REVENUE COLLECTION STRATEGIES AND FINANCIAL SUSTAINABILITY OF WATER SERVICES PROVIDERS IN KENYA: A CASE STUDY OF MALINDI WATER AND SEWERAGE COMPANY LIMITED

Kingstone Kasena Mulewa.
Masters Student, Kenyatta University, Kenya.
Kaplelach Samson.
Department of Accounting and Finance, Kenyatta University, Kenya.

International Academic Journal of Economics and Finance (IAJEF) | ISSN 2518-2366

Received: 24th April 2024

Published: 2nd May 2024

Full Length Research

Available Online at: https://iajournals.org/articles/iajef_v4_i1_455_472.pdf

Citation: Mulewa, K. K., Kaplelach, S. (2024). Revenue collection strategies and financial sustainability of water services providers in Kenya: A case study of Malindi Water and Sewerage Company Limited. *International Academic Journal of Economics and Finance, 4*(1), 455-472.

ABSTRACT

Malindi water and Sewerage Company has failed to collect revenue from 18% of its customers, with revenue collection efficiency being 76% of the budget, non-cost recovery tariff and high non-revenue water losses at 28%. Generally, Malindi Water and Sewerage Company, has been performing poorly over the last two years based on financial sustainability, ranking at position 17 down from position one out of 88 regulated Water Services Providers in the country with a score of 113. The purpose of this Study was to examine the effect of revenue collection strategies on the financial sustainability of Malindi Water and Sewerage Company Limited. The study was anchored on the following specific objective: To examine the effect of revenue generation on the financial sustainability of Malindi Water and Sewerage Company Limited. To underpin the study findings, the study relied on resource dependence theory. Case study research design was adopted in this study. The study targeted 126 company employees out of which a sample size of 96 was drawn. The study used structured questionnaires to collect data from the employees. Further, a pilot study was conducted at Kilifi Mariakani Water and Sewerage Company to determine validity through Kaiser Meyer Olkin and Bartlett Test and reliability through Cronbach Alpha of the research instrument. The data was analysed using Statistical Package for the Social Sciences version 26, which applied both descriptive and inferential statistical approaches. Prior to performing inferential analysis, it was necessary to undertake diagnostic tests. Out of the 96 structured questionnaires distributed to the employees of MAWASCO as per the sample size, 285 questionnaires were returned, this represented 88.5% of the sample size. Revenue generation strategies have a significant, albeit weak, positive effect on financial sustainability ($r = .232$, $p = .033$; regression coefficient $\beta = .239$, $p < .001$), the descriptive statistics suggest a general consensus on the importance of these strategies in MAWASCO's operations. The research aimed to evaluate the impact of revenue generation on the financial sustainability of MAWASCO. The findings from both descriptive and inferential statistical analyses offer a comprehensive understanding of how these factors interact and contribute to the overall financial health of the company. The strong agreement among participants on these aspects, combined with the moderate to substantial correlation and regression coefficients, points to the critical role of revenue diversification in securing MAWASCO's financial future. The recommendations are grounded in the understanding that a multifaceted approach is crucial for the long-term financial health and stability of the organization.

Key words: Revenue Collection Strategies, Financial Sustainability, Revenue Generation, Financial Planning, Revenue Diversification, and Internal Control.

INTRODUCTION

Business executives in various regions across the globe, particularly those in the public water utilities sector, have experienced significant repercussions due to the issue of revenue under collection. The failure of consumers to fulfil their financial commitments has had a detrimental impact on providing high-quality water supply (Boyle, 2014). Managers worldwide, inside various firms, have encountered challenges in collecting water bills from their respective clientele. Revenue collection and billing play an important role in forecasting the cash flows of water utilities. These factors encompass the management of bad debts, billing charges, and collection costs, all of which substantially impact the financial viability of these organisations. Further underperforming revenue collection and billing has also a negative effect on financial viability of utility water firms (Chitonge, 2013).

Developed countries such as the United Kingdom have also witnessed lower revenue collection from water sales (Clerk, *et al.,* 2017). While in the United States, public water utility companies play a significant role on the country's economy, contributing to 289,000 permanent jobs and approximately $524 billion. Further, even though these companies' burdens government budgets, they significantly contribute and promote social change (Quinn *et. al.,* 2014). In California for instance, replacing old water meters with new ones reduced the inaccuracy of water meters thus contributing to increased revenue and maximised water sales in the state (Shields, *et al.,* 2017).

In Africa, under collection of revenue is valued at US $0.5 billion per annum. Many public water utilities are characterised by unaccountable management systems, large proportions of practices, low revenues, ineffective revenue collection, and inefficient billing systems (Gia & Fugelsnes, 2020). The water sector has witnessed pro-reform activities from the mid-1980s, which acquired significant traction in the 1990s by establishing essential regulatory and legislative frameworks (Banerjee & Morella, 2021). The implementation of water-related reforms throughout the continent was instigated and propelled by the World Bank. The implementation of these reforms has necessitated the adoption of water management systems that are both sustainable and efficient. As a result, there has been a notable enhancement in internal governance, a decrease in the government's engagement in water service delivery, and an increasing private sector participation (World Bank, 2018). In Malawi, it has been observed that public water utilities aim to enhance their revenue collection rates from 82% to 95%. However, it has been noted that these utilities have encountered difficulties in collecting 18% of the income owed by their customers (World Bank, 2013).

Locally in Kenya, the water sector has undergone various reforms that have enhanced resource management and improved service delivery. Various challenges which deteriorated the sector, contributed to these reforms. These reforms led to the centralization of the water sector, to address water sector issues effectively. Many water supplies in the country have found themselves in a financial vicious cycle characterised by increased demand for water, low revenue collections, low billing, low tariffs and declining government funding of capital expenditure (Shirley, 2017). Privatization of water sector has been identified as the neoliberal solution to the above problems in Kenya (UNDP, 2016).

In Kilifi County, there has been plans to increase clean and safe water accessibility from 68% to 80% by the end of 2022. The county government through Malindi water has proposed to finance water infrastructure amounting Ksh. 13 billion (Kilifi County CIDP 2018/2022). County government of Kilifi, in collaboration with MAWASCO plans to increase water supply through drilling shallow wells and boreholes, this has increased water accessibility by Malindi residents. Through these efforts the company has supplied 44,353 m^3/ day to Malindi residents. Financial sustainability is important for the company to bridge additional 26,792 m^3/day, in the next 5 years (MAWASCO, 2020).

Statement of the Problem

Successful revenue collection reforms can enable the firm to ensure flow of revenue is stable. Effective revenue collection strategies can enable an organisation to collect sufficient cash for operational costs. This can be possible with ordinances and policies in place (Hoekstra, *et al.,* 2018). Privatisation strategies have been proposed as a proper strategy for implementing management principles and revenue collection strategy. Revenue generation, financial planning, revenue diversification and internal control has been identified to significantly improve financial sustainability and ability of organisation to withstand financial crises (Babu, 2020).

Currently, MAWASCO has failed to collect revenue from 18% of its customers, with revenue collection efficiency being 76% of the budget, low sanitation tariff and high non-revenue water at 28% (MAWASCO, 2020). Generally, MAWASCO, has been performing poorly over the last two years based on financial sustainability, ranking at position 17 out of 88 WSPs in the country with a score of 113. Further, operational and maintenance costs of MAWASCO is 97% which is below average as per WASREB (2021), based on the indicators in Table 1.1.

Table 1: MAWASCO Financial Sustainability Indicators

Performance Indicator	WASREB Score	Remarks
Metering Ratio	92%	Average
Operation and Maintenance Cost	97%	Below Average
Revenue Collection Efficiency	82%	Poor
Personnel Expenditure as a Percentage of Operation and Maintenance Cost	41%	Below Average
Hours of Water Supply (hrs/d)	21	Average
Water Coverage	70%	Below Average
Non- Revenue Water	28%	Below Average
Drinking Water Quality	85%	Below Average

Source: WASREB (2024)

Despite the existing, few studies have focused on the relationship between revenue collection strategies and financial sustainability. Locally in Kenya, Akinyi and Odundo (2018) used a case

study research design, where they delved on Homa Bay Water Sewerage Company Limited, where on the relationship between financial sustainability and revenue generation was examined. This study used cross-section design approach. It was determined that non-revenue water significantly influenced financial sustainability of utility companies. Regionally, Namaliya (2017) conducted a study on the techniques employed by public water utility firms in Malawi to optimise income generation. The research was conducted through a comprehensive analysis of several sources, including document reviews, interviews, and using semi-structured questionnaires. The study's findings indicate that the implementation of water revenue taxes has a favourable impact on promoting social transformation. On the global perspective, Xie et al. (2022) conducted research that explored the potential for financial institutions in Asia to achieve financial sustainability through revenue diversification, offering a green pathway on an international scale. Regression analysis was employed in this study to establish the link between the variables under investigation. The research conducted revealed that several factors, namely gross domestic product, non-interest income, market capitalisation, and revenue diversification, exert a substantial influence on bank efficiency. Based on the synthesis of the above studies, it is clear that there are significant gaps in terms of conceptualization, contextualization, and methodology. Therefore, the primary objective of this study will be to address and fill these gaps.

Objective of the Study

To examine the relationship between revenue collection strategies and financial sustainability of Malindi Water and Sewerage Company Limited in Kenya.

Specific Objective

To examine the effect of revenue generation on the financial sustainability of Malindi Water and Sewerage Company Limited in Kenya.

THEORETICAL REVIEW

Resource Dependence Theory

Pfeffer and Salancik (1978) proposed the theory of resource dependence. The notion is grounded in the principle that companies must actively interact with other entities and stakeholders to obtain resources from their external environment. This theory discusses the significant actions taken by various organisations in striving to overcome dependencies and improving organisational legitimacy and autonomy. This theory is anchored on the fund-raising strategy and tries to explain how environmental factors or external resources affect the behaviour of an organisation. The theory assumes that organisations depend on the environment for resources. The environment also contains other organisations that control other resources; hence, an organisation can depend on other organisations to acquire resources (Gillis, *et al.*, 2014).

This theory has been criticised on the various grounds; first, one of the assumptions of this theory is that its uncertainty clouds organisational control of resources but too much dependency creates uncertainty which leaves the organisation vulnerable to high risk of external control. The theory

further puts pressure on the management to take preventive actions to avoid loss of resources, this might take valuable time from the management in managing other aspects of the business strategies. Thirdly, if the company is highly controlled externally, it can highly affect the position of the workers (Heatley, 2018).

Other studies have used this theory to explain the relationship between revenue generation and financial sustainability (Busienei, 2017). In this study, the theory can be used to explain the behaviour of water companies and their dependence on the environment to generate revenue and improve their financial sustainability. Resource dependency theory suggests that a water company's ability to generate revenue and achieve financial sustainability is closely linked to its ability to manage its dependence on external resources. Water Company that is highly dependent on government funding may be vulnerable to budget cuts or changes in funding priorities, which could impact its ability to generate revenue and maintain financial sustainability.

Empirical literature Review

Revenue Generation and Financial Sustainability

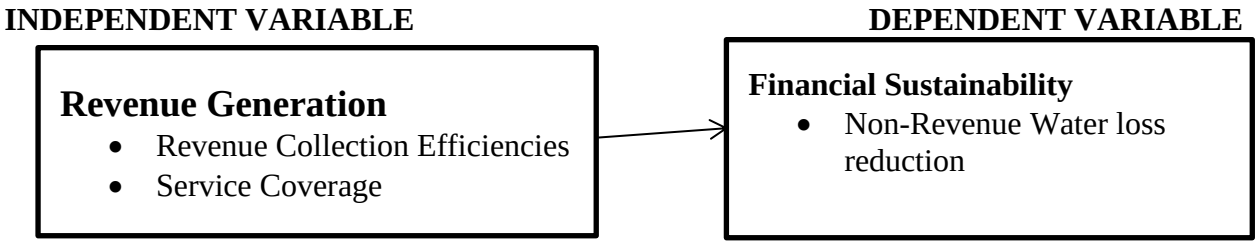
The study conducted by Aduwi (2019) examined the correlation between revenue collecting tactics and financial performance within county governments in Kenya. The study focused on a sample size of 577 revenue personnel, employing stratified random sampling procedures. The research also employed a combination of secondary and primary data sources. The research revealed that outsourcing revenue collection and implementing electronic revenue collection systems substantially impact financial performance. The study proposed that establishing efficient coordination between information and communication technology (ICT) and tax departments is crucial for optimising the revenue potential of the county. The study identified a research deficit within its contextual framework, as it concentrated on Kisumu County.

The study conducted by Busienei (2017) investigated the topic of financial sustainability and income generation strategies within non-governmental organizations (NGOs) located in Nairobi City. The research employed a descriptive research methodology and utilized a sample of 127 managers from the relevant NGO as participants. Data collection was conducted through the use of structured questionnaires. The research revealed that financial sustainability was linked to several factors, namely capacity building, cost recovery tactics, income generating project strategies, and funding strategies. Additionally, the study suggested that NGOs should consider investigating alternative approaches to achieve long-term viability. This study has identified a research vacuum in the context of other NGOs that operate nationwide.

The study conducted by Uwaoma and Nwoka (2016) investigated the association between generated revenue and performance of local governments in River State, Nigeria. The study design employed in this study was ex-post facto, and the sample consisted of 23 local county government states. The study employed just secondary data sources for data collection within the timeframe spanning from 2006 to 2011. The analysis revealed a lack of substantial correlation between road maintenance and construction activities and tax income. The study additionally revealed a statistically significant

negative correlation between Non-Tax Revenue and earnings and salaries of local government personnel. The report proposed the utilization of information technology within revenue systems. The present study has identified a conceptual research gap by demonstrating that the performance of local government is only partially explained by internally generated money, accounting for 80.23% of the variance.

Figure 1: Conceptual Framework



Source: Researcher (2024)

Research Design

According to Orodho (2015), the research design is crucial in mitigating potential research pitfalls that may impact the study's outcomes. These pitfalls encompass factors such as the implementation of controls, selection of variables, and the reliability and validity of the research instruments. A research design employing a case study methodology were employed to mitigate these potential drawbacks. According to Yin (2014), the case study research design is a methodology employed to comprehensively comprehend a multifaceted problem inside its authentic setting. This particular design was deemed justifiable due to its capability to enable the researcher to gather data at a singular point in time, resulting in time efficiency. Additionally, it facilitates the assessment of the correlation between revenue collection tactics and the financial viability of MAWASCO.

Target Population

Study population will be 126 employees of MAWASCO, from the following categories as per the human resource department of the organisation: Departmental heads, Sectional heads, Finance and accounting staff, Revenue officers, Debt collectors, District metered Area managers (DMA managers), zonal **officers** and customer relations officers. These employees were targeted because they have adequate knowledge on the relationship between revenue collection strategies and financial sustainability of MOWASCO. Individuals from these departments were also involved in revenue collection strategies and financial sustainability planning of the company. The target population is as shown in table 2.

Table 2: Target Population

Category	Population
Departmental Heads	7
Sectional Heads	17
Finance & Accounting staff	25
Billing & Revenue officers	30
Zonal officers / Meter readers	41
Customer Relations Officers	6
Total	126

Source: Human Resource Department MAWASCO (2022)

Sample Size and Sampling Technique

The present study employed the Yamane method (1967) to determine the appropriate sample size. Given its straightforward and rigorous approach, the study utilized stratified random sampling to choose respondents from a specified list of officers engaged in revenue collection and administration. The populace was organized into subgroups based on shared features. Stratified random sampling method is appropriate because the groups are not homogenous (heterogeneous). According to Orodho (2015), stratified random sampling is a method that ensures equal chances of selection for each member of a population, hence promoting representativeness in the sample. Proportional systematic stratified sampling formula was used to a portion the sample size into various categories (strata). This proportionate stratified random sampling method is appropriate for this kind of study because it provided a quantitative description of effect of revenue collection strategies on financial sustainability in each department.

The formula is as follows;

$$n = \frac{N}{1+N(e^2)}$$

Where n is the sample size, N is the population size and e is the sampling error (5%),

Hence;

$$n = \frac{126}{1+126(0.05^2)}$$

n = 95.82

95.82 rounded off to the nearest persons will be 96 employees. Therefore, the sample size for this study was 96 staff members.

The 96 sampling units were distributed to the conveniently identified population using the proportional systematic stratified sampling technique using the formula;

$$n_i = \left(\frac{N_i}{N}\right) n$$

Where; n_i is the sample for i^{th} stratum, N_i population size for i^{th} stratum, N is the population and n is the sample size

Table 3: Sample Size

Category (Strata)	Population	Sample Size
Departmental Heads	7	5
Sectional Heads	17	13
Finance & Accounting staff	25	19
Billing & Revenue officers	30	23
Zonal officers / Meter readers	41	31
Customer Relations Officers	6	5
Total	126	96

Source: Human Resource Department MAWASCO (2024)

Data Collection Instruments

The data collection process involved utilizing a self-administered questionnaire to acquire relevant information from the staff members of MAWASCO. According to Kothari (2015), the data collected using questionnaires was devoid of bias and external influences from other researchers. As a result, the data gained can be considered accurate and valid, enabling researchers to draw meaningful conclusions within the investigated topic. According to Orodho (2015), the questionnaire assesses the probability of direct, stable, and sudden reactions as discussed in the study.

The study questionnaire was partitioned into two distinct sections. Part A and B encompass distinct components, with Part A focusing on collecting data pertaining to participants' general information, and Part B centering on collecting data related to revenue creation and financial sustainability. Closed-ended questions elicited organized responses for categorizing traits using a Likert scale of 1 to 5. Mugenda and Mugenda (2013) suggested adopting the Likert scale provides data with equal intervals. This characteristic facilitates the utilization of statistical analyses for assessing research variables within the study.

Pilot Study

This preliminary investigation was conducted before the primary study to assess the effectiveness and reliability of the data gathering equipment. Including a pilot study enhanced the efficacy of the primary research by facilitating the identification and rectification of any deficiencies in the research instruments before the commencement of the main investigation (Creswell, 2013). According to Mugenda & Mugenda (2013), it is recommended that a pilot study be undertaken using a sample size ranging from 1% to 10% of the total sample size. Therefore, to assess the research instrument's validity and reliability, a total of nine employees (representing 10% of the sample size) from Kilifi

Mariakani Water and Sanitation Company was selected by a random sampling method. The choice of Kilifi Mariakani Water and Sanitation Company was informed due its classification as a large Company by the regulator similar to MAWASCO besides its proximity to MAWASCO.

Data Collection Procedure

The initial step in this research procedure was acquiring an introductory letter from Kenyatta University. Subsequently, the researcher sought for a research permit from the National Commission of Science, Technology and Innovation (NACOSTI). Upon approval, the researcher began the study by visiting the designated study region. During this visit, the researcher engaged with the respondents, elucidated the research study's aims, and provided assurance regarding the confidentiality of their responses. Subsequently, the researcher physically distributed the questionnaires to the respondents. Upon the designated time frame's expiration, the researcher gathered the completed questionnaire forms. These forms was then categorized based on the respective departments, facilitating the subsequent analysis and presentation of the research outcomes.

Data Analysis and Presentation

To facilitate data processing prior to fieldwork, the structured questionnaires encoded the questions pertaining to the research objective. The data gathered was analyzed using inferential and descriptive statistical methods. Cooper and Schindler (2014) assert that descriptive analysis entails converting raw data into visual representations such as charts and tables, which include frequency distributions expressed as percentages. This approach facilitated a comprehensive understanding and interpretation of the data. Descriptive statistics primarily pertain to the summarization of replies by examining frequencies, percentages, and means. The data analysis and survey standard deviation calculations was conducted using SPSS Version 26.0 for Windows. This software was utilized to assess the level of involvement among individuals employed by firms and to quantify variations in population responses. Correlation and regression analysis was employed as illustrative instances of inferential statistics. Correlation analysis was employed to ascertain the magnitude of the association between the variables under investigation. The data was subjected to statistical analysis techniques, and the findings were presented using visual aids such as tables.

A regression model was used to establish a causal relationship between the study variables. A regression model was created according to the subsequent equation:

$Y = \beta_0 + \beta_1 X_1 + \varepsilon$

Whereby;

Y = Financial Sustainability, β_0= Constant, X_1 = Revenue Generation and ε = Error term

RESEARCH FINDINGS AND DISCUSSIONS

Descriptive Statistics

Revenue Generation

The participants were requested to express their level of agreement about the different statements pertaining to revenue generation. The scale in question was utilized in the specified context. 1 =

Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree. The results are displayed in Table 4.7.

Table 4: Revenue Generation

	Mean	Std. D
Increase in water service coverage can contribute to the improved revenue generation	3.882	4.83683
Increased accessibility of various households on water and sewage services will improve the firms' revenue	4.247	1.82960
Revenue collection efficiencies of the company determines cash flow from utilities	4.447	13.24956
Revenue collection per bill of the water company is very low	3.964	7.94424
Improvement in the metering ratio will improve revenue generation for the company	3.635	31.07844
Metering ratio contributes to the financial sustainability of the company through revenue generation	2.882	41.21901
Valid N=85 (listwise)		

Source: Study Data (2024)

The statement "Increase in water service coverage can contribute to improved revenue generation" received a mean rating of 3.8824, with a standard deviation of 0.83683, indicating a general agreement among participants. Similarly, the proposition that "Increased accessibility of various households on water and sewage services will improve the firm's revenue" was met with even stronger agreement, reflected in a higher mean of 4.2471 and a standard deviation of 0.82960. Regarding the effectiveness of the company's revenue collection, the statement "Revenue collection efficiencies of the company determines cash flow from utilities" garnered the highest mean agreement score of 4.4471, albeit with a notably higher standard deviation of 3.24956, suggesting a wider dispersion of opinions. Conversely, the participants' views on the current state of revenue collection per bill were moderately positive, as indicated by the mean score of 3.9647 and a standard deviation of 0.94424 for the statement "Revenue collection per bill of the water company is very low." The role of metering in revenue generation received mixed responses. The statement "Improvement in the metering ratio will improve revenue generation for the company" had a mean score of 3.6353 and a standard deviation of 1.07844, indicating moderate agreement. However, the impact of the metering ratio on the financial sustainability of the company through revenue generation was viewed less favourably, with a lower mean score of 2.8824 and a higher standard deviation of 1.21901. In summary, the participants generally agreed that increasing water service coverage and accessibility, as well as enhancing revenue collection efficiencies, are crucial for improving MAWASCO's revenue generation. However, there was less consensus on the effectiveness of the current revenue collection per bill and the impact of the metering ratio on financial sustainability. The varied standard deviations across these statements suggest differing levels of consensus among the participants. These findings were in tandem with that of Busienei (2017) who opined that financial sustainability was linked to several factors, namely capacity building, cost recovery tactics, income generating project strategies, and funding strategies. On the contrary, the study contradicted that of Uwaoma and Nwoka (2016) who revealed a statistically significant negative correlation between Non-Tax Revenue and earnings and salaries of local government personnel.

Financial Sustainability

On the dependent variable, the respondents were asked to indicate the extent in which they agree with the various statements on financial sustainability of MAWASCO. The scale in question was

utilized in the specified context. 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree. The results are displayed in Table 4.11.

Table 5: Financial Sustainability

	Mean	Std. D
Implementing non-revenue water strategy can be bring multiple financial benefit for the company	2.9059	1.10866
Deploying an efficient management of non-revenue water allows the company to enhance financial sustainability	3.2471	1.24313
The revenue of the company can be improved if non-revenue water is reduced	3.6706	1.01639
High non-revenue water levels often require increased operational efforts to identify and repair leaks, replace aging infrastructure, and combat theft.	3.7647	1.03103
To compensate for revenue losses due to non-revenue water, the water company may be forced to increase water tariffs for consumers, thus affecting the company's financial sustainability	3.6118	1.18617
High non-revenue water can lead to inadequate water supply and service interruptions, which can in turn affect company finances	3.882	4.90517
Valid N =85 (listwise)		

Source: Study Data (2024)

For the statement "Deploying an efficient management of non-revenue water allows the company to enhance financial sustainability," the mean score was 3.2471 with a higher standard deviation of 1.24313, reflecting a slightly higher level of agreement but with considerable variation in opinions. The impact of reducing non-revenue water on improving the company's revenue was recognized with a mean score of 3.6706 and a standard deviation of 1.01639, indicating a general agreement among participants. Participants agreed more strongly with the statement "High non-revenue water levels often require increased operational efforts to identify and repair leaks, replace aging infrastructure, and combat theft," as shown by a mean score of 3.7647 and a standard deviation of 1.03103. The potential necessity of increasing water tariffs to compensate for revenue losses due to non-revenue water was acknowledged with a mean score of 3.6118 and a standard deviation of 1.18617, indicating a moderate level of agreement but with significant variation in responses. Finally, the statement "High non-revenue water can lead to inadequate water supply and service interruptions, which can in turn affect company finances" received a mean score of 3.8824 and a standard deviation of 0.90517, suggesting a relatively strong agreement on the financial impact of non-revenue water on water supply and service. In summary, the participants generally agreed that managing non-revenue water is crucial for the financial sustainability of MAWASCO, with varying degrees of consensus. While there was moderate to strong agreement on the need to reduce non-revenue water to improve revenue, operational efficiency, and service quality, there was less certainty about the direct financial benefits of implementing specific non-revenue water strategies. The standard deviations indicate a diverse range of opinions on these aspects. The above findings supported that of Akinyi and Odundo (2018); Namaliya (2017) and Xie et al. (2022)

Correlation Analysis

Pearson correlation r was designed to quantify the degree of linear correlation between revenue collection strategies (revenue generation) and financial sustainability of Malindi Water and Sewerage Company Limited.

Table 6: Pearson Correlation

		Revenue Generation	Financial Sustainability
Revenue Generation	Pearson Correlation	1	
	Sig. (2-tailed)		
Financial Sustainability	Pearson Correlation	.232*	1
	Sig. (2-tailed)	.033	
	N	85	85

Source: Study Data (2024)

A significant but weak positive correlation exists between revenue generation and financial sustainability (r = .232), indicating that as revenue generation increases, financial sustainability slightly improves. This correlation is statistically significant at the 0.05 level (p = .033). This finding was in tandem with that of Busienei (2017) but contradicted that of Uwaoma and Nwoka (2016).

Regression Analysis

Multiple regressing analysis was computed to derive the relationship between the variables.

Coefficient of Determination

Coefficient of determination provided valuable insights into how well the set of revenue collection strategies explains the variability of financial sustainability of MAWASCO.

Table 7: Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.734[a]	.538	.510	.57745

a. Predictors: (Constant), Revenue Generation, Financial Planning, Revenue Diversification, Internal Control

Source: Study Data (2024)

The model's coefficient of determination (R Square) was .538, which indicates that approximately 53.8% of the variance in financial sustainability can be explained by the combined effect of the revenue collection strategies. This suggests a moderate to strong relationship between these strategies and the financial sustainability of the organization. Additionally, the value of the adjusted R Square, which stands at .510, offers a more accurate estimate of the variance in financial sustainability explained by the model when accounting for the number of predictors and sample size. This adjusted value, slightly lower than the R Square, still suggests that a significant portion (51%) of the variation in financial sustainability is accounted for by the revenue collection strategies after adjusting for the number of variables in the model.

Analysis of Variance

To provide valuable insight on the sources of variability between revenue collection strategies (revenue generation) and financial sustainability of MAWASCO, analysis of variance was done.

Table 8: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.266	4	6.316	23.306	.000[b]
	Residual	21.674	80	.271		
	Total	46.939	84			

a. Dependent Variable: Financial Sustainability

b. Predictors: (Constant), Revenue Generation, Financial Planning, Revenue Diversification, Internal Control

Source: Study Data (2024)

A significant regression equation ($F(4, 80) = 23.306$, $p < .001$), with an explained variance (Sum of Squares for Regression) of 25.266. The four predictors in the model collectively explained a significant proportion of variance in financial sustainability. The total variance explained by the model was 46.939, as indicated by the Total Sum of Squares. The Mean Square for the regression was 6.316, suggesting that, on average, the model explained 6.316 units of the total variance in financial sustainability for each degree of freedom. In contrast, the Residual Sum of Squares, which represents the unexplained variance, was 21.674. This was distributed across 80 degrees of freedom, resulting in a Mean Square Residual of 0.271. The significance level (p-value) was reported as .000, which is less than the conventional alpha level of .05, indicating that the regression model was statistically significant. This suggests that the variability in revenue collection strategies had a significant impact on the financial sustainability of MAWASCO. The F-value of 23.306 further supports the strength of the relationship between the independent variables (revenue generation) and the dependent variable (financial sustainability). The above findings supported that of Akinyi and Odundo (2018); Namaliya (2017) and Xie et al. (2022)

Regression Coefficient

The use of regression coefficients in the analysis of MAWASCO's revenue collection strategies is justified as they offer vital insights into the relationships between these strategies and financial sustainability.

Table 9: Regression Coefficient

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.479	.222		2.163	.034
	Revenue Generation	.239	.075	.256	3.507	.000

a. Dependent Variable: Financial Sustainability

Source: Study Data (2024)

Based on the above table, the final model becomes:

$Y = 0.479 + 0.239X_1$

Whereby;

Y = Financial Sustainability, β_0= Constant, X_1 = Revenue Generation,

The regression model includes a constant (intercept) term with a value of .479. This coefficient, significant at the .034 level ($t = 2.163$), indicates the expected value of the financial sustainability score when all independent variables are zero. This value provides a baseline against which the effects of the independent variables are measured. The unstandardized coefficient for revenue generation is .239, with a standard error of .075. This coefficient, significant at the $p < .001$ level ($t = 3.507$), suggests that for every unit increase in revenue generation, there is an expected increase of .239 units in financial sustainability, holding all other variables constant. Its standardized coefficient (beta) of .256 indicates the relative importance of this predictor in the model. This finding was in tandem with that of Busienei (2017) but contradicted that of Uwaoma and Nwoka (2016).

Conclusion and Recommendations

Conclusion

The research aimed to evaluate the impact of revenue collection strategies, specifically focusing on revenue generation on the financial sustainability of MAWASCO. The findings from both descriptive and inferential statistical analyses offer a comprehensive understanding of how these factors interact and contribute to the overall financial health of the company. The study revealed that while revenue generation strategies positively impact financial sustainability, their effect is comparatively modest. The participants generally agreed on the significance of increasing service coverage and improving revenue collection efficiencies. However, the correlation and regression analyses suggest that revenue generation, although essential, is not the strongest driver of financial sustainability.

Recommendations

The study recommends the need to refine revenue generation strategies. While the impact of these strategies on financial sustainability is comparatively modest, they remain a vital component of the company's financial backbone. This could include enhancing billing systems, improving service coverage, and ensuring efficient metering practices. Emphasis should be placed on leveraging technology to streamline processes, improve customer service, and minimize errors in billing and collection.

REFERENCES

Aduwi, C. A. (2019). Effect of Revenue Collection Techniques on Financial Performance of County Governments. *Research Project, Maseno University*, pp. 52-57.

Akinyi, A., M. & Odundo, A., P. (2018). Revenue Generation Aspects That Influence Financial Sustainability of Public Water Utilities in Kenya: The Case of Homa Bay Water and Sewerage Company Limited. *Asian Business Research*, 3 (2), 1-16. doi:10.20849/abr.v3i2.370

Al Dhaheri, A. & Nobanee, H. (2020). Financial Stability and Sustainable Finance: A Mini-Review. doi:http://dx.doi.org/10.2139/ssrn.3538328

Babu, R. (2020). Behavioural Finance Heuristic Driven Factors Impact on Indian Stock Market Investors Investment Decisions: A Review. *Asia Pac. J. Res*, 1, 16–19.

Banerjee, S. G., & Morella, E. (2021). *Africa's Water and Sanitation Infrastructure: Access, Affordability, and Alternatives.* Washington DC: World Bank.

Boyle, C. E. (2014). Adapting to change: Water utility financial practices in the early twenty-first century. *American Water Works Association*, 106,1-9. doi:10.5942/jawwa.2014.106.0015

Chitonge, H. (2013). Who will foot the bill? Water services infrastructure backlog in Sub-Saharan Africa. *Journal of African Studies and Development*, 5(3), 41-56. doi:10.5897/JASD13.001

Clerk, M., McDonald, A., & Boden, P. (2017). Examining the relationship between debt and deprivation in the UK water industry. *Applied Spatial Analysis and Policy*, 6, 47-68. doi:10.1007/s12061-012-9077-0

Cooper, D., R. & Schindler, P., S. (2014). *Business Research Methods.* New York: McGraw Hill International Edition.

Creswell, J.W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* London, UK: SAGE Publications, Inc.

Drost, E., A. (2011). Validity and Reliability in Social Science Research. *Education Research and Perspectives*, 38, 105- 123.

Gia, L. H. & Fugelsnes, T. . (2020). *Public Partnerships for Small Piped Water Schemes.* Nairobi: Water and Sanitation Program.

Heatley, S. (2018, Nov 21). *The low-down on Resource Dependence Theory*. Retrieved from Perbox: https://www.perkbox.com/uk/resources/blog/the-low-down-on-resource-dependence-theory

Hoekstra, W., Pereira, F. G. & Queijo, J. (2018, July 1). *Ten quick steps to unlocking tax-revenue collection in rapidly growing markets*. Retrieved from McKinsey & Company: https://www.mckinsey.com/industries/public-and-social-sector/our-insights/ten-quick-steps-to-unlocking-tax-revenue-collection-in-rapidly-growing-markets

Kanda, E., K., Odiero, J., Lutta, O., V. & Ong'or B. (2018). Challenges Facing Small and Medium Water Service Providers in Kenya: A Case of Amatsi Water Services Company, Vihiga County. *Journal of the Civil Engineering Forum*, 4(1), 19-25. doi:10.22146/jcef.29263

Kothari, C., R. (2015). *Research methodology, methods and techniques.* New Delhi, India: Wisha Prakashan.

Kung'aru, P. N. & Tirimba, I. (2018). Effect of Financial Planning Practices on the Financial Performance of Non Profit Making Health Organizations in Kiambu County, Kenya. *International Journal of Scientific and Research Publications*, 8 (5), 599-624. doi:http://dx.doi.org/10.29322/IJSRP.8.5.2018.p7778

Maina, M. W. (2018, November). Effects of Revenue Diversification on Financial Performance of Commercial Banks in Kenya. *Research Project, School of Business University of Nairobi*, pp. 47-54.

Mugenda, O., M. & Mugenda, A., G. (2013). *Research Methods, Quantitative and Qualitative Approaches.* Nairobi: ACT.

Nobanee, H. (2021). *Financial Planning and Sustainable Business Practices*. Retrieved from ResearchGate.

Nyakundi, D. O., Nyamita, M. O. & Tinega, T. M. (2014). Effect of internal control systems on financial performance of small and medium scale business enterprises in Kisumu City, Kenya. *International Journal of Social Sciences and Entrepreneurship*, 1 (11), 719-734.

Nyanumba, P., Rotich, G., Gekara, M., Keraro, V. & Okari, H. (2017). Influence of Revenue Diversification on Performance of Counties in Kenya. *International Journal of Innovative Finance and Economics Research*, 5(2), 11-20. Retrieved from http://www.seahipaj.org/

Orodho, J., A. (2015). *Techniques of writing research proposals and reports in education and social sciences.* Maseno/Nairobi: KANEZJA HP ENTERPRISES .

Pierce, G. (2017). The political economy of water service privatization in Mexico City, 1999-2016. *International Journal of Water Resources Development*, 28, 675-691.

Quinn, A., Safriet, C., Feeney, K., Lauf, V., Pallansch, K., & Enterprises, A. R. (2014). *National economic and labor impacts of the water utility sector: Technical report.* San Francisco, CA: Water Research Foundation and Water Environmental Research Foundation.

Ravitch, S. M. & Riggan, M. (2016). *Reason and rigor: How conceptual framweworks guide research.* Thousand Oaks, CA: Sage.

Renoir, M., & Guttentag, M. (2018). Facilitating Financial Sustainability: Understanding the Drivers of CSO Financial Sustainability.

Saunders, N., K., Lewis, P. & Thornhill, A. (2015). *Research Methods for Business Students.* New Jersey: Pearson.

Setia, M. S. (2016). Methodology Series Module 3: Cross-sectional Studies. *Indian J Dermatol*, 61(3), 261–264. doi:https://doi.org/10.4103%2F0019-5154.182410

Shields, D. J., Barfuss, S. L., & Johnson, M. C. (n.d.). Revenue recovery through meter replacement. *American Water Works Association Journal*, 104, 252-259. doi:10.5942/jawwa.2012.104.0056

Shirley, M. M. (2017). *Thirsting for Efficiency.* Washington, DC: The World Bank.

UNDP. (2016). *Human Development Report 2006. Beyond Scarcity: Power, Poverty and the Global Water Crisis.* London: Palgrave Macmillan for United Nations Development Programme.

Uwaoma, I. I. & Nwoka, N. E. (2016). Impact of Internally Generated Revenue On Performance Of Local Government In Rivers State, Nigeria. *International Journal of Business & Law Research*, 4(4), 42-58.

WASREB. (2015). *Impact Report Issue No. 8, Performance Review of Kenya's Water Services Sector 2013 – 2014.* Nairobi, Kenya: WASREB.

WASREB. (2020). *Water Service Providers*. Retrieved from Water Services Regulatory Board: https://wasreb.go.ke/water-service-providers/

World Bank. (2018). *Water Sector Reforms: Five Years On.* New York: Water and Sanitation Program-Africa/World Bank.

Xie, Z., Liu, X.. Najam, H., Fu, Q., Abbas, J., Comite, U., Cismas, L.M. & Miculescu, A. (2022). Achieving Financial Sustainability through Revenue Diversification: A Green Pathway for Financial Institutions in Asia. *Sustainability*, 14 (3512), 1-16. doi:https://doi.org/10.3390/su14063512

Zhao, L. P., Yu, G. P., Liu, H., Ma, X. M., Wang, J., Kong, G., Ke, Y. . (2018). Control costs, enhance quality, and increase revenue in three top general public hospitals in Beijing, China. *PLoS One*, 8(8), 1-7.