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THE INFLUENCE OF FACILITIES, INFRASTRUCTURE, AND OPERATIONAL COSTS ON REVENUE (CASE STUDY OF PERUMDA MUARA TIRTA, GORONTALO CITY)

PENGARUH SARANA DAN PRASARANA SERTA BIAYA OPERASIONAL TERHADAP PENDAPATAN (STUDI KASUS PERUMDA MUARA TIRTA KOTA GORONTALO)

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Abstract

The purpose of this study is to analyze the influence of facilities and infrastructure and operational costs on the revenue of Perumda Muara Tirta, Gorontalo City. This study uses a descriptive quantitative research design. The study population was 73 respondents with a questionnaire instrument. The results show that facilities and infrastructure affect revenue, and operational costs affect revenue. The coefficient of determination (R^2) shows that both independent variables are able to explain variations in revenue substantially. This finding indicates that improving the quality of facilities and infrastructure and operational cost efficiency can increase company revenue. Perumda Muara Tirta management is expected to focus more on infrastructure management and operational cost control to maintain sustainable financial performance.

Keywords : Facilities and infrastructure, Operational costs, Income, Regional Public Company

1. INTRODUCTION

The Regional Drinking Water Public Company (Perumdam) was established by the regional government and serves as a public service provider that plays a vital role in ensuring access to safe, quality, and sustainable clean water for households, businesses, and other sectors that require it. As a regionally owned company, Perumda Muara Tirta's existence is not only oriented towards profit, but also has a social responsibility to ensure the availability of clean water that is suitable for consumption and accessible to the wider community. In carrying out

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its role, the company is required to be able to provide quality services while maintaining financial sustainability to remain sustainable in the long term.

The revenue of regional drinking water companies is heavily influenced by internal factors inherent in their operations. Two of these are facilities and infrastructure. as well as Operational costs . Adequate facilities and infrastructure will determine service quality, distribution efficiency, and customer satisfaction. For example, a well-maintained pipeline network, adequate water treatment plants, and optimally functioning reservoirs will reduce water loss and increase the amount of water that can be distributed to customers. Therefore, adequate infrastructure can have a direct impact on increasing company revenue.

On the other hand, operational costs are a crucial factor affecting a company's financial performance. Excessively high costs without balanced efficiency can erode profit margins. Costs for infrastructure maintenance, labor, electricity, and even administration must be managed optimally to avoid excessive burdens. Good operational cost efficiency will provide a company with room to increase net income. Therefore, effective cost management is key to maintaining the financial stability of regional drinking water companies.

Theoretically, this research is based on two main theories. First, the Resource-Based View (RBV) , which states that an organization's competitive advantage can be achieved through the utilization of unique, valuable, and difficult-to-imitate internal resources. In the context of Perumda Muara Tirta, adequate facilities and infrastructure are one of the strategic resources that can improve performance and competitiveness. Second, Agency Theory , which highlights the relationship between owners and management. This theory emphasizes the importance of cost efficiency and transparency in company management to avoid conflicts of interest that are detrimental to organizational performance.

Several previous studies have shown that internal company factors, such as infrastructure availability, human resource competency, and operational costs, significantly influence regional water company revenue. However, studies specifically linking infrastructure and operational costs to regional water company revenue are relatively limited, particularly in Gorontalo City. This creates a research gap that requires further investigation.

Based on the description above, this study aimed to determine the extent to which facilities and infrastructure, as well as operational costs, influence the revenue of Perumda Muara Tirta, Gorontalo City. The results are expected to contribute to company management's strategy for increasing revenue through better infrastructure management and optimal operational cost efficiency.

2. RESEARCH METHOD

This study used a descriptive quantitative method. The study population was 73 respondents, and the instrument was a questionnaire that had undergone validity and reliability testing. The validity test results showed that all questionnaire items were valid, as the calculated r value was greater than the tabulated r value.

In addition, the results of the reliability test show that the Cronbach's Alpha value for each variable is greater than 0.60, so the instrument can be declared reliable. Data analysis in this study was conducted using multiple linear regression tests, t-tests, f-tests, and the coefficient of determination (R^2) to determine the effect of the independent variables on the dependent variable.

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3. RESULTS AND DISCUSSION

In this section, the researcher presents the results of the data analysis obtained from the study. The research instrument was a questionnaire distributed to 73 respondents. Prior to use, the questionnaire underwent validity and reliability testing, where all questions were declared valid (calculated r > table r) and reliable (Cronbach's Alpha > 0.60).

The collected data was then analyzed using the SPSS 30 application with several testing stages, namely descriptive statistical analysis, multiple linear regression analysis, t-test to see partial effects, f-test to see simultaneous effects, and the coefficient of determination (R^2) test to determine how much the independent variables are able to explain the dependent variable. The results of the analysis are presented as follows.

Validity Test Results

Table 1. Results of the Validity Test of Facilities and Infrastructure (X1)

Research Variables	Item Code	R Count	R Table	Item Status
Facilities and infrastructure	X1.1	0.426	0.2303	Valid
	X1.2	0.353	0.2303	Valid
	X1.3	0.312	0.2303	Valid
	X1.4	0.338	0.2303	Valid
	X1.5	0.392	0.2303	Valid
	X1.6	0.363	0.2303	Valid
	X1.7	0.334	0.2303	Valid
	X1.8	0.362	0.2303	Valid
	X1.9	0.362	0.2303	Valid
	X1.10	0.361	0.2303	Valid
	X1.11	0.388	0.2303	Valid
	X1.12	0.379	0.2303	Valid
	X1.13	0.410	0.2303	Valid

The results of the questionnaire item validity test indicate that all statement items in the facilities and infrastructure variable have a significance value below 0.05 and a correlation or calculated r-value greater than the r-table = 0.2303 (r-table value for n = 73). Therefore, it can be said that the questionnaire statement items for the facilities and infrastructure variable are valid.

Table 2. Results of the Validity Test of Operational Costs (X2)

Research Variables	Item Code	R Count	R Table	Item Status
Operating costs	X3.1	0.531	0.2303	Valid
	X3.2	0.518	0.2303	Valid
	X3.3	0.432	0.2303	Valid
	X3.4	0.454	0.2303	Valid
	X3.5	0.557	0.2303	Valid
	X3.6	0.533	0.2303	Valid
	X3.7	0.488	0.2303	Valid
	X3.8	0.452	0.2303	Valid
	X3.9	0.521	0.2303	Valid

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Research Variables	Item Code	R Count	R Table	Item Status
	X3.10	0.488	0.2303	Valid

The results of the questionnaire item validity test show that the operational cost variable meets the valid criteria for all statement items, with a significance value below 0.05 and a correlation or calculated r-value greater than r-table = 0.2303 (r-table value for n = 73). So it can be said that the questionnaire statement items are operational cost variables.

Table 3. Results of the Income Validity Test (Y)

Research Variables	Item Code	R Count	R Table	Item Status
Income	Y.1	0.279	0.2303	Valid
	Y.2	0.510	0.2303	Valid
	Y.3	0.635	0.2303	Valid
	Y.4	0.528	0.2303	Valid
	Y.5	0.750	0.2303	Valid
	Y.6	0.750	0.2303	Valid
	Y.7	0.895	0.2303	Valid
	Y.8	0.882	0.2303	Valid
	Y.9	0.879	0.2303	Valid
	Y.10	0.903	0.2303	Valid
	Y.11	0.903	0.2303	Valid

The results of the questionnaire item validity test show that income meets the valid criteria for all statement items, with a significance value below 0.05 and a correlation or calculated r-value greater than r-table = 0.2303 (r-table value for n = 73). Therefore, it can be said that the statement items of the income variable questionnaire.

Reliability Test Results

Table 4. Reliability Test Results

Variables	Cronbach's Alpha Value	Alpha Tolerance	Item Status
Facilities and infrastructure	0.655	0.60	Reliable
Operating costs	0.661	0.60	Reliable
Income	0.917	0.60	Reliable

Based on the table above, it can be concluded that all questionnaire items—namely, facilities and infrastructure, operational costs, and revenue — are reliable. This is indicated by *a Cronbach's Alpha value* > 0.60, indicating no issues with the reliability test.

Normality Test Results

The table below shows that the sig. (2-tailed) value is 0.200. This indicates that the significance value is greater than 0.05, so it can be concluded that the data in this study is normally distributed.

Table 5 Normality Test Results

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One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			73
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		3.03554957
Most Extreme Differences	Absolute		.062
	Positive		.062
	Negative		-.050
Test Statistic			.062
Asymp. Sig. (2-tailed)[c]			.200[d]
Monte Carlo Sig. (2-tailed)[e]	Sig.		.704
	99% Confidence Interval	Lower Bound	.692
		Upper Bound	.715

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

e. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 299883525.

Multicollinearity Test Results

From the analysis results in the table below, it shows that the tolerance value for the facilities and infrastructure variable (X1) is (0.916 > 0.1) and the VIF value is (1.092 < 10.00), for the operational cost variable (X 2), which is (0.916> 0.1) and the VIF value is (1.092 <10.00). From these results, it can be concluded that there are no symptoms of multicollinearity in each independent variable.

Multicollinearity Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	23.134	13.008		1.778	.080		
	Sarana dan Prasarana (X1)	.081	.218	.045	.371	.712	.916	1.092
	Biaya Operasional (X2)	.305	.190	.195	1.601	.114	.916	1.092

a. Dependent Variable: Pendapatan (Y)

Heteroscedasticity Test Results

Based on the table below, it shows that facilities and infrastructure (X1) produce a significant value of 0.543 > 0.05 and operational costs (X2) produce a significant value of 0.611 > 0.05. Therefore, it can be concluded that there is no indication of heteroscedasticity in the regression model.

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Table 7. Heteroscedasticity Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.778	7.158		1.366	.176
	Sarana dan Prasarana (X1)	-.073	.120	-.076	-.612	.543
	Biaya Operasional (X2)	-.054	.105	-.063	-.512	.611

a. Dependent Variable: Abs_Res

Multiple Linear Regression Analysis

Table 8. Multiple Linear Regression Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	23.134	13.008		1.778	.080
	Sarana dan Prasarana (X1)	.081	.218	.045	.371	.712
	Biaya Operasional (X2)	.305	.190	.195	1.601	.114

a. Dependent Variable: Pendapatan (Y)

Based on the analysis results in Table 8, it shows that in the Unstandardized Coefficients (B) column, the multiple linear regression equation obtained from this study is as follows:

$$Y = 23.134 + 0.081X1 + 0.305X2 + e$$

Based on the results of the simultaneous regression, it can be explained as follows:

1. The constant value a = 23.134 means that if there are no facilities and infrastructure (X1), and operational costs (X2) in the sense that both variables are zero, then the value of the dependent variable Y will be at 23.134, this indicates the initial value of the dependent variable without any contribution from the two independent variables.
2. The regression coefficient value of the variable for the application of facilities and infrastructure (X1) is positive b_1 = 0.081, meaning that if facilities and infrastructure increase, the income variable will increase. will also increase.
3. The regression coefficient value of the operational cost variable (X2) is positive b_2 = 0.305, meaning that if operational costs increase, the income variable will increase. will also increase.

Hypothesis Testing Results

Partially (t-test)

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Table 9. t-Test Results

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	23.134	1.301		17.784	<,001
	Sarana dan Prasarana (X1)	.081	.022	.193	3.706	<,001
	Biaya Operasional (X2)	.305	.019	.834	16.013	<,001

a. Dependent Variable: Y.1

1. The influence of the facilities and infrastructure variable (X1) on income (Y):
   Based on the analysis results, the significance value of the variable (X1) was <0.001 <0.05. In addition, the calculated t value (3.706) > ttable (1.993). So it can be concluded that H0 is rejected and H1 is accepted, which means there is a significant influence of facilities and infrastructure (X1) on income (Y).
2. The effect of operational cost variables (X2) on income (Y):
   Based on the analysis results, the significance value of the variable (X2) was <0.001 <0.05 and the calculated t value (16.013) > t table (1.993), so H0 was rejected and H2 was accepted. This shows that, partially, there is an influence of operational costs (X2) on income (Y).

F Statistical Test (Simultaneous Significance Test)

Table 10. F Test Results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.198	2	24.599	41.590	<,001[b]
	Residual	41.402	70	.591		
	Total	90.600	72			

a. Dependent Variable: Y.1

b. Predictors: (Constant), Biaya Operasional (X2), Sarana dan Prasarana (X1)

Based on the table above, the results of the simultaneous test show that the significance value for the influence of X1 and X2 simultaneously on Y is <0.001 <0.05 and the F count value is 41,590 and F table is 3.98, so it can be concluded that H0 is rejected and H is accepted, which means that X1, X2 and X3 simultaneously have a significant influence on income.

Coefficient of Determination Test (Adjusted R $^{2)}$

Table 11. Results of the Determination Coefficient Test (Adjusted R $^{2)}$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.737[a]	.543	.530	.76906

a. Predictors: (Constant), Biaya Operasional (X2), Sarana dan Prasarana (X1)

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Based on the results above, the adjusted *R Square value* of 0.543 shows that the facilities and infrastructure variables and operational costs together influence the income variable by 53.0%.

Discussion

The research results show that facilities and infrastructure influence the revenue of Perumda Muara Tirta in Gorontalo City. The more adequate the infrastructure, such as pipelines, water treatment plants, and reservoirs, the greater their contribution to revenue. However, there are indicators that are still less than optimal, such as the selection of intake building locations, which are considered suboptimal. This indicates that facilities and infrastructure need to be continuously improved to maximize their effectiveness in supporting revenue.

Furthermore, the study also found that operational costs impact revenue. Efficient cost management is a crucial factor in improving a company's financial performance, although variable cost control remains suboptimal. This finding aligns with previous research that confirmed the positive influence of infrastructure and operational costs on revenue. Based on the Resource-Based View (RBV) and Agency Theory, these two internal factors constitute strategic resources that must be managed effectively and accountably to support revenue growth and ensure the company's business sustainability.

4. CONCLUSION

Based on the results of the data analysis and discussion that has been carried out, several things can be concluded as follows:

4.4.2.1 The results of the study show that facilities and infrastructure (X1) have an effect on income (Y)

4.4.2.2 The results of the study show that operational costs (X2) have an effect on income (Y)

4.4.2.3 The results of the study show that facilities and infrastructure (X1) and operational costs (X2) have an effect on income (Y).

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