# An Analysis of Factors Affecting the Financial Performance of State-Owned Enterprises: A Case Study of Mulonga Water Supply and Sanitation Company Limited

Author1[a], Author2[b*]
1. Samuel Kapasa, 2. Derwin Sikalumbi
[b]School of Business, ZCAS University, Zambia

**ABSTRACT**
This study investigates the factors influencing the financial performance of Mulonga Water Supply and Sanitation Company Limited (MWSC) in Chingola District, Zambia, using a mixed-methods approach. Through a survey of 136 stakeholders, including customers and employees, and in-depth interviews with 10 key informants from management and local government, the research identifies non-revenue water (NRW), political interference, weak internal financial controls, and revenue collection inefficiencies as primary challenges. Quantitative analysis reveals that effective NRW management and reduced political interference are critical for improving financial outcomes, while qualitative insights underscore governance weaknesses and aging infrastructure as significant barriers. The study further explores underlying causes such as chronic underfunding, reliance on outdated billing technologies, and insufficient staff training. To address these issues, the research proposes targeted strategies: enhancing internal financial controls, investing in modern infrastructure to minimize NRW, adopting digital solutions for efficient revenue collection, and instituting governance reforms to insulate the utility from political pressures. These findings contribute to the understanding of financial sustainability in state-owned water utilities in developing contexts and offer practical recommendations for policy and operational enhancements at MWSC and similar entities

**Keywords: Financial Performance, Profitability, Internal control, Improved strategies**

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[*]***Corresponding author email:***
*kapasa.samuel@gmail.com*

## Introduction

This chapter provides a detailed exploration of the various subtopics pertaining to the subject matter under examination, namely An Analysis of Factors Affecting the Financial Performance of State-Owned Enterprises: A Case Study of Mulonga Water Supply and Sanitation Company Limited (MWSC). It offers a comprehensive discussion of global, African, and local trends, thus placing the topic within a broader context and facilitating a nuanced understanding of its significance.

In the first section, the chapter presents a thorough contextual statement of the problem, laying the foundation for the investigation and clarifying the issues at hand. This is followed by an articulation of the purpose of the study, which guides the research trajectory and informs the methodological approach. Subsequent sections outline the research objectives and research questions, both of which direct the study's focus and ensure alignment with the overarching aims of the investigation. The chapter also underscores the significance of the study, highlighting its potential contributions to the field of investor relations and the broader economic landscape, particularly in relation to the growth and financial performance of state-owned enterprises.
The delimitation of the study is carefully delineated, specifying the scope and boundaries of

the research to maintain clarity regarding the limits of the inquiry. In addition, an operational definition of key terms is provided, ensuring consistency and precision in the understanding and application of central concepts throughout the study. The chapter concludes with a concise summary, synthesizing the main points discussed and reinforcing the structure of the study as it progresses.

***Background of the Study***

Financial performance serves as a crucial measure of efficiency and sustainability for organizations (Seth et al., 2020). In many organizations, especially State-Owned Enterprises (SOEs), financial performance objectives are integrated into strategic plans and utilized as benchmarks for assessing efficiency and sustainability. These objectives generally encompass revenue generation, cost management, debt oversight, and the attainment of operational efficiency. Mulonga Water Supply and Sanitation Company Limited (MWSC), a State-Owned Enterprise (SOE) located in Zambia, exemplifies this trend (Chilenga, 2016). As a provider of vital public services, Mulonga Water Supply and Sanitation Company Limited has faced increasing scrutiny regarding its financial performance, particularly in light of high levels of non-revenue water and limited cost recovery (TIOZ News, 2024). Unsatisfactory financial performance occurs when a significant number of financial objectives are not met or are substantially underachieved. In the instance of Mulonga Water Supply and Sanitation Company Limited, ongoing challenges such as non-revenue water levels reported at nearly 39% have directly affected its capacity to generate sufficient revenue, resulting in financial instability (TIOZ News, 2024). Poor financial performance in such organizations is frequently associated with inefficiencies in financial management and the inadequate utilization of public funds. This precarious financial condition hinders the utility company's ability to invest in essential infrastructure improvements or to broaden service coverage.

Profitability, a crucial aspect of financial performance, is particularly vital in private sector organizations as it facilitates business continuity and growth (Seth et al., 2020). Although profitability is not the primary objective of public sector entities like Mulonga Water Supply and Sanitation Company Limited (MWSC), it is still important to maintain a robust financial position through efficient cost management and resource utilization. Insufficient profitability in State-Owned Enterprises such as Mulonga Water Supply and Sanitation Company Limited frequently results in operational limitations and an excessive dependence on government subsidies or donor assistance. For instance, the operations of Mulonga Water Supply and Sanitation Company Limited have recently benefited from debt settlements with major clients like Konkola Copper Mines (KCM), which underscores the company's reliance on external financial support to maintain service delivery (Solwezi Today, 2024). In Zambia and other African countries, the primary goal of public sector organizations is to serve the public rather than to generate profits (Milward, 2011).

Nevertheless, financial prudence is essential to ensure sustainability and self-sufficiency. The government aims for State-Owned Enterprises, including MWSC, to achieve financial self-sustainability to alleviate fiscal pressures. When organizations like MWSC are unable to meet operational expenses due to inefficiencies or inadequate financial planning, they ultimately place a burden on public finances. This situation highlights the necessity of enhancing financial performance systems in public utilities through improved governance, cost control strategies, and performance monitoring, as noted in recent sector reports by NWASCO (MWSC, 2024).

State-Owned Enterprises (SOEs) in Zambia, particularly in the water and sanitation sector, have historically faced challenges in financial performance due to factors such as weak governance, inadequate infrastructure, and inefficiencies in revenue collection (Luqmani and Quraesh, 2011). These issues have often hindered their ability to operate sustainably and meet the growing demand for services. The lack of effective financial management and oversight mechanisms

has exacerbated these challenges, leading to increased operational costs and reduced service delivery efficiency (Mwansa, 2019).

Mulonga Water Supply and Sanitation Company Limited (MWSC), serving the Copperbelt region, exemplifies these challenges (ZIPAR, 2020). Despite efforts to improve service delivery, MWSC has struggled with high levels of non-revenue water (NRW), estimated at 39%, resulting in significant financial losses. NRW encompasses water that is produced but not billed to customers, including losses from leaks, meter inaccuracies, and illegal connections (TIOZ News, 2019). This inefficiency translates to a monthly revenue loss of approximately K5 million, undermining the company's financial stability. The persistence of high NRW levels indicates systemic issues within the utility's operations, such as outdated infrastructure and inadequate maintenance practices (Simbeye and Thombansen, 2018).

In response to these challenges, Mulonga Water Supply and Sanitation Company Limited (MWSC) has initiated several projects aimed at enhancing service delivery and financial performance (NWASCO, 2019). A notable initiative is the K76 million water and sanitation project, part of the larger Zambia Water and Sanitation Project (ZWSP), funded by the European Investment Bank. This project focuses on rehabilitating infrastructure, reducing water wastage, and improving service availability in Chingola, Chililabombwe, and Mufulira (TIOZ News, 2024). These efforts are expected to enhance revenue collection and operational efficiency.

However, the success of such projects depends on effective implementation and monitoring to ensure that the intended outcomes are achieved (Sindano et al., 2018). Additionally, MWSC has received financial support from local industries, such as Konkola Copper Mines (KCM), which paid over K23 million as part of a debt settlement. This payment is crucial for MWSC's operations, benefiting communities in Chingola, Mufulira, and Chililabombwe (Solwezi Today, 2024). However, reliance on such payments underscores the need for MWSC to improve its internal revenue generation mechanisms to reduce dependency on external sources (Mwansa, 2019).

Despite these efforts, MWSC's performance in the 2023 National Water Supply and Sanitation Council (NWASCO) Sector Report ranked it ninth among commercial utilities, with recognition for the best sanitation coverage. The company's Managing Director emphasized the importance of focusing on areas highlighted in the report, such as hours of supply, staff efficiency, and collection efficiency, to improve its standing in future evaluations (MWSC, 2024). This indicates that while MWSC has made progress in certain areas, significant challenges remain in others, particularly in financial performance and operational efficiency.

The financial performance of MWSC and similar SOEs underscores the need for comprehensive reforms in governance, infrastructure investment, and revenue management. Addressing these areas is essential for enhancing the sustainability and effectiveness of water and sanitation services in Zambia. Furthermore, the implementation of best practices in financial management and operational efficiency can serve as a model for other utilities facing similar challenges (Simbeye and Thombansen, 2018).

## Literature Review

### Theoretical Framework

In investigating the financial performance associated with State-Owned Enterprises (SOEs), it is essential to anchor the study in a robust theoretical framework. According to Springer (2016), a theoretical framework serves as a structure that guides research by offering a formal theory that provides a coherent explanation of relationships and phenomena. To analyze the financial performance of MWSC, this study employed a multidimensional theoretical framework comprising Agency Theory, Public Choice Theory, and Firm Performance Theory. These theories collectively provide a comprehensive lens for examining the governance,

behavioral, and resource-related dynamics affecting SOEs.

**Agency Theory**

Agency Theory, initially proposed by Jensen and Meckling (1976), explores the relationship between principals (such as government or shareholders) and agents (managers or public officials) who are delegated to act on their behalf. The theory is rooted in the concept of information asymmetry and goal divergence, whereby agents may pursue their own interests rather than those of the principal. Within the context of Mulonga Water Supply and Sanitation Company Limited, Agency Theory provides insights into how managerial decisions, accountability mechanisms, and incentives impact the company's financial performance. The theory is particularly relevant in understanding how managerial inefficiencies or misaligned objectives can lead to increased operational costs, reduced profitability, and diminished service quality in SOEs.

Public Choice Theory

Public Choice Theory, developed by Buchanan and Tullock (1962), applies economic reasoning to political and bureaucratic behavior. It posits that individuals in the public sector including elected officials and bureaucrats are motivated primarily by self-interest rather than the collective welfare. This theory is instrumental in analyzing the challenges faced by SOEs like MWSC, where political influence, rent-seeking behavior, and lack of market discipline can adversely affect financial performance. Public Choice Theory highlights how personal incentives and political interference may undermine cost efficiency, budget discipline, and strategic decision-making, ultimately leading to underperformance in state-run enterprises.

**Firm Performance Theory**

Firm Performance Theory draws from the Resource-Based View (RBV) of the firm, as articulated by Wernerfelt (1984; 2020), and focuses on how organizations utilize their internal resources to achieve efficiency, profitability, and competitive advantage. This theory evaluates how effectively a firm transforms inputs such as labour, capital, and infrastructure into valuable outputs while maintaining financial sustainability. In the case of MWSC, Firm Performance Theory provides a practical lens for assessing how the company manages its resources to deliver water and sanitation services efficiently. Given the reliance of SOEs on public funds, enhancing performance through cost control, resource optimization, and productivity improvements is vital for achieving better financial outcomes.

**Factors influencing financial performance in Water Supply and Sanitation Company Limited**

Effective governance, operational efficiency and revenue management are pivotal to the financial success of water utilities like MWSC. Below, key factors are synthesized to highlight their impact on financial performance, drawing on global evidence and Zambian evidence.

**Governance and Management Structures**

Weak governance significantly undermines SOE performance in Zambia. Mumba and Kazonga (2021) argue that the politicized board appointments and oversized boards dilute accountability, a challenge evident in MWSC's lack of timely audited financial statements. The absence of dedicated legal framework for SOEs exacerbates political interference, compromising strategic decisions (IMF, 2023). For MWSC, aligning with NWASCO's governance guidelines could enhance transparency and decision making.

**Working Capital and Operational Efficiency**

Effective management of working capital is crucial for maintaining liquidity and ensuring the financial stability of water utilities. In Zambia, challenges such as delayed payments to suppliers and inefficient cash flow management have been identified as significant factors contributing to the poor performance of State-Owned Enterprises (SOEs), including those in the water sector. A study by Mumba and Kazonga (2021) highlighted that weak governance structures and ineffective supervisory mechanisms hinder the profitability and operational efficiency of SOEs.

In the context of MWSC, addressing working capital management is essential to enhance cash flow and operational efficiency. Research by Wanyoike (2015) on Kenyan water utilities revealed that effective management of accounts receivable, inventory, and payables significantly

influenced financial performance. Specifically, reducing the average collection period and improving inventory turnover were associated with better financial outcomes. Applying these findings to MWSC suggests that optimizing working capital management practices could lead to improved financial performance.

Furthermore, a study by Chikwanda and Kayombo (2024) on listed companies in Zambia found that effective working capital management positively influences profitability. The study indicated that managing receivables and payables as distinct components of working capital is more effective for enhancing profitability than focusing solely on the cash conversion cycle. This insight is particularly relevant for MWSC, as it underscores the importance of targeted strategies in managing working capital components to improve financial outcomes.

Additionally, the management of non-revenue water (NRW) is a critical aspect of working capital management for water utilities. High levels of NRW, resulting from leaks, theft, or unbilled consumption, can significantly impact revenue generation and cash flow. Addressing NRW through infrastructure investment and maintenance is essential for improving financial performance. This implies that effective management of working capital is integral to the financial performance of water utilities. For MWSC, implementing strategies to optimize accounts receivable, inventory, payables, and reduce NRW can enhance liquidity, operational efficiency, and overall financial stability.

**Tariff Structures and Cost Recovery**

The ability to set and collect appropriate tariffs is fundamental to the financial sustainability of water utilities. In Zambia, urban water tariffs are structured to promote cross-subsidization, with higher charges for higher-income households. However, challenges in tariff setting and collection have been noted. The average collection efficiency in Zambia was reported at 84% in 2010, indicating that a significant portion of billed amounts remains unpaid.

For MWSC, ensuring that tariffs reflect the true cost of service delivery and improving collection efficiency are vital steps toward financial viability. Research by Wanyoike (2015) on Kenyan water utilities revealed that effective management of accounts receivable, inventory, and payables significantly influenced financial performance. Specifically, reducing the average collection period and improving inventory turnover were associated with better financial outcomes. Applying these findings to MWSC, it is essential to assess and improve its working capital management practices to enhance cash flow and operational efficiency.

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**Infrastructure Investment and Non-Revenue Water**

Investment in infrastructure is essential for expanding service coverage and reducing operational losses in water utilities. However, inefficiencies such as high levels of non-revenue water (NRW), which includes water lost through leaks or unbilled consumption, can undermine

financial performance. A World Bank report indicated that between 2001 and 2017, Zambia's commercial utilities lost an estimated US$858 million due to high NRW and low bill collection efficiency.

Addressing NRW through targeted investments and maintenance can significantly improve MWSC's financial performance. Research by Kaitano and Nhamo (2018) on Southern Water and Sanitation Company in Livingstone found that NRW levels ranged from 35% to 53%, translating to substantial revenue losses. The study emphasized that reducing NRW to the acceptable benchmark of 25% would require significant investment and strategic planning. Similarly, a study by the University of Zambia (2018) on Lusaka's water supply revealed that NRW was at 44%, with physical losses due to poor infrastructure being the primary contributor. The study recommended a complete overhaul of the existing network to reduce NRW and improve financial sustainability.

In the context of MWSC, addressing NRW through infrastructure investment and maintenance is crucial for improving financial performance. Implementing strategies such as leak detection, pipeline replacement, and improved metering can reduce NRW levels and enhance revenue generation. Additionally, public awareness campaigns and stricter enforcement against illegal connections can further mitigate NRW.

## Methodology

### Research Philosophical paradigm

A paradigm is a worldview or a framework for theory and research and includes basic assumptions, key issues, models of quality research and methods for seeking answers (Neuman, 2014). Four major research paradigms have been adopted that influence how researchers approach their studies. These paradigms are: Post-positivism; Interpretivism (Constructivism); Critical Theory (Advocacy) and Pragmatism (Creswell, 2014). Pragmatism was chosen as the philosophical foundation to anchor the study because it is well-suited for addressing practical, real-world issues and effectively combines various types of data to provide actionable insights central to this research. The pragmatic worldview that underpinned this study was rooted in the works of early thinkers such as Charles Sanders Peirce, William James, George Herbert Mead, and John Dewey, as well as more recent scholars like Richard Rorty, Patton, and Cherrholmes (Hannes and Lockwood, 2011). This philosophical stance is grounded in the notion that knowledge arises from human actions, situations, and consequences, rather than from a purely objective or antecedent set of conditions (as is the case in post-positivism). As such, pragmatic approaches to research prioritize practical applications namely, "what works" as a means of understanding and solving real-world problems. Furthermore, this approach involves an interplay between the etic (reality-independent) and emic (mind-dependent) perspectives, focusing on how different worldviews inform and shape the generation of knowledge (Kabundula, 2022).

In line with pragmatism, the methodological focus of the current study sought to integrate various methods and approaches that would provide the most comprehensive understanding of the research problem. The problem itself takes precedence over the method, as argued by Rossman and Wilson (1985). Thus, pragmatists advocate for flexibility in the selection of research techniques, encouraging the use of mixed methods approaches, which combine qualitative and quantitative data generation and analysis. This allows for a more nuanced and practical exploration of the phenomena under study in this case, factors affecting the financial performance of state-owned enterprises (SOEs), focusing a case of Mulonga Water Supply and Sanitation Company Limited.

### Research Approach

Research approach of the Deductive for quantitative and inductive for qualitative for the analyzing factors affecting MWSC’s financial performance necessitates a mixed-methods approach, effectively integrating qualitative and quantitative methods. Given the multifaceted nature of the topic, combining Nomothetic (quantitative) and Idiographic (qualitative) methods provides a comprehensive analysis

(Patton, 2001). The mixed-methods approach facilitates identifying patterns, quantifying relationships, and exploring individual experiences and contextual factors influencing financial performance. Quantitative data establishes broad trends, while qualitative data provides depth, ensuring robust and valid findings (Cresswell, 2014). This approach was selected to offer balanced insights into observable financial behaviour and subjective interpretations, capturing both aspects comprehensively. It also allowed flexibility in exploring social dynamics and economic considerations unique to MWSC's operating environment.

**Research Design**

Kothari (2011) defines a "research design as the arrangements of conditions for collection and analysis of data in manner that aims to combine relevance to the research purpose with economy in procedure". Creswell (2009) identifies five mixed-methods design: convergent parallel, explanatory sequential, exploratory sequential, embedded, and transformative. Due to the nature of this study, an explanatory sequential design was considered appropriate as it effectively facilitated comprehensive exploration of the complex factors influencing MWSC's financial performance. The explanatory sequential design involved initial quantitative data collection and analysis to identify general statistical patterns and relationships, followed by qualitative analysis to explain and contextualize these quantitative findings in greater depth (Tashakkori & Teddlie, 2010). Given this design was justified, it enabled the researcher first to establish a clear quantitative understanding of performance factors, and subsequently delve deeper through qualitative inquiry into the underlying perceptions, motivations, and experiences of stakeholders involved. This two-phase methodological approach ensured that the research captured both broad statistical insights and rich qualitative narratives. Consequently, this enriched the analysis, making the finds more meaningful, relevant contextually, and practically applicable (Patton, 2001).

**Study Location**

The study was conducted in Chingola District, located in the Copperbelt Province of Zambia, a region holistically dominated by mining activities. Chingola's economic context, which is shaped largely by mining yet exploring diversification, provides a distinct backdrop for analyzing MWSC's financial dynamics. Chingola offers insights distinct from more economically central urban hubs like Lusaka, highlighting how industrial contexts influence SOE financial management. The study's location offered potential to reveal how local economic and social contexts impact MWSC's financial performance (Talebi et al. 2017) as significant and positive relationship between the dimensions of strategic alliances, including new opportunities, entrepreneurial and innovative capabilities, social capital, and internationalization of business, and competitive advantage with the performance of SMEs.

**Research Target Population**

The goal of research is to produce rich data and the sample is chosen based on the participants' ability to produce in-depth understanding of phenomena under investigation (Ulin, et al., 2012). In light of the above, the population for this study comprised of the managers, executives, and staff within the finance department. These were selected because of their direct involvement and strategic oversight in the company's financial operations, which made their insights crucial to the research objectives.

**Inclusion and Exclusion Criteria for the Study**

Clear inclusion and exclusion ensure data relevance and validity. The participants were chosen based on these criteria; at least 12 months of service with MWSC, particularly those in managerial or finance roles, due to their intimate knowledge of internal financial processes. Internal financial documents and audited reports from the last five years were included, alongside external stakeholders directly engaged with MWSC. Large institutional customers were also included to gauge billing and service impacts.

Exclusion criteria targeted new employees with less than 12 months service, and staff unrelated to financial or operational roles. Outdated or incomplete financial documents were excluded to

maintain data integrity. Stakeholders without direct recent involvement and irregular customers were excluded to prevent speculative or inconsistent data input.

**Sample Size and Sampling Techniques**

Probability and non-probability sampling techniques were used to select the participants best positioned to provide relevant insights on MWSC's financial performance. The probability sampling for the quantitative study and the non-probabilistic sampling for the qualitative allows for a sample were best fits for the purpose of the study (Neuman 2011). In selecting the sample size, considerations were made regarding the need for efficiency, representativeness, reliability, and flexibility (Kothari, 2004). The sample was carefully selected to be neither excessively large nor too small, but adequate enough to achieve the desired level of precision and confidence in the results (Saunders, Lewis, Thornhill, 2019).

**Determining the Sample Size**

The total population for the study was 207 individuals. The sample size for the quantitative component was determined using Yamane's formula (1967) for small populations, which yielded a required sample of 136 respondents at a 5% margin of error.

$$n = N / (1 + N(e)^2)$$

Where:

n = sample size

N = population size (207)

e = margin of error (commonly 5% or 0.05); Rounded Sample Size for Quantitative Research: 136 respondents

For the qualitative part of the research, the target ranged from 15 to 20 participants based on the saturation, comprising key informants selected based on their relevance to the study's subject matter. This included 15 to 20 in-depth interviews with senior staff and external stakeholders, and 3 focus group discussions (FGDs) with 6 to 10 participants per group. This sample size was sufficient to ensure data saturation and reliability of themes identified.

**Sampling Techniques**

Sampling is a critical process in any research as it defines the way in which participants or data points are selected for the study. The choice of sampling technique impacts the validity, reliability, and generalizability of the study's findings (Bryman and Bell, 2015). For the quantitative component, stratified random sampling was employed to ensure all departments within MWSC were proportionally represented. Employees were grouped according to their departments such as Finance, Operations, Customer Service, and Technical Support and a random selection was made within each stratum to reduce sampling bias and ensure diverse representation.

In addition to internal staff, external stakeholders such as regulatory officials and Ministry representatives were selected through simple random sampling. A comprehensive list of such stakeholders was compiled, from which individuals were randomly chosen to ensure unbiased representation of policy-level perspectives.

For the qualitative component, purposive sampling was utilized to select individuals with specialized knowledge in financial management, policy implementation, and revenue collection. These included senior managers, finance officers, and regulatory personnel directly involved with MWSC. Snowball sampling was also employed to reach individuals who were not easily identified in organizational structures bust possessed critical institutional memory or informal influence, such as long-serving staff or internal auditors (Ulin, et al., 2012). Initial interviews helped identify such participants, enabling a deeper understanding of informal practices and systematic issues. The final qualitative sample included 15 to 20 participants and 5 to 10 external informants. These methods ensured that the study captured both broad trends and nuanced insights into the factors affecting MWSC's financial performance.

***Instruments for Data Generation and Measures***

To achieve the study's objectives, both quantitative and qualitative data collection instruments were used. For the qualitative stage of the research, data was collected using structured questionnaires which were administered to MWSC staff and local government officials. These questionnaires

targeted senior management, departmental heads, and mid-level staff involved in finance and operations. The instrument was designed to gather data on internal processes, financial practices, and perceptions of operational efficiency. A pre-test involving 10 to 15 respondents from MWSC helped refine the instrument for clarity and reliability.

A separate structured questionnaire was administered to government stakeholders, including officials from the Ministry of Water Development and Sanitation. This tool focused on governance, funding mechanisms, and regulatory oversight. It was also piloted with a smaller sample of 5 to 7 officials for validation and refinement.

The interviews with MWSC management and key staff and focus group discussions front-line staff were guided by an interview guide with open-ended questions for the qualitative phase. According to Neuman (2011), a semi-structured interview is a type of interview technique that uses mostly open-ended questions so as to obtain rich and descriptive information from participants. These tools were designed to explore institutional experiences, management practices, and stakeholder interactions in greater depth. The combination of instruments ensured the study collected both statistically analyzable data and detailed narratives essential for understanding complex financial challenges.

### *3.11 Data Triangulation and Validation*

To ensure the validity and reliability of the findings, data triangulation was employed. This involved cross-verifying information obtained through quantitative surveys, in-depth interviews, and focus group discussions. Data from different respondent categories: internal staff, external stakeholders, and frontline employees were compared to common themes, contradictions, and patterns. This approach strengthened credibility of the research by providing a multi-dimensional view of the financial performance factors at MWSC, in line with Neuman's (2014) recommendation for methodological triangulation in mixed-methods research.

### *3.12 Data Analysis for the Study*

Data analysis was conducted in two integrated phases: quantitative and qualitative. The quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS), which allowed for descriptive inferential statistical analysis (Bryman, 2004; Creswell, 2014). Descriptive statistics summarized the key operational and financial trends, while inferential statistics tested the relationships between variables such as non-revenue water, customer payment behavior, and financial performance outcomes.

Correlation analysis was conducted using Pearson's and Spearman's coefficients, depending on whether the data were continuous or ordinal. Regression models were applied, both linear and logistic, to determine how independent variables like regulatory support or operational efficiency influenced outcomes such as billing accuracy or budget compliance.

Qualitative data from interviews and focus groups were transcribed and cleaned to ensure accuracy. Thematic analysis was used to interpret the data (Patton, 2002). Coding was performed using Nvivo software. Thematic categories were developed frequently recurring codes, including tariff regulation, budgetary constraints, staffing, and infrastructure challenges. These themes were refined and validated through constant comparison with the quantitative findings to ensure consistency.

The integration of quantitative and qualitative findings enabled the development of a comprehensive understanding of MWSC's financial dynamics. For example, is survey data highlighted NRW as a key issue, the interviews and focus groups helped uncover the root causes, such as aging infrastructure or weak enforcement of monitoring procedures. This integrative approach ensured that the recommendations drawn were both evidence-based and contextually grounded.

## Research Findings and Analysis

### Summary Statistics for Financial Performance Factors

| Factor | Mean | Std Dev | Agree/Strongly Agree (%) |
|---|---|---|---|
| **NRW Management Challenges** | 4.24 | 0.85 | 86.8 |
| **Insufficient Funding/Subsidies** | 4.19 | 0.91 | 81.6 |
| **Political Interference Impact** | 4.05 | 1.06 | 79.4 |
| **Revenue Collection Challenges** | 3.82 | 0.88 | 70.6 |
| **Inadequate Staff Training** | 3.85 | 0.98 | 70.6 |
| **Weak Internal Financial Controls** | 3.72 | 1.23 | 70.6 |
| **Inadequate Regulatory Oversight** | 3.71 | 1.15 | 66.9 |
| **Poor Governance Structures** | 3.52 | 1.17 | 58.1 |
| **Feasible Improvement Strategies** | 3.39 | 1.15 | 52.2 |
| **Clear Sustainability Strategies** | 2.45 | 1.22 | 21.3 |

Non-revenue water (NRW) management challenges rank highest with 86.8% agreement and a mean of 4.24, signaling a critical financial drain. Insufficient funding (81.6%) and political interference (79.4%) also score highly, emphasizing systemic and external pressures.

Conversely, only 21.3% agree that clear sustainability strategies exist, with a low mean of 2.45, indicating a significant gap in strategic financial planning at MWSC.

**Inferential Statistics**

**Table 2: Correlation Matrix of Key Financial Performance Factors**

| Factor | Internal Controls | Political Interference | Revenue Collection | NRW Management | Insufficient Funding |
|---|---|---|---|---|---|
| **Internal Controls** | 1.000 | -0.062 | 0.116 | 0.014 | 0.021 |
| **Political Interference** | -0.062 | 1.000 | -0.045 | 0.003 | -0.048 |
| **Revenue Collection** | 0.116 | -0.045 | 1.000 | -0.001 | 0.044 |

| | | | | | |
|---|---|---|---|---|---|
| **NRW Management** | 0.014 | 0.003 | -0.001 | 1.000 | -0.067 |
| **Insufficient Funding** | 0.021 | -0.048 | 0.044 | -0.067 | 1.000 |

The correlation coefficients between key factors are generally low, with the highest being 0.116 between internal controls and revenue collection, indicating weak positive relationships. Political interference shows negligible correlations (e.g., -0.062 with internal controls), suggesting these factors independently affect financial performance. This independence justifies analyzing each variable separately in regression models to identify their unique contributions.

**Multiple Linear Regression Results - Factors Affecting Financial Performance**
**Table 3.**

| Independent Variable | Beta Coefficient | Std Error | P-Value | Significance |
|---|---|---|---|---|
| **Weak Internal Controls** | 0.298 | 0.045 | 0.000 | *** |
| **Political Interference** | 0.252 | 0.038 | 0.000 | *** |
| **Revenue Collection Challenges** | 0.195 | 0.042 | 0.000 | *** |
| **NRW Management Challenges** | 0.148 | 0.039 | 0.001 | ** |
| **Insufficient Funding** | 0.097 | 0.041 | 0.019 | * |
| **Constant** | 1.234 | 0.256 | 0.000 | *** |

The regression model explains 78.2% of the variance in financial performance, demonstrating strong predictive capability. Weak internal controls have the highest beta coefficient (0.298, $p < 0.001$), followed by political interference (0.252, $p < 0.001$), confirming their dominant roles. Revenue collection challenges ($\beta = 0.195$) and NRW management ($\beta = 0.148$) also significantly predict financial outcomes. Insufficient funding has a smaller but still significant effect ($\beta = 0.097$, $p = 0.019$), highlighting multiple interacting factors.

***Qualitative Data Analysis***

**Key Factors Affecting Financial Performance**

**Theme 1: Governance and Internal Controls**

Weak internal financial controls and governance significantly undermine MWSC's financial performance. A senior staff member noted, *"The biggest problem we face is the lack of proper financial controls. We don't have adequate systems to track expenditures, and there's limited oversight of financial decisions"*. Another key informant highlighted governance flaws, stating, *"Our board composition lacks technical expertise, and appointments are often based on political considerations rather than merit"*. These qualitative insights, aligning with a 70.6% survey agreement on weak controls, illustrate how inadequate expenditure tracking and politically motivated board appointments foster poor financial

management and reduce accountability. As Mumba and Kazonga (2021) note, such governance deficiencies exacerbate inefficiencies, depicted in the red inner sub-ring of the conceptual framework, hindering MWSC's financial sustainability.

**Theme 2: Political Interference**

*"Political interference affects our daily operations. We receive directives that don't align with commercial principles, making it difficult to operate as a business."* – Senior Official. Similarly, another management personnel highlighted pressures during election periods, stating that, *"We're pressured to extend services without proper feasibility studies or adequate funding arrangements"* (Personal Communication). Such politically motivated directives, often lacking financial backing, strain MWSC's resources and divert focus from operational efficiency (Chikuta, 2020). This qualitative evidence complements the 79.4% quantitative consensus, revealing the tangible ways political influence compromises strategic planning and financial discipline, ultimately hindering sustainable performance.

**Internal and External Challenges**

**Theme 3: Revenue Generation and Collection**

Qualitative data highlight that revenue generation and collection challenges at MWSC stem from a combination of socio-economic and technical barriers, significantly undermining financial viability. A senior official noted, *"Many customers cannot afford to pay their bills, especially in low-income areas. We also struggle with illegal connections that reduce our revenue base"* (Personal Communication, 2024). Similarly, another management personnel emphasized technical shortcomings, stating, *"Our billing system is outdated, and we lack proper metering infrastructure. This leads to estimated bills that customers often dispute"* (Personal Communication, 2024). These narratives align with survey findings, where 70.6% of respondents agreed that operational inefficiencies and customer affordability issues impede revenue inflows. Low-income customers' inability to pay, prevalent illegal water connections, and outdated billing and metering systems collectively contribute to low recovery rates, as evidenced by the sector's average collection efficiency of 85% in 2020, with some utilities achieving higher rates through modernized systems (NWASCO, 2021). These challenges, depicted in the red inner sub-ring of the conceptual framework, exacerbate revenue shortfalls and strain MWSC's financial sustainability.

**Theme 4: Non-Revenue Water Challenges**

Significant water losses through non-revenue water (NRW) represent a critical barrier to MWSC's financial sustainability, driven by aging infrastructure and insufficient maintenance funding. A senior operational staff member noted, *"Water losses through leakages are enormous. Our infrastructure is aging, and we don't have sufficient funds for regular maintenance and replacements"*. Similarly, another key informant emphasized the scale of the issue, stating, *"We estimate that over 40% of treated water is lost before reaching customers. This directly impacts our financial sustainability"*. These firsthand accounts align with survey findings, where 86.8% of respondents identified NRW management as a primary concern, reflecting the severe financial impact of physical water losses due to leaks and unmetered connections. The qualitative data underscore the urgent need for infrastructure investment, as MWSC's high NRW rate, estimated at 48.6% in 2023 (NWASCO, 2023), significantly reduces revenue inflows. These losses highlight the critical need for targeted interventions to enhance MWSC's operational efficiency and financial viability.

**Governance and Political Influence**

**Theme 5: Decision-Making Processes**

Weak governance structures and top-down decision-making processes significantly undermine MWSC's financial performance and operational efficiency. A senior staff member expressed frustration, stating, *"Financial decisions often come from above without proper consultation with technical staff. This leads to unrealistic budgets and targets"*. Similarly, another key

informant highlighted governance flaws, noting, *"The board lacks independence from political influence. Members are appointed based on political affiliation rather than technical competence"*. These qualitative perspectives illuminate how top-down financial directives, often disconnected from operational realities, result in impractical budgets and unattainable performance targets. Furthermore, the board's lack of independence, driven by politically motivated appointments, weakens strategic oversight and fosters mismanagement, as corroborated by Mumba and Kazonga (2021). These governance challenges exacerbate financial underperformance by perpetuating ineffective decision-making processes and misaligned priorities, underscoring the need for governance reforms to enhance MWSC's sustainability

**Improvement Strategies**

**Theme 6: Proposed Solutions**

To enhance MWSC's financial sustainability, staff propose targeted strategies that address operational and systemic challenges. A senior staff member emphasized the need for updated tariffs, stating, *"We need tariff adjustments that reflect true cost of service delivery. The current tariffs haven't been reviewed for years despite inflation"*. Another key informant advocated for technological upgrades, noting, *"Investment in modern technology for billing, metering, and leak detection would significantly improve our financial position"*. Similarly, management personnel highlighted the importance of human capital, stating, *"Staff training in financial management and commercial operations is crucial for improving our performance"*.

These qualitative insights, which resonate with a moderate 52.2% survey agreement on feasible improvement strategies, demonstrate employee awareness of actionable reforms. By implementing cost-reflective tariffs, as successfully adopted by Lusaka Water and Sewerage Company to achieve 85% collection efficiency (NWASCO, 2019), MWSC could enhance revenue generation. Investing in modern billing and metering systems, alongside leak detection technologies, would reduce non-revenue water and improve collection rates, aligning with regional best practices (Mubanga, 2021). Additionally, enhanced staff training in financial management and commercial operations would strengthen operational efficiency, as supported by the African Development Bank's (2018) emphasis on capacity building. These strategies, depicted in the green outer sub-ring of the conceptual framework, collectively address the causes of poor financial performance, paving the way for MWSC's long-term sustainability

**Integration of Findings**

Both quantitative and qualitative findings consistently identify weak internal controls, political interference, NRW management, and revenue collection as key factors affecting MWSC's financial performance. Qualitative data enriches the understanding by providing detailed explanations of how these factors operate in practice. The findings address the study objectives by identifying key factors, examining causes of poor performance, and informing potential improvement strategies. This comprehensive analysis offers evidence-based insights to enhance MWSC's financial sustainability and service delivery.

## Discussion and Recommendations

**Objective One: Key Factors Influencing Financial Performance at MWSC**

The study identified several critical factors that significantly influence MWSC's financial performance, with Non-Revenue Water (NRW) management challenges emerging as the most prominent issue (86.8% agreement, Mean = 4.24). This finding aligns with Chisanga, Simumba, and Kanyoka (2020), who demonstrated that infrastructure deterioration directly contributes to substantial water losses in Zambian water utilities. The high prevalence of NRW at MWSC, estimated at over 40% by respondents, reflects a common challenge across African water utilities where aging infrastructure and inadequate maintenance funding create significant revenue losses (African Development Bank, 2018).

Political interference was identified as the second most critical factor (79.4% agreement, Mean =

4.05), consistent with findings by Chikuta (2020) who highlighted governance challenges in Zambia's water sector. The IMF (2023) emphasized that political interference in state-owned enterprises undermines financial discipline and commercial viability, which directly corresponds to the experiences reported by MWSC staff. The pervasive nature of political influence on operational decisions, particularly during election periods, reflects broader governance weaknesses in Zambian state-owned enterprises as documented by Mumba and Kazonga (2021).

Insufficient funding and subsidies ranked third among the factors (81.6% agreement, Mean = 4.19), highlighting the financial constraints faced by state-owned water utilities. This finding resonates with the African Development Bank (2020) analysis of Zambia's water sector, which identified inadequate capital investment as a barrier to sustainable water service delivery. The funding challenges at MWSC mirror broader issues affecting water utilities across sub-Saharan Africa, where tariff levels often fail to cover operational costs (World Bank, 2017).

Revenue collection challenges (70.6% agreement, Mean = 3.82) represent another significant factor, reflecting both technical and socio-economic barriers to financial sustainability. Kato and Mwaisaka (2019) demonstrated the direct relationship between customer satisfaction and revenue generation in urban water utilities, suggesting that billing inefficiencies and service quality issues compound revenue collection problems. The outdated billing systems and metering infrastructure identified at MWSC align with Mwansa and Zulu (2020) findings on barriers to electronic billing adoption in Zambia's water sector.

**Objective Two: Primary Causes Contributing to Poor Financial Performance**

The regression analysis revealed that weak internal financial controls serve as the strongest predictor of poor financial performance ($\beta = 0.298$, $p < 0.001$), supporting the OECD (2015) guidelines on corporate governance of state-owned enterprises. The lack of adequate financial oversight systems and expenditure tracking mechanisms identified in the qualitative findings reflects broader governance deficiencies documented by Chikuta (2020) in Zambian state-owned enterprises.

The significant impact of political interference ($\beta = 0.252$, $p < 0.001$) as a predictor of poor performance aligns with theoretical frameworks on state-owned enterprise governance. The IMF (2023) specifically identified political interference as a key factor undermining the commercial orientation of state-owned enterprises in Zambia. The qualitative findings revealing how political directives override commercial principles demonstrate the practical manifestation of governance challenges that compromise financial sustainability.

Infrastructure-related causes, particularly NRW management challenges ($\beta = 0.148$, $p = 0.001$), reflect the broader infrastructure crisis affecting Zambian water utilities. Kalenga, Banda, and Mulenga (2017) documented similar water loss challenges in Lusaka, emphasizing how aging infrastructure creates financial losses that compound over time. The European Investment Bank (2013) investment in upgrading Zambian water networks highlights the scale of infrastructure rehabilitation required to address these challenges.

Staff capacity limitations emerged as an underlying cause, with 70.6% of respondents identifying inadequate training as a contributing factor. This finding supports the African Development Bank (2018) emphasis on capacity building as a critical component of water utility reform. The lack of technical expertise in financial management and commercial operations identified at MWSC reflects broader human resource challenges affecting state-owned enterprises in developing countries.

**Objective Three: Practical Strategies for Improving Financial Performance**

Based on the research findings and literature review, several strategic interventions emerge as priorities for enhancing MWSC's financial performance. The moderate agreement on feasible improvement strategies (52.2% agreement, Mean = 3.39) suggests that while challenges are

recognized, there is cautious optimism about potential solutions.

**Infrastructure Investment and NRW Reduction**
The critical need for infrastructure investment to address NRW challenges aligns with successful interventions documented by Mubanga (2021) in Livingstone, where District Metered Areas significantly reduced water losses. Khan, Qureshi, and Hassan (2020) demonstrated how strategic investment planning in water utility systems can enhance financial sustainability through improved operational efficiency. The qualitative findings suggesting investment in modern technology for leak detection and metering correspond to best practices identified in water utility reform literature (African Development Bank, 2018).

**Governance and Internal Control** Strengthening
The weak internal controls identified as the strongest predictor of poor performance necessitate comprehensive governance reforms. The OECD (2015) guidelines provide a framework for enhancing corporate governance in state-owned enterprises, emphasizing board independence and merit-based appointments. Mumba and Kazonga (2021) demonstrated how improved corporate governance practices can enhance financial performance in Zambian state-owned enterprises, supporting the need for governance reforms at MWSC.

**Revenue Enhancement Strategies**
The revenue collection challenges identified in the study can be addressed through multiple interventions. Chileshe and Mwanza (2019) demonstrated how mobile payment solutions can improve utility bill collection in Zambia, addressing both technical and accessibility barriers. The implementation of electronic billing systems, as analyzed by Mwansa and Zulu (2020), can enhance billing efficiency and reduce revenue losses. Customer engagement strategies, as documented by Mwale, Ndlela, and Lamba (2020), can improve payment compliance through enhanced service delivery and community participation.

**Tariff Reform and Cost Recovery**
The qualitative findings emphasizing the need for tariff adjustments reflect broader challenges in achieving cost recovery in water utilities. Johnson and Williams (2019) highlighted how scenario analysis and financial planning tools can support sustainable tariff setting in water utilities. The African Development Bank (2018) emphasized that cost-reflective tariffs are essential for financial sustainability while requiring complementary social protection measures for vulnerable populations.

**Capacity Building and Technical Assistance**
The identified staff training needs align with capacity building approaches documented in water utility reform literature. Smith and Brown (2018) demonstrated how financial planning tools and training can enhance water utility sustainability. The African Development Bank (2020) emphasis on technical assistance and capacity building in Zambia's water sector supports the need for comprehensive staff development programs at MWSC.

***5.3 Recommendations***

To transform Mulonga Water Supply and Sanitation Company Limited (MWSC) into a financially sustainable utility capable of delivering reliable water and sanitation services, a strategic roadmap spanning short-term, medium-term, and long-term interventions is essential. These recommendations draw on the study's findings, global best practices, and successful reforms in Zambia's water sector, offering a pathway to address non-revenue water (NRW), governance weaknesses, and revenue challenges while fostering hope for lasting change.

**Short-term Recommendations (1-2 years)**

**Strengthen Internal Financial Controls**
MWSC should implement comprehensive financial management systems with clear expenditure tracking and approval processes. The OECD (2015) guidelines on state-owned enterprise governance provide a framework for establishing robust internal controls. Regular financial audits and performance monitoring systems should be

established to enhance accountability and transparency. For instance, establishing clear approval processes for spending can prevent mismanagement, a concern raised by 70.6% of respondents.

**Improve Revenue Collection Systems**
The company should invest in modern billing and metering infrastructure, drawing on successful implementations documented by Chileshe and Mwanza (2019). Electronic billing systems and mobile payment platforms can address the technical barriers to revenue collection identified in the study. Complementing these technological upgrades with community outreach initiatives will encourage payment compliance, particularly in low-income areas where affordability is a barrier.

**Implement NRW Reduction Programs**
MWSC should adopt District Metered Areas and leak detection programs, following successful models documented by Mubanga (2021). Immediate interventions should focus on high-loss areas to achieve quick financial returns. Partnership with technical assistance providers can accelerate implementation while building internal capacity. These immediate actions lay a foundation for financial stability, addressing the urgent challenges identified in the study.

**Medium-term Recommendations (3-5 years)**

**Governance Reform and Board Strengthening**
The company should advocate for governance reforms that enhance board independence and technical competence, aligning with IMF (2023) recommendations for Zambian state-owned enterprises. Merit-based appointment processes and clear performance indicators should be established to reduce political interference in operational decisions.

**Infrastructure Rehabilitation and Investment**
MWSC should develop a comprehensive infrastructure investment plan, drawing on successful models documented by the European Investment Bank (2013). Public-private partnerships, as analyzed by Galiano and Esquivel (2017), can provide financing mechanisms for large-scale infrastructure upgrades. The company should explore output-based aid approaches documented by Brocklehurst (2010) to attract development financing.

**Tariff Reform and Cost Recovery**
The company should work with regulatory authorities to implement cost-reflective tariffs while developing social protection mechanisms for vulnerable customers. Johnson and Williams (2019) provide frameworks for scenario analysis in tariff setting. Community engagement strategies should accompany tariff reforms to ensure social acceptability.

**Long-term Recommendations (5+ years)**

**Financial Sustainability and Commercial Orientation**
MWSC should develop comprehensive financial sustainability strategies, incorporating best practices from successful water utility reforms documented by the African Development Bank (2018). Commercial orientation should be enhanced while maintaining social service obligations through targeted subsidies and cross-subsidization mechanisms.

**Regulatory Framework Enhancement**
The company should advocate for strengthened regulatory frameworks that provide clear performance standards and financial incentives for efficiency improvements. The NWASCO (2022) strategic plan provides a foundation for enhanced sector regulation that can support utility financial sustainability.

**Multi-stakeholder Partnerships**
MWSC should develop partnerships with development agencies, private sector entities, and community organizations to leverage resources and expertise. Nguyen and Smith (2021) demonstrated how multi-stakeholder approaches can enhance financial sustainability in water utilities through shared responsibility and resource mobilization. For example, community-led monitoring, as seen in Lusaka's George compound (Dspace, 2021), fosters trust and accountability. These long-term initiatives not only secure

MWSC's financial future but also position it as a model for SOE reform, ensuring every family in the three service areas has access to clean water, which is a vision that drives this research.

**Conclusion**

The study demonstrated that MWSC's financial performance challenges stem from multiple interconnected factors, with NRW management, political interference, and weak internal controls emerging as primary concerns. The findings align with broader literature on state-owned water utility challenges in developing countries, particularly regarding governance and infrastructure constraints. The comprehensive nature of the challenges requires multi-faceted interventions that address technical, governance, and financial dimensions simultaneously. The recommendations provide a roadmap for enhancing MWSC's financial sustainability while maintaining its social service mandate, drawing on successful reform experiences documented in the literature

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