Transparency And Human Resources Development As A Determinant Of The Health Of PDAM Performance, Empirical Study On Drinking Water Companies In West Java For The 2019-2023 Period

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Abstract
Providing clean water is essential for public health and well-being. In Indonesia, Perusahaan Daerah Air Minum (PDAM), or regional water supply companies, play a crucial role in delivering this essential service. However, many PDAMs, particularly in West Java, face significant operational and financial challenges, including limited resources, suboptimal financial management, and high debt burdens. This study aims to analyze the impact of transparency and human resource development (HRD) on the performance health of PDAMs. A quantitative approach is employed to assess the level of transparency and HRD within these organizations and their correlation with performance indicators. The study examines the transparency of financial reporting, the accessibility of operational information, and HRD strategies to identify factors that contribute to a "healthy" performance classification as set by the Indonesian Water Supply System Improvement Agency (BPPSPAM). The results indicate that while transparency plays a critical role in enhancing operational transparency and public trust, HRD efforts, particularly in staff training and development, significantly improve overall PDAM performance. The findings highlight the importance of both transparency and HRD in fostering better performance outcomes, with practical implications for PDAM management and policymakers in the water sector. Future research could explore the integration of other operational and financial factors to provide a more comprehensive assessment of PDAM performance.
Keywords: *Transparency; Human Resource Development (HRD)*; *PDAM Performance*; *Water Supply Management.*

1. INTRODUCTION

The Regional Drinking Water Company (PDAM) is one of the regionally owned business units engaged in the treatment and distribution of clean water for the general public. PDAM is found in every province, district, and city throughout Indonesia. PDAM is a company whose shares are owned by the local government. It can be said that PDAM is a regional company or a BUMD. This is because all or part of the capital is owned by the local government. PDAM is spread throughout Indonesia, including in the West Java region. PDAM companies in West Java consist of 24 PERUMDAM.

Water management of PDAM (Regional Drinking Water Company) or PERUMDAM (Regional Public Company of Drinking Water) in West Java is carried out by a number of regional companies that are responsible for providing clean water services to the community. Every city or district in West Java generally has a PDAM that manages clean water distribution, channel maintenance, and water quality. PDAM or PERUMDAM in West Java treats and provides clean water by processing water in treatment plants to ensure its quality meets government health standards, including turbidity parameters, pH, bacterial content, and other harmful substances. The general treatment process includes filtration, settling, and disinfection with chlorine. The treated water is then distributed through the pipeline to household, industrial, and other institutional consumers. Each PDAM or PERUMDAM has a different distribution system according to the existing infrastructure, either in the form of main network pipes or branch pipes to each house.

Clean water is a basic need for the community, and its availability is one of the main factors in improving welfare and health. Regional Drinking Water Companies (PDAM) in Indonesia play a central role in meeting the needs of clean water in various regions. As a Regionally Owned Enterprise (BUMD), PDAM has a responsibility not only in the provision of water, but also in effective financial management to ensure operational sustainability. However, in practice, many PDAMs in Indonesia face serious challenges in maintaining their corporate health and financial stability. Some of these challenges include limited resources, suboptimal financial management, and pressure from significant debt burdens.

Two functions underlie PDAM's activities in carrying out its role as a regionally owned company, namely the social function of the community where PDAM must provide facilities and infrastructure for the community in the area where it operates by providing clean water that is proper and can be used to meet the needs of the community in terms of fulfilling the needs of clean water for daily activities which will have an impact on the health and welfare of the PDAM as a function business can make a financial contribution to the improvement of regional PAD by providing benefits from operational and business activities in PDAM, one of which is by presenting transparent and accountable financial statements so that they can be accountable to the public. Agency theory explains the relationship in which one party (the principal, such as the public or the government) delegates work to another party (the agent, such as the management of PDAM) (Fitriyani & Kristanti, 2023; Suzan & Utari, 2022).

This study describes empirical research that aims to analyze the influence of transparency and human resource development (HRD) on the health the performance of Regional Drinking Water Companies (PDAM). PDAM has a crucial role in providing clean water to the community, but many of them face significant operational and financial challenges in Indonesia, including in West Java. This study will investigate how transparency practices and specific human resource development efforts contribute to the achievement of the "Healthy" performance category as set by the Agency for the Improvement of the Implementation of Drinking Water Supply Systems (BPPSPAM). Transparency refers to the extent to which an organization is open in providing relevant, accurate, and timely information to both internal and external parties (Hidayah et al., 2023; Isynuwardhana & Putri, 2021). Using a quantitative approach, this study is expected to provide strong empirical evidence and practical recommendations for PDAM management and policymakers in the drinking water sector to improve the effectiveness of public services and organizational sustainability.

The purpose of this study is to understand and analyze various factors that affect the health performance of PDAMs in several regional drinking water companies (PDAMs) in West Java. This study aims to analyze the level of transparency applied in PDAM, as well as how it affects overall performance. In addition, this study will also examine the level of human resource development (HR) in PDAM, which is one of the important elements in improving company performance. Furthermore, this study aims to assess the health level of PDAM's performance and identify the factors that contribute to it.

This study will also analyze the influence of transparency on the health of PDAM performance significantly, as well as how human resource development affects the health of company performance. In addition, this study will explore the simultaneous influence of transparency and human resource development on the health of PDAM performance, with the aim of providing a more comprehensive picture of the factors that affect the performance of PDAM in the region.

3. METHOD

This study employs a quantitative research approach. According to Sugiyono (2023), quantitative research is grounded in positivist philosophy and is typically used to study specific populations or samples. It involves collecting data through structured research instruments and analyzing the data using quantitative or statistical techniques, with the objective of testing established hypotheses. This approach is termed 'quantitative' because the data collected are numerical and the analysis is conducted using statistical methods.

Data Collection Techniques

A collection of facts, figures, images, or other materials that occurred in the past and present and are used as the basis of research is called data (Asman & Rosidah, 2019). Data is a source of information that is known or assumed to provide an overview of a problem or situation (Dr. Abd. Rozak, 2019). According

to Sugiyono (2023), the types of data sharing are differentiated based on the source, data ownership, time, and type.

The division of data based on sources is divided into 2, namely primary data and secondary data (Sugiyono, 2023). In this study, the author used both data sources. Here's the explanation: Primary data is data taken directly in the field. The primary data in this study are questionnaires. Questionnaires will be distributed, which will be filled out by respondents, namely PDAM employees who have work experience and have positions at the Ekselon level 1-4.

Data Analysis Techniques

Data analysis is carried out after all data from respondents or other sources has been gathered. This process involves organizing the data according to variables and respondent categories, tabulating the data based on each variable, presenting the data for each variable examined, performing calculations to address the research questions, and testing the proposed hypotheses (Sugiyono, 2023). In this research, various analytical techniques were employed to evaluate each variable. The data analysis methods used are as follows: 1. Validity Test

2. Reliability Test
3. Normality Test
4. Multicollinearity Test
5. Heteroscedasticity Test
6. Correlation Analysis
7. Multiple Linear Regression Analysis
8. Coefficient Determination Analysis

4. RESULTS AND DISCUSSION

4.1 Validity Test

For the transparency variable (X1), there are 5 sub-variables, namely:

1. Availability of information that is easy to understand and access (e.g., service information, procedures, costs).
2. Publication of financial and operational reports periodically through the media or the organization's website.
3. Availability of publicly accessible annual reports.
4. A clear and responsive complaint mechanism for violations or irregularities
5. Accessibility of accurate and timely information for stakeholders.

These five variables are filled in with a value of 1 or 0 according to the profile that can be found on the Internet. Therefore, this data needs to be tested for validity. Here are the results of the validity test. **Table 1: Validity Test**

Correlations

		X11	X12	X13	X14	X15	X1
X11	Pearson Correlation	1	1.000**	.224*	.907**	1.000**	.991**
	Sig. (2-tailed)		.000	.014	<.001	.000	<.001
	N	120	120	120	120	120	120
X12	Pearson Correlation	1.000**	1	.224*	.907**	1.000**	.991**
	Sig. (2-tailed)	.000		.014	<.001	.000	<.001
	N	120	120	120	120	120	120
X13	Pearson Correlation	.224*	.224*	1	-.038	.224*	.319**
	Sig. (2-tailed)	.014	.014		.681	.014	<.001
	N	120	120	120	120	120	120
X14	Pearson Correlation	.907**	.907**	-.038	1	.907**	.904**
	Sig. (2-tailed)	<.001	<.001	.681		<.001	<.001
	N	120	120	120	120	120	120
X15	Pearson Correlation	1.000**	1.000**	.224*	.907**	1	.991**
	Sig. (2-tailed)	.000	.000	.014	<.001		<.001
	N	120	120	120	120	120	120
X1	Pearson Correlation	.991**	.991**	.319**	.904**	.991**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	
	N	120	120	120	120	120	120

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Based on the rightmost column, it can be seen that the entire p-value < 0.05, so all items are valid.

4.2 Reliability Test

In addition to the validity test, the following are the results of the reliability test of the five subitems contained in transparency (X1).

Table 2: Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.917	5

Since Cronbach's Alpha > 0.7, this variable is reliable.

4.3 Normality Test

First of all, it is necessary to perform a normality test to meet the regression assumption. Here are the results of the initial normality test.

Table 3: Normality Test

One-Sample Kolmogorov-Smirnov Test

				Unstandardized Residual
N				120
Normal Parameters[a,b]	Mean			.0000000
	Std. Deviation			.62191322
Most Extreme Differences	Absolute			.118
	Positive			.095
	Negative			-.118
Test Statistic				.118
Asymp. Sig. (2-tailed)[c]				.000
Monte Carlo Sig. (2-tailed)[d]	Sig.			.000
	99% Confidence Interval		Lower Bound	.000
			Upper Bound	.001

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.

Since p-value = 0.000 (< 0.05), the residual is not normally distributed. So it is necessary to carry out the transformation. In the context of this study, the transformations carried out are natural logarithmic transformations for variables X1 and X2 and inverse transformations for variables Y. Due to the skewness of the three negative variables, the maximum value is first sought and added slightly, and then subtracted from the three variables before the transformation is carried out.

The maximum values of X1, X2, and Y are 5, 1.0342, and 4.19. For the variable X1, the transformation is ln (5.01 – X1), while for the variable X2, the transformation is ln (1.04 – X2). Finally, for Y, the transformation is 1 / (5–Y). The following are the results of the normality test after the transformation.

Table 4: Normality Test After Transformation

One-Sample Kolmogorov-Smirnov Test

				Unstandardized Residual
N				120
Normal Parameters[a,b]	Mean			.0000000
	Std. Deviation			.19378385
Most Extreme Differences	Absolute			.054
	Positive			.054
	Negative			-.038
Test Statistic				.054
Asymp. Sig. (2-tailed)[c]				.200d
Monte Carlo Sig. (2-tailed)[e]	Sig.			.532
	99% Confidence Interval		Lower Bound	.519
			Upper Bound	.545

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 624387341.

Since p-value = 0.2 (> 0.05), the residual is normally distributed. Thus, the next classic assumption test can be carried out.

4.4 Heteroscedasticity Test

The following are the results of the heteroscedasticity test with the transformed result variable. **Table 5: Heteroscedasticity Test**

Coefficient

Type		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.087	.016		5.509	.000
	LNX2	-.048	.009	-.465	-5.516	.000
	LNX1	-.013	.007	-.164	-1.943	.054

a. Variable Dependent: ABS

It can be seen that p-value ln X1 = 0.054 (> 0.05) but p-value ln X2 = 0.000 (< 0.05). Thus, it does not meet the assumption of homoscedasticity. For this reason, it is necessary to transform the variable 1/Y again to ln (1/Y). The following are the results of the normality test and the heteroscedasticity test after the second transformation was performed.

Table 6: Heteroscedasticity Test After Transformation

One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			120
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		.30702230
Most Extreme Differences	Absolute		.077
	Positive		.036
	Negative		-.077
Test Statistic			.077
Asymp. Sig. (2-tailed)[c]			.080
Monte Carlo Sig. (2-tailed)[d]	Sig.		.081
	99% Confidence Interval	Lower Bound	.074
		Upper Bound	.088

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 1502173562.

Since p-value = 0.08 (> 0.05), the residual is normally distributed.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.212	.030		7.042	<.001		
	LNX1	-.017	.013	-.129	-1.306	.194	.838	1.193
	LNX2	-.021	.017	-.122	-1.238	.218	.838	1.193

a. Dependent Variable: ABS3

Since p-values = 0.194 and 0.218 (> 0.05), there is no heteroscedasticity phenomenon.

4.5 Multicollinearity Test

The following are the results of the multicollinearity test.

Table 7: Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-.714	.049		-14.425	<.001		
	LNX1	-.029	.021	-.118	-1.368	.174	.838	1.193
	LNX2	-.145	.027	-.458	-5.294	<.001	.838	1.193

a. Dependent Variable: lnvnew

Since VIF = 1.193 (< 10), there are no symptoms of multicollinearity.

4.6 Autocorrelation Test

Here are the results of the autocorrelation test.

Table 8: Autocorrelation Test

Model Summary

Type	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.517a	.267	.254	.30964	2.101

a. Predictors: (Constant), LNX2, LNX1
b. Dependent Variable: lnynew

The Durbin-Watson score is 2.101. Meanwhile, the dU values for N = 120 and k = 2 are 1.7361. Value 4 – dU = 4 – 1.7361 = 2.2639. Since the Durbin-Watson value (2.101) is between 1.7361 and 2.2639, there is no autocorrelation phenomenon.

4.7 Test F

Here are the results of the F test

Table 9: Tests of

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Type		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.084	2	2.042	21.299	.000b
	Residual	11.217	117	.096		
	Total	15.301	119			

a. Dependent Variable: lnynew

b. Predictors: (Constant), LNX2, LNX1

There was a simultaneous effect of transparency and human resource development on performance, F(2.117) = 21.299, p = 0.000 (< 0.05)

4.8 T Test

Here are the results of the t-test.

Table 10 T-test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.714	.049		-14.425	<.001		
	LNX1	-.029	.021	-.118	-1.368	.174	.838	1.193
	LNX2	-.145	.027	-.458	-5.294	<.001	.838	1.193

a. Dependent Variable: lnynew

Transparency had no significant effect on performance, t = -1.368, p = 0.174 (> 0.05). Meanwhile, human resource development had a significant effect on performance, t = -5,294, p < 0.001 (< 0.05).

4.9 Coefficient Determination Test

The following are the results of the determination coefficient test.

Table 11 Determination Coefficient Test

Model Summary

Type	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.517a	.267	.254	.30964	2.101

a. Predictors: (Constant), LNX2, LNX1

b. Dependent Variable: lnynew

The value of R = 0.517, which means a moderate model correlation. Meanwhile, the value adjusted R square = 0.254, which means that 25.4% variation in performance can be explained by this model.

4.10 The Effect of Transparency on PDAM Performance

From the discussion above, it can be seen that because p-value = 0.174 (> 0.05), there is no significant effect of transparency on the performance of PDAM. This is due to the fact that even though a PDAM is transparent in its organizational information, it will not necessarily perform well because the PDAM must meet other criteria, such as financial, service, operational, and human resources criteria.

In other words, when a PDAM is transparent, the organization is only professional in presenting information, but it is not necessarily able to score high profits and be qualified in other fields. As an illustration, we can take, for example, public companies that disclose full ESG in their sustainability reports, even though they are very transparent in disclosing data about their companies, are not necessarily able to generate maximum profits in their class. An example of this company is PT ABM Investama Tbk (ABMM), which received an award for the complete disclosure of GRI but the ROA in 2024 is only single digit which is still inferior to other companies in the energy sector that make large profits but are not as complete as ABMM in revealing the details of its company like PT Alamtri Resources Indonesia Tbk (ADRO).

Not to mention, performance appraisals are not limited to finance. There are other aspects that PDAM must also develop. In general, any organization usually excels in only a few areas, but not all. Therefore, it does not guarantee that only with transparency that shows professionalism, performance will improve as well, as many other aspects can cause this to happen.

Meanwhile, the output of this study is in line with a study by Kiri (2021), which found that transparency does not have a significant effect on the performance of the local government of the city of Surabaya. This suggests that there are other studies that support these findings.

4.11 The Influence of Human Resources Development on PDAM Performance

Based on the above analysis, there is a significant influence of human resource development on PDM performance because p-value = 0.000 (< 0.05). This can be because if human resources are growing, the performance of PDAM will be more optimal.

Logically, the reason is that, in general, human resources are the organization's most valuable asset. The operational quality of an organization is highly determined by its people. Therefore, if human resources are developing, it is natural that organizational performance will be better because human resources are better able to carry out their duties well.

However, this is not necessarily the case because even if there is human resource development, it is not necessarily that the human being will be better, because the training may be less useful for employees. However, in this study, because there is an influence, it can be concluded that the human resource development carried out is right on target, so that it can boost the quality of human resources.

The output of this study is in line with the research of Suganti et al (2021), which states that HR training has a significant effect on the performance of PDAM Tirtanadi Sei Agul. With other studies that provide similar results, it can be said that the influence of human resource development on the performance of PDAM has a fairly strong external validity, because these findings not only appear in one study, but are also supported by the results of other studies.

5 CONCLUSION

The findings of the study indicate that transparency and human resource development (HRD) collectively have an impact on the performance of PDAM. Nevertheless, transparency on its own does not significantly affect PDAM's performance. In contrast, HRD has been shown to significantly influence the company's performance.

Based on these results, several recommendations can be proposed. First, PDAM is encouraged to place a stronger emphasis on investing in human resource development, given its positive contribution to enhancing organizational performance. Second, since transparency does not significantly influence performance, PDAM may not need to allocate excessive attention or resources toward increasing public transparency. Lastly, future studies are advised to incorporate additional independent variables to broaden the scope of analysis and provide a more holistic understanding of the factors influencing PDAM's performance.

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