given the authority to provide innovative practices that would improve performance. Therefore, the study The general objective of the study was established influence of innovative practices on performance of Nzoia Water Services Company Limited, Kenya. The theories guiding the study were; diffusion of innovation theory, the Hall's Concerns-Based Adoption Model, technology acceptance model and new administration theory. The study used a case study research design this is because the focus is on a single company and the respondents of the study were 7 managers of the company. Data was collected from primary sources of information obtained using interview schedule representing qualitative approaches. Data was analyzed using thematic analysis for the data collected from interviews. The study findings showed that use of new innovative practices for instance hybrid water supply systems, automated customer care bill and payment system, and modern supply network system have significantly improved the company performance the last 2 years. The findings showed that the number of connections has increased over a period of years, the number of sales has increased also during this period. The volume of water consumption improved in 2020 compared to 2019. The study concludes that innovative practices have contributed to performance of the company. The study recommends that managerial units in organization need to use the findings to develop innovative policies that will be significant in enhancing performance. The study concludes that innovative practices have contributed to performance of the company. The use of new innovative practices for instance hybrid water supply systems, automated customer care bill and payment system, and modern supply network system have significantly improved the company performance the last 2 years. Furthermore, the study concludes that innovative practices in the company has improved the number of connections, sales level and increased volume of consumptions among the clients. The study denotes that client awareness or capacity building is important in increasing uptake of innovative practices.

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Table 1 Company 5 year performance30

LIST OF ABBREVIATION AND ACRONYMS

CWS:	Centralized water systems
EP:	European policy
MSP:	Ministry Strategic Plan
NZOWASCO:	Nzoia Water Services Company Limited
PET:	Punctuated Equilibrium Theory
SPSS:	Statistical package of. social sciences
WDS:	Water decentralized system
WUS:	Western United States

CHAPTER ONE: INTRODUCTION

1.1. Background to the study

One of the global challenges facing many countries is water resource management. Water as a resource is indispensable in sustaining both lives for animals and plants, and directly providing transport for many supply chain industries in the world (Afshar, Massoumi, Afshar & Mariño, 2015). For sustainable living, water resource management demands for efficient and effective utilization of scarce water for economic and social sustainability. Current challenges emanating from climate change and population growth have made water management a progressive planning activity. Claassen (2018) agrees that there has been an increasing need of adopting innovative technologies to curb these challenges and enhance customer satisfaction. Nevertheless, some studies have claimed that the water sector has been slow in adopting innovative strategies compared to other sectors.

The intertwined and multifaceted water linked problems facing developing countries require innovative and sustainable practices. These problems are found in both rural and urban settlements (Afshar et al, 2015). Top priority should be given in decision making in ensuring that water innovative strategies are implemented to ensure safe water is available for consumption and usage. Ojuondo (2015) state that emergence of water service companies and firms is critical in enhancing innovation practices in supply, distribution and storage of water resources. Increasing demand for quality products calls for current innovative water management strategies, specifically in developing countries in Africa and Asia.

The study was guided by diffusion of innovation theory developed by Rogers (1962), hall's concern based adoption model, and technology acceptance model and new administration theory which attributes that individual are more likely to adopt an idea, behavior, or product if they perceived it as a new innovation. This makes the new perceived product, idea, or behavior be adopted or be diffused widely according to the proposer of the theory. The theory therefore explains the extent to which innovative practices employed by Nzoia Water Services Company did adopt by consumers thus enhancing performance.

1.1.1. Innovative Strategic Management

Business organizations are employing strategic management to enhance their competitive edge. Claassen (2018) defines strategic management as the process of developing new ideas and products to improve the competitive edge in organizations. New strategies involve suitable ideas, suggestions and products that organization can use to solve problems and capitalize opportunities. Ojuondo (2015) observes that strategies can form the basis of innovation of products and services in organizations, which means organizations develop innovations as part of their strategy to solve various environmental problems and challenges facing their business.

Several authors have defined innovative practices; Taylor & Francis (2021) defines innovative practices to be unique techniques, methods, and procedures that organizations are employing to enhance their image, profitability, and productivity. Droste and Gehr (2018) define it as those methods and techniques that improve the organization's competitive edge in the market. Other researchers in their studies have used the term innovative practices in water management, for example; When and Montalvo (2018) define innovative practices as those methods and techniques that increase efficiency in resource management. While Pereira V (2021) defines it as

those methods that increase the utility of products among the consumers. All these definitions point that water innovative practices represent techniques or methods that enhance performance or utilization of water as a resource.

Innovative practices entail a wide number of methods and techniques that many organizations are employing. These practices cover the scope of planning, quality, supply, storage, and consumption (Ojuondo, 2015). Innovative practices in this study are guided by Droste and Gehr (2018) who state that they include; technological and distribution innovative methods and techniques used in water resource management. Therefore, the study did employ technological, policy, and distribution innovative practices as water innovative practices.

1.1.2. Construct of Performance

In-water service organizations, performance is important in ensuring the objectives, targets, or goals are achieved. A larger number of water resource management organizations through their strategic plans have focused on product performance. As pointed by Mastrorilli and Zucaro (2019) it is necessary for organizations or firms to design and develop performance as part of their strategic thinking. Although, product performance is similar to the view of many organizations, in water resource management it represents consumer intake, level of market share, and sales revenues as cited by Ojuondo (2015) in Gupta and Rao's (2019) study.

Public institutions offering water services are expected to perform effectively and efficiently as part of service provision (Mastrorilli & Zucaro, 2019). This means water resource management agencies need to increase their levels of market share, sales revenue, and consumer intakes. Performance can be enhanced in the organization by ensuring that innovative practices become part of their operations, procedures, and

undertaking in general. Consequently, this study did use market share, sale revenue, and level of consumer consumption to measure performance.

1.1.3. Innovative Practices and Performance

In normal organization practices, innovation techniques and methods have significantly contributed to performance. Beyene and Ngonzo Luwesi (2018) has pointed those innovative practices are a cornerstone for organizations that seek to increase their performance. Hence the use of water management practices becomes part of strategic decisions that agencies mandated to manage water resources should undertake. In Europe, there is a solid legislative policy that governs the sustainability of water resources among member states (Mastrorilli & Zucaro, 2019). The aim of the European policy (EP) is to allow member states to use innovative practices that practice and improve the water environment. This is in contrast with Africa, where there is the need to have an integrative innovative system to manage water resources and enhance its performance.

Increased water consumption and utilization are largely attributed to distinctive innovative practices adopted by leading water resource management firms (Gehrke, Geiser and Somborn-Schulz, 2015). Many firms have adopted water supply, distribution, and technologically innovative systems that have increased the level at which the needs of consumers are sustainably met. Gehrke et al (2015) further state that profit-making firms are adopting innovative water solutions to enhance their sales revenues. It is imperative, therefore, to conclude that the performance of water management is depended on the type of innovative strategies by the respective firms or organizations.

1.1.4. Water Resource Management in Kenya

In Kenya, all the water resource management is vested heavily in the state. The water sector is devolved to various counties under their respective ministries of water and irrigation. Together with the National government, these departments are provided with the mandate to safeguard, protect and manage water resources in the Country (Ministry of Water & Irrigation, 2006). Due to various shortfalls in the water supply, as compared to the demand, Kenya is classified as a water-scarce country due to its ability to supply 647 cubic meters per capita freshwater annually. In 2002, the Kenya water act gazette outlined certain reforms which included; decentralization in the management of water by establishing independent local water management institutions to govern sanitation and water. Furthermore, allowing the institutions to commercialize water supply in their respective regions or areas (Ministry of Water & Irrigation, 2006).

Through the ministry of Water and Irrigation, the Water resource management Authority, Water and Sewerage policy the Nzoia Water Services Company Limited (NZOWAS) was initiated on 4th February 2004 as a company (MSP, 2009). It is on 9th Feb 2005 that the company started its operations serving the population from Trans Nzoia and Bungoma counties (MSP, 2009). The policy framework allowed and mandated the company to adopt innovative practices that would ensure equitable allocation, monitoring, testing, and surveillance of water resources as per established standards. In achieving these mandates, the company has outlined innovation as part of its objective in its strategic plan. NZOWAS, based on National policy framework have currently adopted innovative practices in its water supply and distribution aimed at improving performance. Therefore, it apparent to establish if these water innovative practices contribute to improved financial performance.

1.2. Research Problem

Service provision is important especially when there is a product being offered to the customers. Water provision is a key product that needs to be provided consistently to the immediate users. Focus on better product and service provisions among organizations has led to strategic planning to devise better integrative innovative solutions and systems (Ojuondo 2015). As pointed in the background of the study, the contrast on how water resources are managed in Europe as compared to Africa justifies the need to improve its management. Water innovative practices need to be part of the manager's decisions in enhancing performance.

Several studies have pointed out theoretical, conceptual, and methodological gaps to justify the need to conduct the study. There are several studies indicating theoretical gaps. Omondi (1999) which was cited in Mastrorilli and Zucaro (2019) on services provided by the public institutions on customer satisfaction. Found that there are poor service provision and customer complaints in the majority of public institutions offering monopolized services. Amatulla (2017) did a study that sought to establish water sustainable management practices in Africa and found that countries lack suitable practices to manage water as a scarce resource. Although, these studies point out a lack of suitable practices they do not address the theoretical aspect of innovative practices.

Few studies reviewed have pointed out conceptual and methodological gaps. Bichai, Grindle, Murthy (2018) did a study addressing barriers in the water-recycling innovation system to reach water security in arid countries and found this system to be effective in water management. Marin, Tal, Yeres and Ringskog (2017) studied water Management in Israel: Key Innovations and Lessons learned for water-scarce

countries. They established that innovations are the best solutions in managing water scarcity problems. Claassen (2018) did a study on international innovations in water: stewardship. The study pointed that management is the major problem in providing viable sustainable water innovative management solutions. All these studies have not shown a linkage between water innovative practices and performance.

In addition to the mentioned gaps, the need to conduct this study is based on the aim to address the provision of services and products among the public institutions and parastatals. Implementation of performance contracting ensured that services are improved in public institutions but this has brought varied outcomes. The majority of the public institutions in Kenya have been localized to improve their managerial performance. Nzoia Water Services Company Limited is one of these institutions currently been allowed to employ innovative practices to enhance its performance. The study therefore be seeking to answer the question of whether do water management innovation practices employed have any influence on performance?

1.3. Objective of the study

The general objective of the study was established influence of innovative practices on performance of Nzoia Water Services Company Limited, Kenya.

1.4. Value of the study

The study is conducted to provide insightful benefits for various stakeholders. These findings will enrich policymaking, managerial practice, and theoretical foundations. In terms of policymaking, institutions mandated in coming up with policies for water resource management will benefit from the outcomes of this study. They will be able to formulate policies supported by the study findings on the extent to which

innovative strategies in water management influence the performance of relevant institutions.

Other beneficiaries of the study findings are the management of respective institutions and other organizations. Findings from the current study would provide scientific findings that support daily operations and strategic planning. It is predicted that innovation practices contribute significantly to the performance of organizations. Therefore, this supports the need for managers to devise new ways, techniques, and methods that would contribute to the performance of their respective organizations. This serves the purpose of scientific studies improving managerial practices in organizations.

Final report findings will be made available for library and online users who include; researchers, and academicians. Future and current researchers will either find the study findings useful in establishing gaps for their studies or supporting their literature review respectively. This provision of scientific secondary data goes in line with the study purpose of supporting a theoretical foundation on performance and innovative practices in institutions. This means that more scientific data on the two concepts will be available for individual or corporate researchers, and all types of academicians.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This chapter makes a review of various scientific secondary data. The purpose of conducting the review of literature is to: understand the study variables, justify the reason to conduct the study, and establish gaps from these related studies. This chapter was therefore divided into sub-headings consisting of the theoretical foundation, measurement of concepts, empirical review, and knowledge gap.

2.2 Theoretical foundation

The section provides a theoretical foundation guided by four theories. The first theory of diffusion of innovation theory seeks to explain the process that innovation practices are spread in organization while the second theory of technology acceptance explains acceptance of innovation among users. The Hall's Concerns-Based Adoption Model explains the change that is brought by any innovative practice which is adopted in organizations and new theory model used to indicate improvement in public sector. Others include technology acceptance model and new administration theory.

2.2.1 Diffusion of Innovation Theory

The study's was guided by the Diffusion of Innovation Theory developed in 1962 by Rogers. The theory attributes that individuals would adopt a new idea, product, or behavior if it is perceived to bring transformation or change. The theory further attributes that change and transformations can be brought through new innovations directed to improve operations and practices. Diffusion explains the extent to which the new innovation spreads or is embraced widely across the company operations.

Diffusion of innovation theory is applicable in this study in seeking the extent to which innovative practices adopted by companies will be accepted widely across the

customers in which it is serving. The performance of the company will not be successful if consumers do not embrace innovative practices or are not aware of the services as well. Therefore, it is important for the outlined innovative practices to diffuse to entice customer loyalty and persuade potential customers to consume products. The criticism of the study is that it only focuses on the way innovation spreads in the organization but lacks to explain much on the consequences or contribution of the innovation.

2.2.2 Hall's Concerns-Based Adoption Model

The study is further guided by Hall (1979) theory known as concerns-based Adoption Model. The theory outlines that innovation involves change which is based on six assumptions; change is a process not an event, individuals are the ones to accomplish change, change is a personalized experience, development growth is attributed to change, individuals can best explain change on operational terms, and change is facilitation of innovations. According to the theory, innovation is made possible if change is embraced and implemented by the users.

In this study, the theory was useful in explaining the adoption of innovative practices among the recipients of the services offered by the company. Hall (1969) pre assumes that success of any innovative practice is highly depended on the ability and behavior of the users to embrace change. This means that for the water innovative practices to be successful among the users, it requires that the customers positively embrace the new changes. On the company perspective, they need to understand that change is a process, development growth and accomplished by the individuals for them to easily implement it. The gap in this study is that it does not major focus on the performance of the change created and developed.

2.2.3. Technology Acceptance Model

Lastly, the study was guided by the Technology Acceptance Model compounded by Davis (1985). According to the theory, it is the user expectations and attitudes towards innovation practices that directly affects its probability of it being accepted and adopted. It is based on two dimensions; how the users perceive the innovation and how simple the innovation is it to be used or learnt. Davis (1985) states that once the two questions are answered positively then there is higher chance that the stated innovation would be embraced and be successful.

The theory was used in this study to explain the nature of adoption of innovative practices among the customers. The study was to answer the two questions provided by the theory. How are the customers being served by the company innovative products and services perceive it in meeting their expectations? And as well, establish if the new changes brought by innovative practices are simple to use and operate? The gap in this theory is that it does not provide explanation where such innovations contribute to the innovators performance.

2.2.4. New administration theory

The theory which came in applicability in 1980 was proposed by Hood and Jackson (1980) in United Kingdom and Australia. The goal of the theory was to covert service delivery among public enterprises to follow some features that private sector has in their service delivery models. The main themes that were advocated by the theory included; improving financial controls, advocating for money value, enhancing efficiency, developing e-government systems and reduction in costs. Several businesses both private and public in countries all the world have adopted the model

to improve their service delivery. The model is applied in improving service delivery of the company where they seek to use innovative practices to enhance performance.

2.3. Measurement of performance

Performance is one of the criteria that are essential for a business to meet its intended objectives or goals (Craine, 2017). Water resource management Authority, Water and Sewerage policy allowed the commercialization of authorities dealing with water in Kenya. This meant that water companies have to relook at their ways of enhancing performance. Dinar, Pochat & Albiac-Murillo (2015) states that performance involves indicators that increase productivity in organizations. According to the author's commercialized organizations mainly focus on sales, customers, and profit making.

In other words, several authors Sapkota et al (2015) agree that performance is essential for product and service companies to sustain their operations. Commercialization of public water services was therefore critical in ensuring that they perform efficiently and effectively. Consequently, to assess the performance of the water management company the study will adopt the following measurement indicators; growth of market share, number of water capacity intake, and sales levels. These performance indicators will be useful in justifying the various water innovative practices.

2.4. Measurement of innovative practices

Innovative practices represent new methods, and techniques employed by authorized companies and agents to ensure quality and sustainability of products and services is provided to current and potential customers (Cosgrove and Loucks, 2015). There are several methods that firms employ to institute innovative practices. Craine (2017) points out examples of current and future innovative practices involving new

technologies on products, services and technology-aided functions. For example, innovative practices in water management include; satellite remote sensing, systematized technology aided payment methods, alert systems, customer care, decentralized and distribution networks.

According to Liu and Jensen (2018), there are a number of innovative techniques that firms may employ as part of their innovative management solutions. The independent variable of the study that is innovative practices will be guided by three variables (innovative strategic planning practices, product or service innovative practices, and technology innovative aided practices). According to Liu *et. al* (2018) many of the innovative practices cover the three dimensions.

2.5. Innovative practices and Performance of Organizations

The empirical review seeks to establish the gaps existing from related studies. The section will review scientific secondary studies guided by the specific objectives of the study. The review is to identify methodological, theoretical, and conceptual gaps that will be summarized in the knowledge gap. The section points out some of innovative practices that organizations are employing to enhance performance especially in water related industries.

A study conducted by Cosgrove and Loucks (2015) sought to establish the need to solve the current challenges facing water management across countries in Africa. The objective was to establish innovative solutions that organizations are using to solve water related problems in Africa. Solutions brought by the study were more theoretical where the authors were advocating for water resource research and disseminating approach to be conducted by the relevant authorities. The study advocated for innovative research to take a leading role in providing solutions. This

study is supported by Craine (2017) who agrees that current and future challenges need to be scientifically established through experimental research. Both studies point to the need to have a fact-finding solution for current and future needs, opportunities, and challenges.

Several studies have been conducted to establish the effectiveness of having innovative distribution systems in enhancing performance. Liu and Jensen (2018) point to the need to have a hybrid system of distributing water services. Centralized water systems (WCS) have been in use for a long but currently, a water decentralized system (WDS) is being used in some homes. A combination of both systems is found to be cost-effective as reported by the study. This study shows that technology aided innovation is useful in enhancing performance of water related firms. This study finding is supported by Colby and Young (2018) who state that distribution systems especially decentralized one is effective in managing water and reducing water wastages. Generally, the two independent studies point to the need to have an effective distribution system to enhance performance.

Water pricing and payment solutions have been major problems in many water resource management companies. A number of studies have pointed out the need to have improved innovative water pricing and payment solutions. Sapkota et al (2015) study point out the need to have an automated pricing system that is related to automated payment solution services found in Canada. This automated payment system ensures equity in making charges and enhances the performance of the companies. Dinar, Pochat and Albiac-Murillo's (2015) study indicates how China's water pricing and payment comprehensive system have enabled pricing of water consumption, accessibility of bills, and quicker payments of bills. According to the

authors, China's revenue from water bill collection increased tremendously over the years. The two studies reviewed show the usefulness of having a payment innovative system which is part of technology aided innovation for water management which aids organizations to increase their performance.

In support of innovative water supply and distributive networks, Colby and Young's (2018) study points out the need to have innovative piping systems in urban settlements that minimize water wastages. Water wastage management is supported by Tekken and Kropp (2015) who agree on the need to have sustainable water management practices during the distribution and supply of water to homes which increase efficiency and effectiveness. Dinar et al (2015) identify the use of innovative piping systems made of durable material ensuring that water is distributed without any wastages. All these authors are in agreement that innovative aided products and services in form of piping distribution systems are essential in minimizing wastages.

The utility and use of innovative water management systems in enhancing organization performance is explained well by a study conducted by Hornidge et al (2016). The study illustrates the use of innovative large-scale irrigation systems found in the Khorezm Region serving livelihoods in rural areas. The integrative water system consists of water linkages between society, technical infrastructure, and the research development process. From this study, a conclusion of a better water service management system is designed and developed leading to better outcomes and results for consumers. The innovative integrative system has further enhanced the number of customers connected to the water distribution network, and fewer complaints have

been reported over the last decade. This indicates that innovative products are useful in enhancing performance of organizations.

Technology innovative systems in water management have used in tracking and controlling water resources. As reported by Zyrianoff, Heideker, Silva and Kamienski (2018) innovative satellite remote sensing technologies have been used to manage smart water management used in Agriculture. According to the study the innovative satellite system is used to track the amount and intensity of the water used in the firms within a centralized location. Furthermore, the satellite remote sensing in some parts of Nigeria Urban settlements has been used to control illegal water connections. According to the authors, the technology has increased efficiency in water management thus increasing water revenues and therefore enhanced performance for companies.

An article published by Colby and Isaaks (2018) points out the need for a suitable innovative policy framework that should be used for managing water trading in Colorado. An effective econometric model of transaction known as the punctuated Equilibrium Theory (PET) was adopted that involved mutual contractual agreements with private suppliers of water resources serving the general public water grid. Recent Colorado policy innovations related to water trading emphasize reducing on-farm consumptive use and making water available for other purposes without permanently drying up irrigated cropland. This innovative policy has enabled proper management of water supply and usage in the Western United States (WUS). Colby and Isaaks (2018) show how innovative policy frameworks are significant in managing water resources.

The use of nanotechnologies for water and wastewater treatment as a new innovative opportunity is pointed by the study conducted by Gehrke, Geiser and Somborn-Schulz, (2015). The study points out the use of nano adsorbents, nanometals, and photocatalyst used in water and wastewater treatments. The new innovative technologies have been effective in propelling the capacity of supply of water supplied and reducing global water pollution. The use of nanotechnology is highly regarded and is in place in European countries. Many studies though are pointed by the authors to be conducted to indicate its health implications before a global rollout. Nanotechnologies innovation use in water and waste treatment provide an opportunity for further studies to be carried out.

A study to clarify the need and importance of water innovative practices was done by Sherry, Juran, Kolivras, Krometis and Ling, (2019) who proposed the use of solar power innovations and automated prepayments in improving water management in Tanzania. These studies outline how the public authorities' water service provision is perceived as poor and lower revenues are obtained from the endeavors. Adoption of these innovative water system solutions would increase accountability and reduce costs emanating from fuel charges. Tanzania's government has been able to fill these gaps by changing the majority of the water management operations by adopting solar-aided machines and prepaid systems.

The role of innovative water policy development in managing water resources in Kenya was pointed by Ojuondo (2015). The study sought to find out factors influencing the sustainability of water treatment projects. The study mentioned the need to develop sustainable water innovative treatment technology that would substitute the use of chlorine for purifying water which is has been associated with

major health implications. Ojuondo (2015) is supported by Thompson (2015) who advocates for advanced water filtering and condensing technologies that enhance the quality of water safe for consumption rather than using chemicals for water purification.

2.6. Summary of literature and Knowledge Gap

The review of related empirical studies has brought insightful findings useful in enriching the study. Several studies have shown the existence of innovative practices in organizations or operations especially in water management. Liu and Jensen (2018) mentioned a hybrid water distributive system, Sapkota et al (2015) outlined an automated piping system, Colby and Young (2018) mentions an automated water bill payment system, Hornidge et al (2016) outlines an integrative water system, and Zyrianoff, Heideker, Silva and Kamienski (2018) mentions about satellite remote sensing water technologies. These studies show the existence of innovation practices in water management but lack the linkage with performance. They generally the studies do not indicate the extent these innovative practices would have on performance. Apart from the studies by Ojuondo (2015) and Kimorop, Ngeno and Rotich, (2018), few local studies have been conducted on the topic of interest. The current study will be seeking to fill the gaps by integrating the variables in the study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

This chapter depicts the research methodology which was used in this study. It outlines the research design, the study respondents, methods of data collecting and analyzing data, and presentation of results and findings.

3.2. Research design

The study used a case study research design this is because the focus is on a single company. The case study research design provides a comprehensive study of a specific scenario or object to get inferences (Kothari, 2004). According to Queirós, Faria and Almeida (2017), the case study is a in depth study of one specific unit of study. The research design is relevant in seeking comprehensive answers to the research questions provided by a survey instrument.

3.3. Study respondents

The respondents of the study represent units, objects, and individuals that provide useful data relevant to the study (Stokes, 2017). The unit of the study was obtained from the managers working at the Nzoia Water Services Company from both counties of Bungoma and Trans Nzoia. As per the county public service commission records of 2021 of Bungoma and Trans Nzoia there are about 7 relevant managers working in different sections within the company dealing with water innovative practices. They include; research, planning & development, head of technical services, business development, risk & internal audit, supply chain, physical & facilities, and electro-mechanical managers. The respondents of the study were 7 managers of the company. The staff did provide useful information regarding the water innovation practices and the extent they have been helpful in enhancing performance in the company.

The study did employ the census method as part of its sampling procedure. According to Crowther and Lancaster (2012), the census sampling technique is ideal for a population that is small in number. The 7 respondents were purposively selected because of the small number they represent, and in addition, the nature of the information they are more likely to provide to the study. The purposive sampling technique represents a method that locks other potential respondents from the study (Crowther & Lancaster, 2012) Census sampling method is also appropriate because it reduces the sampling errors (Stokes, 2017).

3.4. Data collection

Data was collected from primary sources of information obtained using interview schedule representing qualitative approaches respectively. Primary sources were obtained from structured interview schedule administered to the respective managers. Stokes (2017) states that interview schedule is effective in gathering more data in allowing customers to give a wider approach to the given questions. Secondary data in aid of data collection checklists was used to collect data from the company records to ascertain their performance the last 5 years.

The process of collecting the data began with validating the contents of the research questions with the college supervisor and subject experts. A structured interview schedule was administered to the study respondents after seeking authorization from the relevant institutions and making pre-interview bookings. To facilitate a quicker 10-day data collection process, an interview schedule was developed, arranged and followed accordingly which help in the data collection process. Data was then stored ready for analysis.

3.5. Data analysis

Data analysis is defined by Queirós, Faria and Almeida (2017) as the process of obtaining information from the data collected and processed. Data was analyzed using thematic analysis for the data collected from interviews. According to Crowther and Lancaster (2012), thematic analysis involves a process of organizing qualitative data into a logical statement based on the themes provided by the study. Final report findings were presented using logical statements.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS, AND DISCUSSIONS

4.1 Introduction

The section outlines findings obtained from the interviews conducted. Data collected in this section was analyzed using thematic analysis and presented using logical statements based on the themes of the study. Discussion was based on the linkage between the study findings and empirical findings from chapter two empirical review. The study obtained an interview response rate of 100%, this was achieved by keen follow up by the researcher.

4.2. General information

The respondents were asked to provide the number of years they have been with the company. This question was important to assess the employee knowledge on the activities being carried out in the company. The response to the question was as follows:

The 1st respondent stated to have been in the organization for a period of 6 years, similar to the 2nd Respondent who stated the same period. The 3rd, and 5th respondents mentioned a period of 5, and 4 years respectively. Notably, the 4th, 6th, and 7th respondents agreed to have been in the company for a period of 2¹/₂, 2 and 6 months subsequently.

The finding shows that a large number of respondents (6) have stayed long enough to understand the various activities and changes to have occurred to the company the last 2 years. The study sought to find out from the respondents the general

performance of the company the last decade and whether there has been any form of changes in performance. Findings to these questions were reported as follows:

The 1st respondents stated that the last decade the company has not been meeting all its obligations as required, while the 3rd, 5th, and 7th stated that the performance has been average. Moreover, only 4th and 6th respondents alluded that the performances have improved the last decade. To signify the changes in that have occurred in the company the last two years, all the 7 respondents agreed that new changes have occurred currently in the organization.

These findings from the majority of the respondents denote that previously the organization was not performing well or was performing on average but recent changes have seen improvement in performance. Additionally, the study sought to establish from the respondents which aspect of performance has predominantly been seen to have improved in the company and how often do the company make any form of changes. Findings to this question were reported as follows:

The 1st, 4th, 5th and 6th respondents mentioned that; they have witnessed improvement in governance, and financial management where the company is able to meet its financial obligations, pay creditors and avoid wastages in its resources. While the 2nd and 3rd respondents eluded that the company has witnessed a significant growth and improvement in service provision. In respect to the frequency in making changes all the seven respondents agreed that on rare or not often does the company make in form of changes.

The findings from the respondents showed that there have been significant changes in the areas of governance and management. This is evidenced by the ability of the company to meet its financial obligations and expand its service delivery.

4.3. Organizational changes and innovation

In establishing whether the organization harbors any notable changes that reflect the aspect of innovation practices, the respondents were asked to mention innovative areas which were then reported as follows.

The 1st, 5th and 6th respondents in a unified voice agreed that there have been significant changes in administration and management of the company. They both reported that new managers have been recruited, employee salary structures have improved, job performance evaluations are conducted and competitive governance techniques are being applied. While the 2nd, 3rd, 4th and 7th respondents stated that new technical changes have occurred in billing section, water treatments, and sales department in the organization.

These findings from the respondents provide testimony that managerial and technical changes have occurred in the company the last 5 years. This denotes that innovation practices are subsequently witnessed by these new changes. The study further sought to establish from the respondents which section within the company that is in charge of new innovations. Findings to this particular question was logically presented as follows;

The 2nd, 5th and 6th respondents stated that the Information Communication Technology section is in charge of new innovations in the company. While the 1st, 3rd and 4th respondents stated that the technical department is in charge of any new innovations. The 7th respondent stated that all the departments in the company have the mandate to develop and be in charge of any new innovation especially in their particular specialty. The 2nd, 3rd and 5th respondents stated that the ICT department is the main source of innovation ideas in the company

while 1st and 4th respondents stated that the research and benchmarking is the main sources of innovation ideas.

The findings dominantly shows that the ICT and technical departments are fully in charge of any innovations taking place in the company and are also the main source of innovations in the company. But as established from the 7th respondents other sections have been empowered to oversee any form of innovation within their units.

4.4. Innovation practices

This section sought to establish from the respondents which type of innovative practices are applied in the company. Therefore, the respondents were asked to generally state which element do they view as an innovation of the company. The finding to the question was logically reported as follows;

The 1st, 2nd and 6th respondents reported that the enterprise resource planning (ERP) is one of the elements they are viewing to be an innovation in the company. While the 3rd respondents mentioned the use of smart metering technology, and new billing systems as new elements of innovation. The 4th and 7th respondents alluded that meter audit and real time payment systems are the dominant elements of innovation in the company.

The findings from the respondents verify that there are new innovations in the company. This is proven by the various elements that the respondents pointed out like the use of ERP, new billing and payment systems.

4.4.1. Types of innovation practices

The respondents were asked to explain on which type of water distribution systems do their company utilize. The findings to the question were therefore reported as follows;

The 2nd, 3rd, 4th and 6th respondents had similar findings where they explained that the company is using gravity and pumping as its distribution system. Whereas the 1st, 5th and 7th respondents agreed that the company using a hybrid water distribution system.

The findings from the respondents clearly verifies that the company is using a hybrid type of distributing water system in supplying water to its consumers. They hybrid consists of gravity and pumping. The study therefore sought to find out the period in which this distribution system has been in place in the company. Findings were as follows;

The seven respondents were together in stating that the gravity distribution system has been operational for a longer period since the inception of the company. But the use of both pumping and gravity has been instituted and got to operation the last 3 years . Therefore, giving way to a hybrid new innovative practice.

The findings shows that the introduction of the hybrid system by the management is one of its innovative practices installed recently in the company. Furthermore, the study asked the respondents to explain if performance of the company has improved with adoption of the distribution system. Findings to this was reported logically as follows:

The 1st, 2nd, 4th and 6th respondents were in agreement that the hybrid water distribution system has been effective in enhancing performance in the organization. They further supported their responses by stating that no water leakages or filtrations are witnessed by the use of the distribution system.

The findings are a clear indicator that adoption of the new hybrid water distribution system has enhanced performance in the company by reducing water wastages and filtrations.

Furthermore, the study sought to establish other type of innovation practice that is present in the company. Therefore, they were asked on whether the company have an automated billing or payment system and the period in which it has been operational. The findings to these questions were logically presented using statements as follows;

The 1st, 3rd, 4th, 5th, 6th and 7th respondents were in agreement by stating that the company have an automated billing or payment system. Only, the 2nd respondent refuted that the company does not have the system. Furthermore, all the respondents excluding the 2nd respondents stated that the automated billing or payment system has been operational since 2018.

The findings from the majority of the respondents provides verification that the automated billing pr payment is used by the company, and has been in operation since 2018. Also, the study sought to establish the service performance level of the automated billing or payment. The findings to the question were shown as follows:

The 1st, 3rd, 5th, and 6th respondents agreed that the service performance of the automated billing or payment system is excellent, good or effective. The respondents further noted that gaps in financial management have reduced significantly due to the use of the system.

The study additionally sought to find out if the company have a customer care automated system, how long has it been use, and whether the system does provide the required service expectations. Findings to this question was reported as follows;

Excluding the 2nd and 5th respondents other respondents agreed that the company have a customer care automated system. They further noted that the customer care automated system has been use since the year 2018. They respondents agreed that the system has been able to meet the required expectations. Furthermore, the 6th, 2nd and 3rd respondents stated that the system has enabled the customers to give feedback of the innovative practices offered by the company.

The findings shows that the innovation of customer care automated system has been in existence for a period of 2 years and serving the customer feedback effectively and efficiently. The respondents were asked to state whether the company have an updated supply network, the period in which they have been operational and whether it is offering improved service to the customers. The findings for these questions were reported as follows;

All the respondents agreed that the company have an updated modern supply network, and it has been in operation since 2018. Additionally, all the respondents were in agreement that the modern supply network has led to improved service provision to the client. They stated that more water connections have been made possible through the innovative system.

The findings show that the company has a modern supply network system which was implemented in 2018. According to the respondents the innovative system has been effective in enhancing performance in the company.

4.5. Performance of the company

The study sought to establish from the respondents which of the performance metrics have improved the last 2 years due to several innovations implemented by the company. Finding to this question was therefore presented as follows;

The 1st, 3rd, 4th and 5th respondents were in agreement that customer bill generation, and customer care have improved significantly for the last three years. while the 2nd respondents stated that revenue, customer base and payroll systems have significantly improved in the company. Furthermore, the 3rd and 6th respondents were in agreement that water wastages have been reduced and increase in water supply coverage have improved over the last two years of operations.

The findings show that customer billing on water charges have improved significantly the last 2 years, and furthermore the business has grown in water supply distribution networks. Furthermore, revenue for the company have improved and lesser water is wasted during the distribution process. The study sought to find out whether the clients have been trained on the new innovation products offered by the company and which challenges are facing the company in seeking to improve performance through important practices.

All the respondents agreed that clients have been trained or provided with capacity awareness programmes on the new innovation projects implemented by the company. They all stated that financial resources is the main challenge that faces the company in implementing new innovations that would enhance performance in the company.

The findings shows that clients have been trained on innovation practices by the company. This has enhanced performance of the innovative practices instituted by the company. Inadequate financial resources are seen to be the main hindrance in developing new innovations in the company that would enhance performance. Furthermore, Table 4.1 shows a summary of performance of the company for a period between 2016 to 2020.

Table 4.1 Company 5 year Performance

Year	Number of connections	Sales levels (k.sh)	Volume of water consumptions (M₃)
2016	50,281	299,746,404	3,356,034
2017	51,621	307,734,713	4,278,055
2018	53,390	318,280,473	4,587,023
2019	56,223	336,653,833	4,067,976
2020	51,670	380,019,355	4,254,899

Source: Nzoia Water Services Company, 2021

The secondary data of the company performance obtained from the financial records showed that; the number of connections has increased over a period of years, the number of sales has increased also during this period. The volume of water consumption improved in 2020 compared to 2019. The findings show improvement in performance of the company in the 5 year period.

4.6. Discussions

Changes occurring in many organizations are mainly associated with new innovative practices as witnessed in the company the last 3 years. This finding is confirmed by Colby and Isaacs (2018) who states that managers are concerned with making changes

within their organization but this is found possible by embracing innovation. In service companies it found that mainly the technical and ICT departments are found to be the contributors of innovations. This assertion is supported by a study by Craine (2017) who observes that technicality in operations is mainly a cornerstone of business that provide services to its customers.

The hybrid water distribution system was one of innovative practice that was used by the company and was found to have improved performance. This finding is supported by Liu and Jensen (2018) who state that a hybrid of a water decentralized system (WDS) and Centralized water systems (WCS) is found to be cost effective in management of water resources. Another innovative practices that is effective in managing customer complaints and needs and enhancing customer satisfaction is by using customer automated billing and payment systems. The findings are supported by Sapkota *et al* (2015) which was conducted in Canada where an automated pricing system is used and this automated payment system ensures equity in making charges and enhances the performance of the companies.

The supply network system is effective in ensuring water is distributed without any wastages as adopted by the company. This system has improved water supply, eliminated wastages and it effective in management of water resources. This is supported by Colby and Young's (2018) who state that there is need to have innovative piping systems which have enabled sustainable water management practices during the distribution and supply of water to homes which increase efficiency and effectiveness. This further is supported by Dinar *et al* (2015) who identify the use of innovative piping systems made of durable material ensuring that water is distributed without any wastage.

The study found that innovative practices have been contributed to increased volume water consumed, sales level and number of connections hence improved performance. This is supported by Hornidge *et al* (2016) who state that use of innovative water management systems is useful in enhancing organization performance. Additionally, Zyrianoff, Heideker, Silva and Kamienski (2018) observes that the innovative integrative system has further enhanced the number of customers connected to the water distribution network. Furthermore, the authors states that technology has increased efficiency in water management thus increasing water revenues and therefore enhanced performance for companies.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMEDATIONS

5.1. Introduction

This chapter discusses the summary of the study, conclusion and recommendations for further studies, limitations of the study and lastly conclusions for further studies based on the objectives of the study. The main objective of this study was to establish the influence of innovative practices on performance of Nzoia Water Services Company Limited, Kenya.

5.2 Summary

The study established that the company has witnessed innovation practices the last 2 years of operations. The findings dominantly show that the ICT and technical departments are fully in charge of any innovations taking place. In respect to the types of innovations in the company the findings from the respondents clearly verifies that the company is using a hybrid type of distributing water system in supplying water to its consumers. This new hybrid water distribution system was found to have enhanced performance. Another innovation that was found to be used in the company is the customer automated billing and payment system implemented in the year 2018. The customer automated billing service was found to be serving the customer feedback effectively and efficiently. Furthermore, the company was found to have a modern supply network system which was implemented in 2018. The innovative system was found to be effective in enhancing performance in the company.

The study in reference of performance the study found that customer billing on water charges have improved significantly. Additionally, it was established by the

researcher that the last 2 years clients have been trained on innovation practices by the company. In respect to challenges; the study found that inadequate financial resources are seen to be the main hindrance in developing new innovations. Financial records of the company showed that the number of connections has increased over a period of years, and additionally, the number of sales has increased during this period. Overall, the study found that the volume of water consumption improved in 2020 compared to 2019.

5.3 Conclusion

The study concludes that innovative practices have contributed to performance of the company. The use of new innovative practices for instance hybrid water supply systems, automated customer care bill and payment system, and modern supply network system have significantly improved the company performance the last 2 years. Furthermore, the study concludes that innovative practices in the company has improved the number of connections, sales level and increased volume of consumptions among the clients. The study denotes that client awareness or capacity building is important in increasing uptake of innovative practices.

5.4 Recommendations

The study provides theoretical and empirical enriching findings that would be useful to various stakeholders. Managerial units in organization need to use the findings to develop innovative policies that will be significant in enhancing performance. Managers as well need to develop innovative programmes that are directed to customer management and systems management of performing work. Those in operation sections need to embrace innovation practices to be part of the organization competitive edge.

Additionally, the study recommends to organizations to enhance capacity building or trainings to their customers on new changes or innovations. This will increase uptake of the services. Furthermore, organizations should focus on using research and development to source for new innovative ideas and practices. To enhance ownership and sustainability the study recommends that each unit, sections or departments should be responsible or in charge of any innovations taking place in the organizations.

5.5. Limitations of the study

The methodological limitations the study found that the responses provided by the managers are not comprehensive as compared to a scenario where all the employees were contacted, and a short period in collecting data hindered the need to target a larger population. The study lacked a more equitable response where all potential study subjects could have been selected. Contextual limitation showed that other managers contacted lacked knowledge of certain innovative practices found in the organization.

5.6 Suggestions for further studies

In reference to methodological and contextual limitations in the study the researcher makes further suggestions for future researchers. Future studies need to be conducted in other organizations to obtain a wider view of the problem. Furthermore, the target populations of the study need to be increased to have a wider scope of responses in answering the study objectives. Other methods of collecting data mainly quantitatively would be used by future studies.

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APPENDICES

Appendix I: Interview Schedule

I'm pursuing a Master of Business Administration from the University of Nairobi School of business, and I'm interested in conducting a study titled WATER INNOVATIVE PRACTICES AND PERFORMANCE OF NZOIA WATER SERVICE. The study is for academic purposes. Your participation during this interview process will be appreciated and treated with the highest professionalism.

The interview schedule is scheduled for 10-15 minutes of your time.

1. For how long have you been working in the company?
2. What is your job destination?
3. What was the performance of the company last decade?
4. Are there changes in performance between the current and past?
5. If Yes, what aspect of performance is predominantly seen in the company?
6. How often does the company make changes in the job practices in six months?
7. What are some of the notable changes seen in the organization over the last 5 years?
8. Which section in which the company dominantly makes new innovations
9. Which element do you view as innovation in the company?
10. Which water distributive system does your company utilizes?
11. How long have this type of distributive system innovation have been operational?
12. How is performance of the type innovation in distribution system effective in providing the required service?
13. Do you have an automated billing or payment system?
14. How long has this automated billing or payment system been operational?

15. How is the service performance of the automated billing or payment system?
16. a. Do you have a customer care automated system?
 - b. How long has it been in use?
 - c. Does it provide the required service expectations?
17. a. Do you have an updated modern supply network?
 - b. Which period was it initiated?
 - c. Has it led to improved service provision to the clients?
18. Which of the performance metrics have improved in the last 2 years due to the innovation?
19. Were the clients trained or provided with any capacity awareness programmes for the new innovation products?
20. What form of feedback does customers provide on the new innovation?
21. What is the main source of innovation ideas in your company?
22. What challenges is facing your company in terms of new innovations and performance?

Appendix II: Data collection Checklist

A review of company for performance for the five-year period

	2016	2017	2018	2019	2020
No of connections					
Amount of sales level					
Average Volume of water consumption					

Appendix III: Research Plan

Task No:	Task descriptions	Tentative Time Period:
1	Writing and submission of synopsis	8 th August 2020
2	Development of research proposal	1 st Jan to 30 th March 2021
3	Submission & correction of the research proposal	1 st to 10 th April 2021
4	Research proposal first defense	12 th -20 th September 2021
5	Correction of the first defense findings	25 th to 30 th September 2021
6	Pilot study on the research instruments	4 th OCT -10 th October 2021
7	Collection of data	15 th -30 th October 2021
8	Data analysis & final report documentation	1 st Nov -10 th 2021
9	Presentation & final report findings	11 th -20 th Nov 2021
10	Correction & submission of final research project	21-30 th Nov 2021

Appendix IV: Research Budget

Research Phase	Items	Appx Cost (Ksh.)
Proposal development	Stationery	
	Printing & photocopy	
	Library charges	
	Internet & telecommunications	
	Transport and other ledger costs	
Data collection	Questionnaire's printing	
	Data collectors' fees	
	Lunch & entertainment	
	Transport	
	Permit fees	
Data analysis	Data analyst fees	
Final report submission	Printing and photocopying	
	Transport	
	Binding charges	
	Miscellaneous costs	
GRAND TOTALS=		

Appendix IV: Plagiarism Report