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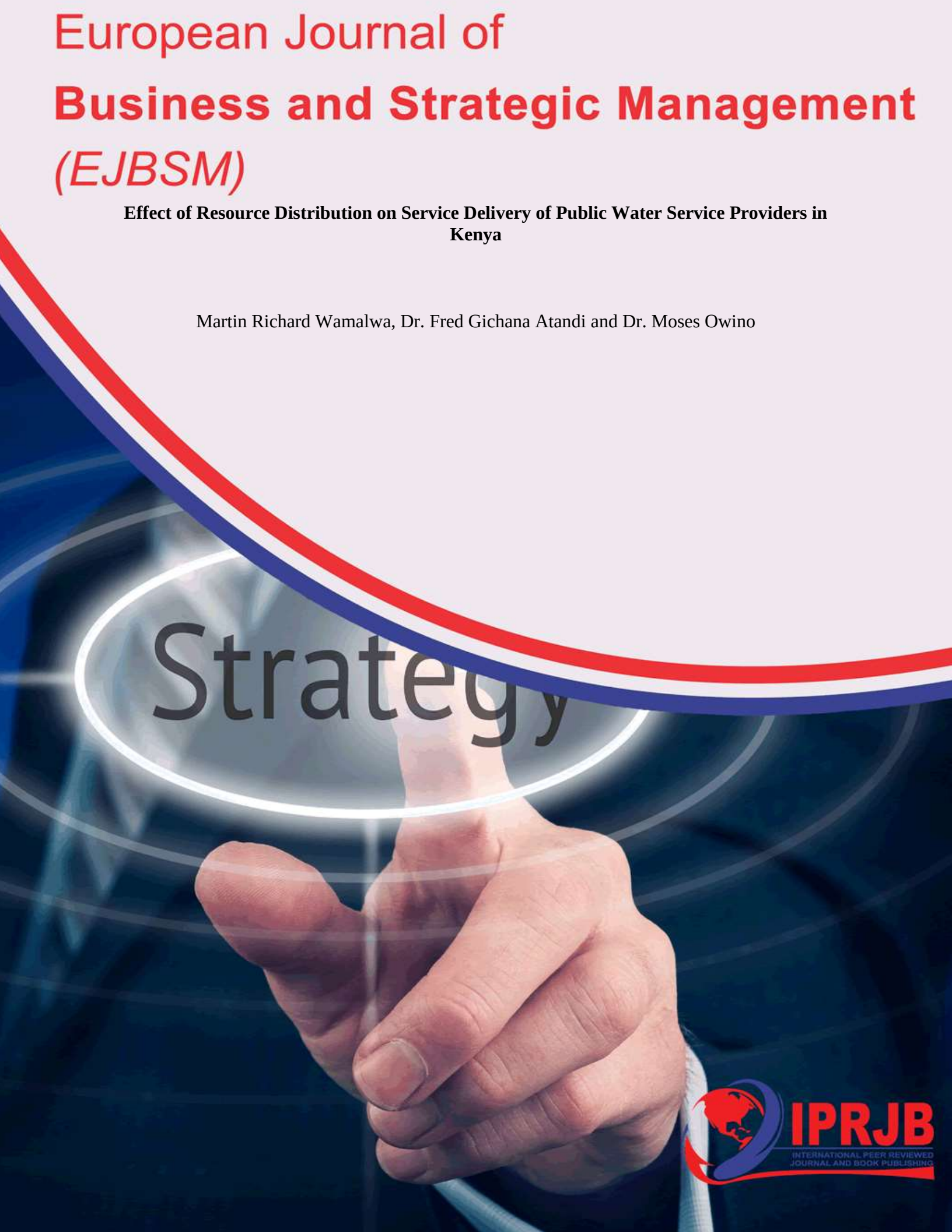
Martin Richard Wamalwa, Dr. Fred Gichana Atandi and Dr. Moses Owino



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Martin Richard Wamalwa
Kibabii University

Dr. Fred Gichana Atandi
Department of Business Administration and Management, Kibabii University

Dr. Moses Owino
Department of Business Administration and Management, Kibabii University

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Abstract

Purpose: This study aimed to evaluate the influence of strategic partnership on service delivery among the public water service providers in Kenya.

Methodology: The study employed a mixed-methods research design, specifically an explanatory sequential approach, to gain a comprehensive understanding of the research problem. This involved collecting and analyzing quantitative data first using a cross-sectional survey with structured questionnaires administered to a sample of personnel within public water service providers in Kenya. This quantitative phase aimed to test hypotheses and establish relationships between variables. Following this, a qualitative phase was conducted using semi-structured interviews with key stakeholders, such as managers and staff, to provide in-depth insights and contextual explanations for the quantitative findings. This integrated approach allowed for both the testing of relationships and a deeper exploration of the underlying factors influencing service delivery. The target population for the study comprised all 88 public water service providers in Kenya, focusing on key management and staff members involved in service delivery, totaling 352 potential respondents. To ensure a manageable yet representative sample, the study utilized the Krejcie and Morgan formula, which yielded a sample size of 184 respondents selected from 46 randomly chosen water service providers, stratified by size. The data collected through both quantitative and qualitative instruments were analyzed using descriptive statistics to summarize the data and inferential statistics, specifically regression analysis, to examine the relationships between strategic partnership, resource distribution, diversification, innovativeness, and service delivery, as guided by the study's hypotheses.

Findings: The study achieved a high response rate of 76.63% from the distributed 184 questionnaires. Descriptive statistics for resource distribution showed generally high levels of agreement among respondents, with average mean scores around 3.96 on a 5-point scale (ranging from 3.87 to 4.06) and average standard deviations around 0.92 (ranging from 0.82 to 0.99), indicating a shared positive view on the importance of various resource distribution aspects for service delivery. Pearson correlation analysis revealed a strong positive correlation between human resource placement and service delivery ($r = 0.832$, $p < 0.001$), and between investment portfolios and service delivery ($r = 0.812$, $p < 0.001$), while the correlation between physical infrastructure and service delivery was not statistically significant ($r = 0.040$, $p = 0.664$). The multiple regression model demonstrated a strong overall relationship between resource distribution and service delivery, with an R-squared value of 0.860 (adjusted R-squared = 0.856), and the ANOVA indicated the model was statistically significant ($F(3,116) = 237.006$, $p < 0.001$). The regression coefficients showed that human resource placement ($\beta = 0.576$, $p < 0.001$) and investment portfolios ($\beta = 0.512$, $p < 0.001$) had a significant positive effect on service delivery, while physical infrastructure did not ($\beta = -0.037$, $p = 0.273$).

Unique Contributions to Theory, Practice and Policy: Based on the findings, this study uniquely contributes to theory, policy, and practice by demonstrating the critical role of strategic resource distribution, particularly in human resources and technology investments, in enhancing service delivery within the public water sector in Kenya. The findings support the Stakeholder Theory by highlighting how engagement informs resource allocation strategies. For policy, the study underscores the need for an enabling regulatory framework that facilitates digital transformation and ensures financial sustainability to support these crucial investments. In practice, the study recommends that public water service providers prioritize strategic human resource placement and development, along with investments in business technology portfolios, and strengthen partnerships to optimize resource utilization and improve service delivery outcomes.

Keywords: *Resources Distribution, Service Delivery, Public Water Service Providers*

JEL Codes: *D63, R11, L33, H11, H54, R13*

INTRODUCTION

This study focuses on the critical interplay between resource distribution and service delivery within public water service providers in Kenya. The key constructs under investigation are Resource Distribution and Service Delivery. Resource Distribution in this context refers to the allocation and utilization of various organizational assets and capabilities that are essential for the operation of water service providers. This encompasses three primary dimensions: Physical Infrastructure, which includes the tangible assets such as water sources, treatment plants, transmission and distribution networks, and storage facilities, as documented in reports by organizations like WASREB (2023) and highlighted in research on water utility performance (Mugabi & Kayaga, 2020). Human Resources, which relates to the skills, knowledge, capabilities, and strategic placement of personnel within the organization, a crucial aspect addressed by institutions like the Kenya Water Institute (KEWI, 2020) and also recognized in studies on utility effectiveness (Mugabi & Kayaga, 2020); and Investment Portfolios, which involves the allocation of financial resources towards business technologies, capital projects, and operational expenditures aimed at improving efficiency and effectiveness, a focus evident in WASREB reports (2022) and national strategies from the Ministry of Water and Sanitation (2022). Each of these dimensions is crucial for understanding how resources are deployed to support service provision.

The second key construct, Service Delivery, represents the quality and effectiveness of the water services provided to consumers. In line with the performance indicators used by the Water Services Regulatory Board (WASREB), this study operationalizes Service Delivery through several key metrics. These include Service Coverage, which measures the proportion of the population within a provider's service area that has access to safe and reliable water connections (WASREB, 2023). Service Reliability is assessed by the consistency of water supply, often measured in hours of service per day (Mugabi & Kayaga, 2020). Water Quality is evaluated based on compliance with national water quality standards, ensuring the water is safe for consumption (WASREB, 2023). Finally, Non-Revenue Water (NRW) serves as an indicator of operational efficiency and system losses, representing the volume of water produced but not billed, often due to leakages, theft, or inaccurate metering (WASREB, 2022). These metrics collectively provide a comprehensive picture of the performance of public water service providers in Kenya.

Water supply service providers play a vital role in ensuring access to safe and reliable water supply and proper sanitation facilities is essential for preventing waterborne diseases, supporting economic growth, protecting and preserving the environment (Mugabi & Kayaga, 2020; Obeng-Odoom, 2020). However, many communities around the world still grapple with inadequate water supply services, which has far-reaching consequences on human well-being and sustainable development (WHO & UNICEF, 2021). Effective service delivery in water companies encompasses several critical elements; including consistent water availability, efficient infrastructure maintenance, and prompt response to customer concerns (Mugabi & Kayaga, 2020). Well-functioning companies contribute to the prevention of waterborne diseases, support economic activities that rely on clean and safe water, and foster environmental conservation by managing wastewater effectively (Obeng-Odoom, 2020; Kayaga & Smout, 2019).

The performance of these service providers is reviewed annually by the national regulator. The annual review is based on key performance indicators among them; the coverage (population with access where the SDG target is 100%), reliability (hours of service measured to 24 hours as the

standard), water quality (compliance to 100% standards), non-revenue water (measured to 20% national target) A review of the Performance Report of Kenya's Water Services Sector – 2022-2023 indicated that although these regulated service providers collectively serve an area of population of approximately 28,266,927 people, only 18,248,634 of that population access the water services (WASREB, 2023). The total population in the country was 55,100,586 (World meter, 2023) This leaves a significant portion of the population without access to regulated water services. Furthermore, while the water service providers have a total of about 4.5 million connections, only approximately 3.4 million or 75% of those connections are actually active. This indicates that there is substantial need for improvement in terms of service coverage. The high levels of non-revenue water (NRW), which averages around 43% nationwide, significantly above the national target of 20% (WASREB, 2022) suggest widespread inefficiencies in water distribution systems, including leakages, unauthorized connections, and inadequate billing and revenue collection mechanisms. As a result, water service providers face substantial revenue losses, hindering their ability to invest in infrastructure maintenance and expansion, and limiting their strategic positioning in the sector. While the desire of the service user is to have reliable water supply services assured of water quality, these service providers often experience a lack of capacity to regularly monitor and maintain the infrastructure leading to frequent breakdowns. high levels of nonrevenue water, population pressure, natural and environmental challenges.

Furthermore, rapid urbanization and population growth have exacerbated the strain on existing water infrastructure, leading to service delivery deficiencies, particularly in urban informal settlements. According to the World Bank's Kenya Urbanization Review (2022), approximately 56% of the urban population in Kenya resides in informal settlements, where access to safe water and sanitation services is severely limited. The effects of climate change have also emerged as a significant challenge for water service delivery in Kenya. Recurring droughts, shifting rainfall patterns, and increased water scarcity have strained water resources and affected the ability of utilities to meet demand (WASREB, 2023). This will require the adoption of climate-resilient strategies in order to ensure long-term sustainability of water supplies.

To address these multifaceted challenges, the Kenyan government, in collaboration with development partners and stakeholders, has developed various policies and strategies aimed at improving service delivery in the water and sanitation sector. The Water Act (2016) and the National Water Services Strategy (2022-2030) outline a comprehensive framework for enhancing water governance, promoting private sector participation, and fostering innovation and technological adoption in the sector (Ministry of Water and Sanitation, 2022). The Water Sector Trust Fund (WSTF), established in 2002, has played a crucial role in financing water and sanitation infrastructure projects and capacity building initiatives for service providers (WSTF, 2022).

Additionally, the Kenya Water Institute (KEWI) has been mandated to provide training and capacity development programs for water sector professionals, aiming to enhance operational efficiency and service delivery (KEWI, 2020). The ongoing implementation of the water sector strategic plan 2023 – 2027 targeting an additional 3.2 million people is one of the strategies being implemented by the Government. The World Bank through Kenya Water Security Climate & Resilience Project has developed the six Basin Plans for Lake Victoria North, Lake Victoria South, Rift Valley, Athi, Tana, and Ewaso Nyiro North basin to enable build WRA’s Institutional capacity and strengthen its Institutional structure to protect, conserve, control and regulate use of water resources. The Germany

government through KFW Development Bank has financed the Nairobi Satellite Towns Water and Sanitation Development Programme (NST-WSDP) which entails the upgrading of the Ruiru-Juja /Greater Githurai Water supply system in the areas of Mwiki, Kahawa wendani & Sukari, Kiuu and Mwihoko. The Government is implementing the Kenya towns Sustainable Water Supply and Sanitation Program financed by the African development Bank, aimed at improving water supply services access, quality, availability, sustainability, and contributing the development of water supply infrastructure in 19 towns, targeting eight water services boards, 15 water service providers and 2.1 million persons to have access to reliable and sustainable water supply services since 2017 to 2025.

Despite the critical importance of effective resource distribution in ensuring reliable and equitable water services, many public water service providers in Kenya continue to face significant challenges such as infrastructure deficits, frequent service interruptions, and disparities in access across different regions. Existing literature often describes these issues descriptively but tends to lack critical analysis of how inefficiencies or misallocations in resource distribution directly contribute to these delivery failures. For instance, uneven resource allocation may manifest in inadequate infrastructure in rural areas, resulting in low service coverage, or in over-concentration of resources in urban centers, neglecting underserved communities. These manifestations of uneven resource distribution hinder the ability of water providers to deliver consistent and equitable service, yet the causal relationship remains underexplored in the Kenyan context. Understanding this link is crucial for designing targeted policies that address systemic inefficiencies and improve service outcomes. Therefore, this study aimed to investigate the causal effect of resource distribution on the performance of public water service providers in Kenya, providing deeper analytical insights into how resource misallocations impact service delivery and informing strategies for more effective resource management.

Statement of the Problem

Various interventions have been implemented by different stakeholders to improve water services in Kenya. The Government, through the Water Sector Trust Fund, has rehabilitated and expanded water infrastructure and capacity-building initiatives such as training programs (WSTF, 2020). The World Bank has supported performance improvement plans and the development of management information systems for service providers in the region (World Bank, 2018). Despite these efforts, water service delivery remains inadequate, with connectivity at approximately 64%, non-revenue water (NRW) at 43%, revenue collection at 75%, and average hours of supply at only 17 hours per day (WASREB, 2023).

While performance indicators like these are widely reported, there is limited empirical understanding of how resource allocation particularly infrastructure and funding distribution directly influences these metrics. Specifically, it remains under-researched how misallocated or uneven resource distribution leads to infrastructure deficits, which in turn cause service failures such as low connectivity, high NRW, and unreliable supply. These failures have cascading effects: inadequate water access increases the risk of waterborne diseases like cholera, typhoid, and diarrhea, straining healthcare systems (Obeng-Odoom, 2020), and hampers economic growth, thereby exacerbating poverty (Kayaga & Smout, 2019). Furthermore, persistent service deficiencies threaten the financial stability of providers, leading to infrastructure deterioration, staff layoffs, and further declines in service quality (WSRB, 2021).

Although performance indicators such as coverage, reliability, and customer satisfaction are routinely reported in the public water sector, empirical evidence on the influence of resource distribution such as financial, infrastructure and human on service delivery levels are scarce. The explicit lanes through which resource distribution influences performance levels in particular context to the public water service provision in Kenya are also under-explored. This gap in empirical evidence hinders policymakers' ability to design targeted resource allocation strategies that effectively address the root causes of poor service delivery. Therefore, there is a critical need to investigate the causal relationship between resource distribution and service performance, in order to inform more efficient and equitable water sector interventions in Kenya.

Objective of the Study

To determine the effect of resource distribution on service delivery of public water service providers in Kenya.

Research Hypotheses

$H_0$1: Resource distribution has no statistically significant effect on service delivery of public water service providers in Kenya.

LITERATURE REVIEW

Theoretical Review

Stakeholder Theory

Stakeholder theory is a theoretical perspective that suggests organizations should consider the interests of all stakeholders, not just shareholders or owners (Freeman, 1984). The central premise is that organizations have obligations to various stakeholders, including customers, employees, suppliers, communities, and the environment, among others (Donaldson & Preston, 1995). It assumes that stakeholders have a legitimate interest in the organization's activities and decision-making processes (Friedman & Miles, 2002). Moreover, organizations that effectively manage stakeholder relationships are more likely to be successful and sustainable over the long term (Freeman et al., 2010).

However, a key critique of stakeholder theory is the lack of clarity on how to prioritize and balance the often-competing interests of different stakeholders (Jensen, 2001). Additionally, some argue that the theory can be too broad and lacks specific guidance on how stakeholder interests should be integrated into organizational decision-making (Sternberg, 1997).

This theory is highly relevant to the context of water service delivery in Kenya. For example, in informal settlements such as Kibera in Nairobi, community involvement in water projects has often faced challenges. In some cases, efforts to involve local residents in water management have been undermined by inadequate participation, lack of transparency, or conflicts between community groups and service providers (Karanja, 2018). Such failures illustrate how neglecting the interests and legitimate concerns of local stakeholders can lead to poor maintenance, misallocation of resources, and ultimately, service failures. Similarly, conflicts between regulatory bodies, municipal authorities, and community groups over water access and management rights can hamper efforts to improve service delivery (Oloo & Otieno, 2020).

By applying stakeholder theory, water service providers can better understand and manage these diverse interests, fostering more inclusive decision-making processes. Effectively engaging communities and balancing their needs with regulatory and environmental considerations can help develop strategic solutions that improve service quality, increase community trust, and ensure the sustainability of water infrastructure in Kenya.

Resource Dependence Theory

Resource Dependence Theory (Pfeffer & Salancik, 1978) posits that organizations operate within environments where access to critical resources such as funding, skilled personnel, and infrastructure is essential for their survival and effectiveness. Organizations are influenced by their dependencies on external actors and resources, which can create vulnerabilities and uncertainty. To mitigate these dependencies, organizations often engage in strategies such as building relationships, forming alliances, and restructuring their operations to gain more control over vital resources. For public water service providers, managing these dependencies is vital for ensuring continuous and reliable service delivery.

Organizations may pursue several approaches to reduce their reliance on external resources. For instance, establishing partnerships with donors and development agencies can diversify funding sources and bring in technical expertise. Implementing tariff models that align revenue collection with operational costs can enhance financial sustainability and reduce dependency on external funding. Additionally, decentralization of water management transferring authority and decision-making to local entities can foster more responsive and context-specific service provision, decreasing reliance on centralized control and enabling communities to better address their water needs.

The management of external dependencies involves balancing relationships with external resource providers such as government agencies, donors, and skilled labour markets and internal capabilities. Strategic resource management enables utilities to improve operational efficiency, enhance service quality, and build resilience against external shocks. These strategies are central to navigating the resource landscape, ensuring that dependencies are minimized where possible, and resources are leveraged effectively to serve the needs of the population.

Service Quality Theory (SQT, SERVQUAL Model)

The original SERVQUAL model, developed by Parasuraman, Zeithaml, and Berry in 1985, provides a framework for evaluating service quality based on the gap between customer expectations and perceptions of actual service delivery. The model identifies five dimensions reliability, responsiveness, assurance, empathy, and tangibles that collectively influence perceived service quality. While widely applied across various service sectors, its direct application in monopolistic utility settings necessitates some adaptation due to the unique market structure and service delivery context.

In a monopolistic environment such as public water utilities, the emphasis on certain SERVQUAL dimensions must be adjusted. Specifically, dimensions like responsiveness and empathy, which are heavily influenced by customer choice and competitive dynamics, may have less immediate operational relevance. Instead, focus should be placed on dimensions that directly impact the core aspects of water service provision namely reliability, assurance, and tangibles.

Reliability, which concerns the consistency and dependability of water supply, is paramount in a monopolistic context where customers rely entirely on the utility for their water needs. Assurance, reflecting customer confidence in the utility's competence and safety, becomes crucial in maintaining trust, especially when water quality issues or service disruptions occur. Tangibles, encompassing infrastructure quality, water quality, and physical facilities, directly influence the operational capacity of the utility to deliver safe, accessible water.

Operationally, these adapted dimensions are closely linked to key performance metrics such as service reliability, coverage, water quality, and non-revenue water (NRW). For instance, investments in infrastructure upgrades and maintenance can improve tangibles, thereby reducing NRW and expanding coverage. Ensuring consistent water supply and safety standards enhances reliability and assurance, which in turn boosts customer confidence and satisfaction. Although dimensions like responsiveness and empathy remain valuable, their focus in this context is more on maintaining community trust and managing customer relations rather than immediate operational outcomes.

In applying this modified framework, public water utilities can better identify service quality gaps that affect their operational performance. By prioritizing infrastructure improvements, safety protocols, and reliability measures, utilities can align their service delivery more closely with customer expectations, ultimately enhancing overall service quality and operational efficiency. Although the original SERVQUAL model was developed within a competitive and market-driven environment, its core principles remain relevant when tailored to the monopolistic water sector, where strategic resource management and infrastructure resilience are key to meeting user needs and regulatory standards.

This tailored approach recognizes the strengths of the SERVQUAL model while adapting it to suit the specific challenges and characteristics of publicly managed, monopolistic water utilities, thus providing a practical tool for strategic improvement and performance measurement.

Empirical Review

Resource Distribution and Service Delivery

Resource distribution in water utilities has been an area of significant research interest, with several studies exploring strategies and approaches to enhance service delivery. One such study, conducted by Klise et al. (2020), titled "Improving Resource Distribution and Service Delivery for Water Utilities: A Data-Driven Approach," aimed to develop a data-driven approach to optimize resource distribution and improve service delivery. The researchers employed a combination of data analytics, optimization techniques, and simulation models to analyze resource distribution patterns and service delivery performance. Their findings revealed that many water utilities faced challenges in efficiently allocating resources, leading to suboptimal service delivery. However, by leveraging data analytics and optimization models, opportunities for more effective resource distribution were identified, resulting in improved response times, reduced water losses, and increased customer satisfaction. They developed a data-driven approach to optimize resource distribution and improve service delivery in water utilities. While their study highlighted the benefits of leveraging data analytics and optimization models, it did not specifically address the unique challenges faced by water service providers in Kenya. The current study expands on this by examining the Kenyan context, using a mixed-methods approach that combines quantitative analysis with qualitative

insights to provide a more nuanced understanding of local resource distribution challenges and opportunities.

Another study, titled "Resource Distribution and Service Delivery in Water Supply Networks: Towards Sustainable Solutions," by Carvalho et al. (2021), focused on developing sustainable solutions for resource distribution and service delivery in water supply networks. The researchers employed a multi-objective optimization approach, considering factors such as water demand, infrastructure capacity, energy consumption, and environmental impacts. Their methodology was applied to water supply networks in Portugal, and the findings indicated that traditional approaches often resulted in inefficient water usage, high energy consumption, and increased environmental impacts. By incorporating sustainability considerations into the optimization model, the researchers identified solutions that balanced service delivery requirements with resource conservation and environmental protection they focused on developing sustainable solutions for resource distribution and service delivery in water supply networks in Portugal. Although their study provided important insights into balancing service delivery requirements with resource conservation, its applicability to the Kenyan context is limited. The current study addresses this gap by specifically examining the Kenyan water sector, considering the unique environmental and resource constraints faced by local water service providers.

A more recent study by Campos et al. (2022), titled "Enhancing Resource Distribution and Service Delivery in Water Utilities through Digital Transformation," investigated the potential of digital technologies and data-driven approaches to enhance resource distribution and service delivery. The researchers conducted a case study of water utilities in the United Kingdom, analyzing their adoption of digital technologies, such as smart meters, sensors, and data analytics platforms. The study found that the implementation of digital technologies and data-driven approaches enabled water utilities to optimize resource distribution and improve service delivery. Real-time data and analytics provided insights into water demand patterns, infrastructure performance, and resource utilization, allowing for more efficient allocation of resources and proactive maintenance. These studies highlight the importance of adopting innovative approaches, leveraging data analytics, and incorporating sustainability considerations in resource distribution strategies to enhance service delivery in water utilities. However, it is important to note that the specific challenges and contexts faced by water service providers in the Kenya region may differ, necessitating the exploration of tailored solutions that address their unique constraints and opportunities. They investigated the potential of digital technologies and data-driven approaches to enhance resource distribution and service delivery in UK water utilities. While their study demonstrated the benefits of digital transformation, it did not consider the technological readiness and infrastructure challenges that may exist in developing countries like Kenya. The current study addresses this limitation by examining the role of technological capabilities in the Kenyan context, considering both the potential benefits and the practical constraints of implementing such technologies.

Angoua et al. (2019) study in Côte d'Ivoire, titled "Improving Resource Distribution and Service Delivery in Urban Water Supply: A Case Study of Abidjan," highlighted the significant disparities in water access and service quality within the city. The researchers employed a geographic information system (GIS) analysis to map the spatial distribution of water infrastructure and resources, revealing that low-income areas faced disproportionate challenges in accessing reliable water services. The study recommended targeted infrastructure investments and community-based

resource distribution strategies to address these inequalities. They highlighted disparities in water access and service quality in Abidjan, Côte d'Ivoire, using GIS analysis. While their study provided valuable insights into urban water supply challenges, it focused on a single city and did not examine the broader national context. The current study expands on this by examining all regulated public water service providers in Kenya, providing a more comprehensive view of resource distribution challenges across urban, peri-urban, and rural areas.

In South Africa, a study by Muller and Brent (2020), titled "Resource Distribution Optimization for Sustainable Water Service Delivery in Rural Communities," explored the potential of optimization models to enhance resource allocation and service delivery in rural areas. The researchers developed a multi-objective optimization framework that considered factors such as water demand, infrastructure costs, energy consumption, and environmental impacts. The study's findings demonstrated that optimized resource distribution strategies could significantly improve water access, reduce operational costs, and promote sustainability in rural water supply systems.

The study explored optimization models for resource allocation in rural water supply systems in South Africa. While their study offered important insights into rural water service delivery, it did not consider the interplay between strategic positioning and resource distribution. The current study addresses this gap by examining how strategic positioning influences resource distribution and service delivery across different types of water service providers in Kenya.

Mwangi et al. (2021) study in Tanzania, titled "Enhancing Service Delivery in Water Utilities through Capacity Building and Resource Distribution," examined the role of capacity building and resource distribution in improving service delivery. The researchers conducted a comprehensive assessment of water utilities' operational practices, resource allocation strategies, and staff training programs. The study highlighted the importance of investing in human resource development, implementing performance-based resource distribution mechanisms, and fostering collaboration among stakeholders. The findings provided valuable insights for policymakers and utility managers seeking to improve service delivery within resource-constrained environments. These studies underscore the diverse challenges and opportunities associated with resource distribution and service delivery in water utilities across the African continent. While the specific contexts and constraints may vary, these empirical investigations offer valuable lessons and recommendations that can inform strategies for enhancing water access, ensuring equitable resource distribution, and promoting sustainable service delivery models tailored to local needs and circumstances. They examined the role of capacity building and resource distribution in improving service delivery in Tanzanian water utilities. While their study highlighted the importance of human resource development, it did not specifically address the role of technological capabilities. The current study expands on this by explicitly examining how technological capabilities moderate the relationship between strategic positioning and service delivery in Kenyan water service providers.

Wambua et al. (2019), study titled "Optimizing Resource Distribution for Enhanced Service Delivery in Kenyan Water Utilities," employed optimization models to analyze the allocation of financial and human resources across various water service providers. The researchers found that many utilities faced constraints in effectively distributing resources, leading to operational inefficiencies, high non-revenue water levels, and suboptimal service delivery. The study recommended the adoption of data-driven resource distribution strategies and the implementation of performance-based resource allocation mechanisms to enhance service delivery outcomes. They

employed optimization models to analyze resource allocation in Kenyan water utilities. While their study provided valuable insights into the Kenyan context, it focused primarily on quantitative analysis and did not explore the qualitative aspects of resource distribution challenges. The current study addresses this limitation by employing a mixed-methods approach that combines quantitative analysis with in-depth qualitative insights.

Ouma et al. (2020), study titled "Resource Distribution and Water Access in Informal Settlements: A Case Study of Nairobi," focused on the unique challenges faced by water utilities in serving informal urban settlements. The researchers used geospatial analysis and community surveys to assess the distribution of water infrastructure and resources in these settlements. The findings revealed significant disparities in water access, with households in informal settlements often relying on informal water vendors and facing higher costs and lower service quality. The study highlighted the need for inclusive resource distribution strategies that prioritize investments in underserved areas and engage local communities in decision-making processes. The study focused on resource distribution and water access in informal settlements in Nairobi. While their study highlighted important equity issues, it was limited to urban informal settlements. The current study expands on this by examining resource distribution across all types of water service providers in Kenya, providing a more comprehensive view of the sector.

In the study titled "Enhancing Service Delivery in Rural Water Supply through Community-Based Resource Distribution," by Kuria et al. (2022), the researchers explored the potential of community-based resource distribution models in rural areas of Kenya. Through a participatory action research approach, the study examined the effectiveness of community-led initiatives in managing water resources, distributing infrastructure maintenance responsibilities, and promoting sustainable service delivery. The findings demonstrated the potential of community-based resource distribution models to improve water access, foster ownership, and enhance the long-term sustainability of rural water supply systems. These studies collectively underscore the importance of adopting innovative resource distribution strategies, leveraging data-driven decision-making processes, and engaging local communities in water service delivery initiatives. By addressing the unique challenges faced by water utilities in different contexts, these empirical investigations provide valuable insights and recommendations for policymakers, utility managers, and stakeholders working towards improving access to safe and reliable water services in Kenya. Kuria et al. (2022) explored community-based resource distribution models in rural areas of Kenya. While their study offered valuable insights into community engagement, it did not examine the role of strategic positioning or technological capabilities in service delivery. The current study addresses this gap by explicitly examining these factors and their relationship to resource distribution and service delivery across different types of water service providers.

Existing research on resource distribution in water utilities highlights the importance of data-driven approaches, optimization models, technological integration, and community engagement in enhancing service delivery. However, most studies are focused on developed countries or specific urban contexts, with limited applicability to the unique infrastructural, environmental, and institutional challenges faced by Kenyan water service providers. Gaps remain in understanding how strategic positioning and technological capabilities interact within the Kenyan context to influence resource allocation and service performance. Future research should therefore explore how these factors synergistically affect resource distribution across diverse provider types and geographic

areas, offering tailored strategies to improve efficiency, equity, and sustainability in Kenya's water sector.

Conceptual Framework

The conceptual framework, summarized in Figure 1 and developed from literature review, posits that the independent variable of strategic positioning, specifically focusing on resource distribution, directly influences the dependent variable of service delivery, suggesting that how public water service providers strategically allocate their resources significantly impacts the quality and efficiency of the services they provide.

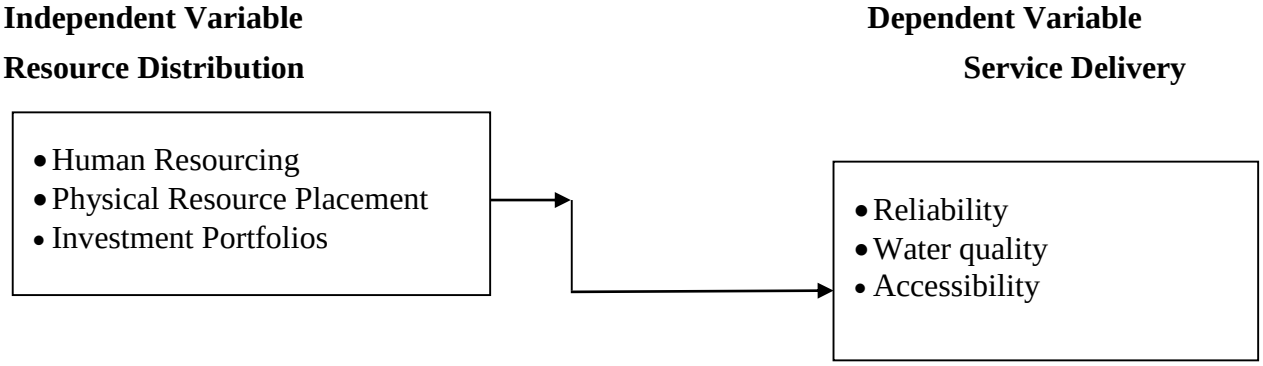

Figure 1: Conceptual Framework

METHODOLOGY

The research employed a mixed-methods design, specifically an explanatory sequential approach, to comprehensively determine the effect of resource distribution on service delivery of public water service providers in Kenya. This involved first collecting and analyzing quantitative data through a cross-sectional survey using structured questionnaires administered to a sample of key personnel within these organizations. This quantitative phase aimed to test hypotheses and identify relationships between the variables.

Following the quantitative phase, qualitative data was collected through semi-structured interviews and focus group discussions with key stakeholders, including managers, employees, and customers. This qualitative phase was designed to provide deeper insights and context to explain and elaborate on the findings from the quantitative analysis. The mixed-methods approach was chosen for its ability to integrate the strengths of both quantitative and qualitative methods, enhancing the study's credibility, generalizability through triangulation, and providing a more complete understanding of the complex research problem.

The target population for the study comprised all 88 regulated public water service providers in Kenya, as identified by WASREB. Within each provider, four key staff members (Financial Managers, Technical Managers, Commercial Managers, and Customer Service Managers) were identified as respondents, resulting in a total target population of 352. To determine a manageable yet representative sample size, the Krejcie and Morgan formula was applied to the target population of 352, yielding a required sample size of 184 respondents. These 184 respondents were drawn from a stratified random sample of 46 water service providers, ensuring representation across different

size categories (very large, large, medium, and small) and providing diverse strategic and operational insights.

Data collection utilized structured questionnaires for quantitative data on strategic positioning, technological capabilities, and service delivery, employing closed-ended questions based on existing literature and validated scales. Semi-structured interviews were used to gather qualitative data from key Chief Executive Officers or Managing Directors, providing rich, in-depth perspectives. The quantitative data was analyzed using descriptive statistics (percentages, mean, standard deviation) and inferential statistics, including regression models to examine the relationships between the independent variables resource distribution and the dependent variable service delivery. Specifically, separate regression models were employed to assess the influence of each independent variable on service delivery, with the model for resource distribution and service delivery explicitly presented.

FINDINGS

Response Rate

The study administered a total of 184 questionnaires to employees of public water service providers across Kenya. Out of these, 141 questionnaires were completely filled and returned, resulting in a response rate of approximately 76.63%. However, 43 questionnaires representing 23.37% were never returned. This response rate of 76.63% is considered high and acceptable for survey-based studies, as it surpasses the 70% threshold recommended for robust statistical analysis (Mugenda & Mugenda, 2003). The high response rate implies that the findings are representative of the target population and provide reliable insights into the study objectives. It also indicates a strong willingness among participants to engage with the study, reflecting the relevance of the research topic to stakeholders in the public water service sector.

Table 1: Response Rate

Response Rate	Frequency	Percentage
Returned	141	76.63%
Not Returned	43	23.37%
Number Distributed	**184**	**100%**

Source: Research Data, 2025

The response rate provides a solid foundation for the analysis and ensures that the conclusions drawn from the data are statistically valid and generalizable to the larger population of public water service providers in Kenya.

Descriptive Analysis

Table 2: Descriptive Statistics for Resource Distribution

Statement(s)	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev
Our organization invests in developing infrastructure to ensure reliable water supply.	0.00%	7.10%	17.00%	44.00%	31.90%	4.01	0.88

Human resources are placed strategically to ensure efficient service delivery.	0.00%	7.80%	19.90%	35.50%	36.90%	4.01	0.94
Investments in business technology portfolios are prioritized to enhance operational processes.	0.00%	10.60%	12.10%	38.30%	39.00%	4.06	0.97
Resource distribution considers specific needs of different service areas.	0.00%	11.30%	15.60%	36.90%	36.20%	3.98	0.99
Data-driven analyses and customer feedback guide resource allocation.	0.00%	7.80%	19.90%	43.30%	29.10%	3.94	0.9
Workforce training investments enhance service delivery capabilities.	0.00%	5.70%	21.30%	48.90%	24.10%	3.91	0.82
Infrastructure development aligns with long-term organizational goals.	0.00%	8.50%	22.70%	42.60%	26.20%	3.87	0.9
Engagements with stakeholders informs resource portfolio investment strategies.	0.00%	10.60%	18.40%	42.60%	28.40%	3.89	0.94
Average	**0.00%**	**8.68%**	**18.36%**	**41.51%**	**31.48%**	**3.958**	**0.92**

Source: Research Data, 2025

The objective of the study was to examine the effect of resource distribution on service delivery of public water service providers in Kenya. Respondents were asked to provide their views on aspects such as infrastructure investments, human resource allocation and data-driven decision-making in resource distribution. In order to gather in-depth insights, the study included a set of survey questions designed to assess resource distribution within public water service providers. Respondents were tasked with evaluating their agreement on resource distribution using a five-point scale, where 5 corresponded to "strongly agree," 4 represented "agree," 3 was "neutral," 2 signified "disagree," and 1 meant "strongly disagree." The findings are summarized in Table 2.

The results reveal a strong consensus among respondents regarding the critical role of infrastructure and resource management in enhancing service delivery. Specifically, a mean score of 4.01 and SD 0.88 which denotes 75.9% of the respondents agree their organizations invest in developing infrastructure to ensure a reliable water supply, underscoring the importance of infrastructure as a foundational element for service improvement. In addition, a mean score of 4.01 and SD 0.94 reflecting 72.4% of the respondents agrees that human resources are strategically placed to enhance efficiency, emphasizing the significance of proper workforce deployment in achieving operational goals. Furthermore, a notable mean score of 4.06 and SD 0.97 denoting 77.3% of the respondents agree that Investments in business technology portfolios are prioritized to enhance operational processes, highlighting technological adoption as a key driver for resource optimization and improved service delivery. Respondents also expressed agreement with the notion that resource distribution strategies consider the specific needs of different service areas, as evidenced by a mean score of 3.98 and SD 0.99 representing 73.1% of the respondents. This demonstrates a tailored approach to resource allocation that ensures equity in service provision. Moreover, a mean score of 3.94 and SD 0.90 or 72.4% of the respondents reveal that data-driven analyses and customer feedback guide resource allocation decisions, suggesting an increasing reliance on evidence-based

approaches to enhance decision-making processes. Respondents further acknowledged the importance of workforce training investments, with a mean score of 3.91 and SD 0.82 which represents 73.0% of the respondents indicating that such training is viewed as critical for improving service delivery capabilities and emphasizing the value of capacity building. Collectively, these findings underscore the interconnectedness of infrastructure development, strategic resource management, and workforce training in fostering effective service delivery.

The analysis further revealed a mean score of 3.87 and SD 0.90 or 68.8% of the respondents demonstrating an agreement that infrastructure development aligns with long-term organizational goals, while a mean score of 3.89 and SD 0.94 which represents 71.0% of the respondents indicated that engagements with stakeholders informs resource portfolio investment strategies. These findings suggest that alignment with strategic objectives and stakeholder engagement are vital for effective resource distribution. These findings align with the study by Klise et al. (2020), which demonstrated that efficient resource distribution through data-driven approaches enhances service delivery, reduces water losses, and improves customer satisfaction. Carvalho et al. (2021) similarly emphasized the importance of sustainable resource allocation strategies in achieving service delivery goals. The current study confirms that strategic investments in physical infrastructure, investment in business portfolios, and human resource placements and development are critical components in resource distribution frameworks. Moreover, the emphasis on data-driven decision-making resonates with Campos et al. (2022), who highlighted the transformative role of digital technologies in optimizing resource distribution. The tailored approaches identified in this study align with Angoua et al. (2019), who emphasized the need for equitable resource allocation to address disparities in water access.

The objective of the study was to determine the effect of resource distribution and service delivery among public water service providers in Kenya. It is centered on finding out whether there was a relationship between resource distribution and service delivery. To assess the strength and direction of the relationship between resource distribution and service delivery, a Pearson correlation analysis was conducted. The Pearson correlation coefficient measures the degree to which two variables are linearly related, with values ranging from -1 (perfect negative correlation) to +1 (perfect positive correlation). A correlation of 0 implies no linear association between the variables. The correlation results for resource distribution and service delivery are presented in the tables below.

Descriptive Statistics for Service Delivery

The dependent variable of this study was service delivery, which reflects the performance outcomes of public water service providers in Kenya. Respondents were asked to evaluate their organization's service delivery in terms of reliability, customer satisfaction, accessibility and quality assurance. Their level of agreement was evaluated using a five-point scale: "strongly agree" (5), "agree" (4), "neutral" (3), "disagree" (2), and "strongly disagree" (1). The findings are summarized in Table 3.

Table 3: Descriptive Statistics for Service Delivery

Statement(s)	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev
Our organization provides a reliable water supply with minimal interruptions.	0.00%	9.20%	18.40%	39.00%	33.30%	3.96	0.94

System networks are regularly monitored and inconsistencies addressed.	0.00%	9.20%	15.60%	37.60%	37.60%	4.04	0.95
Service delivery strategies ensure accessibility for underserved populations.	0.00%	5.70%	18.40%	44.70%	31.20%	4.01	0.85
Efficient processes are in place for managing customer complaints.	0.00%	7.10%	16.30%	45.40%	31.20%	4.01	0.87
Our organization adheres to strict water quality standards.	0.00%	9.20%	22.70%	43.30%	24.80%	3.84	0.91
Communication with customers includes quality deviations and conservation efforts.	0.00%	10.60%	19.90%	39.00%	30.50%	3.89	0.96
Contingency plans ensure service delivery during emergencies.	0.00%	7.10%	20.60%	35.50%	36.90%	4.02	0.93
We explore innovative solutions to improve service quality and operational efficiency.	0.00%	7.80%	18.40%	39.00%	34.80%	4.01	0.92
Average	0.00%	8.24%	18.79%	40.44%	32.54%	3.9725	0.91625

Source: Research Data, 2025

In reference to the findings in Table 3, it is revealed that organizations are perceived to provide a reliable water supply with minimal interruptions, as indicated by a mean of 3.96, SD 0.94 representing 72.3% of the respondents. System networks are regularly monitored and inconsistencies addressed with a mean of 4.04, SD 0.95 or 75.2% emphasizing the providers to focus on ensuring that the installed infrastructure remains operational at all times in order to supply water consistently. Accessibility is ensured through service delivery strategies that address underserved populations with a mean of 4.01, SD 0.85 representing 75.9% respondents demonstrating efforts to ensure equity in water distribution. Efficient processes for managing customer complaints are found to exist with a mean of 4.01, SD 0.87 representing 76.6% of the respondents highlighting the importance of rapid issue resolution in fostering trust with consumers.

Adherence to strict water quality standards is acknowledged with a mean of 3.84, SD 0.91 or 68.1% respondents suggesting room for improvement in quality assurance. Positive ratings are given for communication with customers, including updates on quality deviations and conservation efforts, with a mean of 3.89, SD 0.96 representing 69.5% underscoring the value of proactive and transparent engagement with the user community in regard to water quality management. Contingency planning is identified as a strong area with a mean of 4.02, SD 0.93 or 72.4% of the respondents, indicating preparedness to ensure service delivery during emergencies. Innovative solutions are noted to be actively explored to improve service quality and operational efficiency, with a mean of 4.01, SD 0.92 or 73.8% respondents pointing to the integration of forward-thinking practices in service delivery. The results align with the findings of Wanjiku et al. (2021), who highlighted the significance of customer satisfaction monitoring and addressing underserved populations to enhance service delivery. The emphasis on innovative approaches and proactive communication mirrors the findings of Xu et al. (2020), who emphasized creativity and responsiveness in optimizing service delivery systems. The slightly lower scores for adherence to water quality standards resonate with the challenges identified by Mkhize et al. (2020), who noted that stringent quality assurance

mechanisms are critical for maintaining trust and operational excellence. The strong performance in contingency planning and complaint resolution aligns with Marlow et al. (2021), who argued for robust systems to address emergencies and consumer feedback

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Table 4: Correlation for Resource Distribution

Correlations for Resource Distribution and Service Delivery					
		Human resource placement	**Physical infrastructure**	**Investment portfolios**	**Service delivery**
Human resource placement	Pearson Correlation	--			
	N	141			
Physical infrastructure	Pearson Correlation	.058	--		
	Sig. (2-tailed)	.498			
	N	141	141		
Investment portfolios	Pearson Correlation	.531**	.066	--	
	Sig. (2-tailed)	.000	.437		
	N	141	141	141	
Service delivery	Pearson Correlation	.832**	.040	.812**	--
	Sig. (2-tailed)	.000	.664	.000	
	N	141	141	141	141

Source: Research Data, 2025

In reference to Table 4 the analysis of correlations related to resource distribution and service delivery, a Pearson correlation coefficient of 0.832 was observed between human resource placement and service delivery indicating a strong relationship. A significance level of 0.000 was observed further confirming that this correlation is statistically significant at 95% confidence level. Similarly, a Pearson correlation coefficient of 0.812 was observed between investment portfolios and service delivery with a significance level of 0.05 confirming that this correlation is statistically significant. In contrast, the correlation between physical infrastructure and service delivery was minimal, with a coefficient of 0.040, indicating no significant relationship, as reflected by a significance value of 0.664. This demonstrates a statistically significant positive relationship between both human resource placements and investment portfolios and service delivery. This suggests that that effective human resource placement is closely associated with improved service delivery outcomes and further emphasizing the importance of strategic investment in enhancing service delivery.

These quantitative results were further enriched by the qualitative findings where participants emphasized on workforce placement and development noting that skilled personnel placed in their relevant positions are critical in managing water service operations effectively. PPT2a remarked, *"placement of key staff in their right positions have made the staff maximise their skills be more productive. Also, regular training for our staff ensures they are equipped to handle technological advancements and operational challenges effectively."* These findings align with other studies such as those by Mugisha et al. (2020), which found that human resource placement in public water utilities leads to service bottlenecks, supply inefficiencies, and customer dissatisfaction They also align with Mwangi et al. (2021), who established that continuous capacity-building initiatives lead to enhanced efficiency and innovation in public water service provision. PPT2b noted "We *allocate resources based on the water demand and consumption trends in order to ensure that our customers do not run into shortages".* The study by Jiménez and Pérez-Foguet (2019) also emphasized that equitable resource distribution, particularly in developing countries, enhances water service reliability and reduces disparities in access. The positive correlation in this study suggests that public WSPs that effectively allocate financial, technical, and human resources are more likely to provide reliable and sustainable services to consumers. It also aligns with Bakker (2018), who found that

while proper resource allocation is essential, its impact is maximized when complemented by effective institutional management and accountability mechanisms.

Regression Analysis

The regression model was considered in determining the effect of resource distribution on service delivery by the help of SPSS. The results are presented in Table 5.

Table 5: Model Summary of Resource Distribution and Service Delivery

Model Summary of Resource Distribution				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	0.927[a]	0.860	0.856	0.25086

a. Predictors: (Constant), Resource Distribution and Service Delivery; Source: Research data, 2025

In reference to Table 5 the model summary for resource distribution and service delivery, the regression model analysis revealed a strong positive correlation with an R value of 0.927 indicating that resource distribution significantly impacts service delivery public water service providers in Kenya with R value greater than 0.5. Moreover, the study established an adjusted R square value of 0.856. This reveals that resource distribution (physical infrastructure, human resource placement and investment portfolios) accounts to 85.8 percent of service delivery of public water service providers. This reveals that other factors unexamined in the current study contribute to service delivery of public water service providers by 14.2 percent. The study supports research carried out by Klise et al. (2020) who found a positive correlation between Resource Distribution and Service Delivery for Water Utilities.

Table 6: Analysis of Variance

ANOVA for Resource Distribution						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	44.743	3	14.914	237.006	.000[b]
	Residual	7.300	116	.063		
	Total	**52.043**	**119**			

a. Dependent Variable: Service delivery

b. *a. Predictors: (Constant), Resource Distribution and Service Delivery; Source: Research data, 2025*

Analysis of variance (ANOVA) was further employed to examine the overall significance of the regression model. This analysis yielded a p-value of 0.000, which is significantly less than the threshold of 0.05. This confirms a statistically significant relationship between resource distribution and service delivery among public water service providers. This conclusion is further reinforced by the calculated F statistic value of 237.006, which exceeds the critical F statistic value of 2.68. This further indicates that the regression model is statistically significant meaning that resource distribution (physical infrastructure, human resource placement, investment portfolios) have a significant impact on service delivery.

These findings are in line with Carvalho et al. (2021) who carried out research on the role of resource distribution in enhancing service delivery among water utilities and identified a positive association

between resource distribution and service delivery performance in water supply networks, emphasizing sustainable solutions. Additionally, this study underpins Campos et al. (2022), who found a statistically significant relationship (p = 0.00) between resource distribution and service improvement, particularly through digital transformation in water utilities. The similarities in these studies collectively affirm a strong positive relationship between resource distribution and service delivery. This study plus Carvalho et al. (2021), and Campos et al. (2022), have demonstrated that that effective allocation of resources enhances the operational efficiency of water service providers. However, while Carvalho and Campos focused on systems that had undergone digital transformation and advanced infrastructure reforms, the present study examined public water service providers at varying levels of technological advancement. The difference may accordingly explain disparities in the extent of the impact observed, suggesting that technology acts as a moderator that can boost the effectiveness of resource distribution.

This study may add to the growing body of literature on resource optimization within public sector utilities. It contributes empirical evidence that backs up the Resource-Based View (RBV) by demonstrating that distribution of internal resources is a vital driver of service delivery. these findings can offer guidance for developing resource allocation models in water service provision in the public sector settlings.

While these findings offer valuable insights, it could be limited by a small sample size, which may restrict generalizability and obscure long-term or causal effects of resource distribution on service delivery. Future research therefore should adopt longitudinal and comparative approaches across regions or countries to better capture evolving practices and contextual influences in public water service provision.

Accordingly, the null hypothesis which was resource distribution has no statistically significant effect on service delivery of public water service providers in Kenya was therefore rejected as the results indicated that diversification has statistically significant effect on service delivery of public water service providers in Kenya.

Table 7: Coefficients for Resource Distribution and Service Delivery

Coefficients for Resource Distribution

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	-.275	.196		-1.405	.163
	Physical infrastructure	-.037	.033	-.038	-1.101	.273
	Human resource placement	.576	.045	.546	12.856	.000
	Investment portfolios	.512	.043	.502	11.788	.000

a. Dependent Variable: Service delivery

Source: Research data, 2025

The regression coefficient Table 7 highlights that human resource placements and investment portfolios have a statistically significant effect on service delivery among public water service providers, with p-values of 0.000 for both variables. This was in support of the calculated t-statistic value of (12.856 and 11.788) which exceeded the critical t-statistic of 1.96 revealing a significant effect between human resource placements, investment portfolios and service delivery of public

water service providers. Conversely, physical infrastructure was found to have an inverse nexus on service delivery of public water service providers with a P-value of 0.273 and a calculated t–statistic value of 1.101 which was less than the critical t-statistic value of 1.96. This perspective aligns with the research conducted by Klise et al. (2020), which concluded that robust infrastructure is essential for reducing operational inefficiencies and minimizing service disruptions in the water sector. The regression analysis further revealed the equation Service delivery = -2.75 – 0.037 physical infrastructure + 0.576 human resource placements + 0.512 investment portfolios. This reveals that one unit increase in human resource placements and investment portfolios lead improvement of service sharing by 0.576 and 0.512 respectively. However, an increase in physical infrastructure could affect the service delivery negatively by 0.037. The findings of the study support the study carried by Roba et al. (2024) who established a significant nexus between strategic human resource planning and service delivery in County governments in Kenya.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Based on the findings, the study concludes that resource distribution significantly impacts the service delivery of public water service providers in Kenya. Specifically, strategic human resource placement and investments in business technology portfolios are strongly and positively correlated with improved service delivery. While physical infrastructure was perceived as important descriptively, the correlation and regression analyses indicated a statistically insignificant negative relationship with service delivery, suggesting that while essential, its direct impact might be less pronounced compared to human capital and technology investments, or that other factors moderate its influence. The high response rate of the survey further strengthens the reliability and generalizability of these conclusions to the broader population of public water service providers in Kenya.

The implications of these findings are significant for public water service providers and policymakers in Kenya. The strong positive correlation and significant effects of human resource placement and investment portfolios on service delivery highlight the critical need to prioritize these areas. This suggests that focusing on attracting, developing, and strategically deploying skilled personnel, alongside investing in relevant business technologies, can lead to substantial improvements in water service provision. While infrastructure development remains a foundational element, the findings suggest that its effectiveness in enhancing service delivery is maximized when complemented by efficient human resource management and technological adoption. These insights can inform strategic planning and resource allocation decisions within public water utilities, guiding them towards investments that are most likely to yield tangible improvements in service quality and reliability for consumers.

Recommendations

Based on the study's findings, it is recommended that public water service providers in Kenya prioritize strategic human resource management. This includes focusing on attracting and retaining skilled personnel, implementing effective training and development programs to enhance capabilities, and strategically placing staff in positions where their expertise can be best utilized to optimize service delivery. Furthermore, organizations should invest in robust business technology portfolios that can streamline operational processes, improve data management, and facilitate data-

driven decision-making in resource allocation. These investments should be aligned with long-term organizational goals and consider the specific needs of different service areas to ensure equitable and efficient resource distribution.

While physical infrastructure is a necessary component of water service provision, the study suggests that its impact on service delivery is not as direct or strong as human resource and technology investments. Therefore, organizations should ensure that infrastructure development is integrated with improvements in human capacity and technological capabilities. Stakeholder engagement should be actively pursued to inform resource portfolio investment strategies and ensure that resource allocation decisions are responsive to the needs and feedback of the community. Future research is also recommended to adopt longitudinal and comparative approaches to further explore the long-term and contextual influences of resource distribution on service delivery in the public water sector.

Suggestions for Further Research

i) The current study employs a cross-sectional design, providing a snapshot of the relationship between resource distribution and service delivery at a specific point in time. A longitudinal study tracking the same water service providers over several years would provide valuable insights into how changes in resource distribution strategies (e.g., sustained investment in technology, targeted human resource development programs) dynamically affect service delivery outcomes over time.

ii) This study focuses on public water service providers in Kenya. Further research could conduct comparative studies across different geographical regions within Kenya (e.g., urban vs. rural, different climatic zones) or compare the performance of public water service providers with those under different ownership or management structures (e.g., private operators, community-managed schemes).

iii) The quantitative findings indicated a statistically insignificant negative relationship between physical infrastructure and service delivery in the regression analysis, despite the descriptive statistics suggesting its importance. This counterintuitive finding warrants further investigation. A qualitative study using in-depth interviews with technical managers, engineers, and frontline staff could explore the reasons behind this apparent disconnect.

iv) The study mentions the potential moderating effect of technology on the relationship between resource distribution and service delivery in the discussion section. Future research could explicitly test this moderating effect using quantitative methods. This would involve collecting detailed data on the level of technological adoption and capability within water service providers and including it as a moderator in the regression analysis.

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