Optimization of Performance at PDAM Tirtanadi, North Sumatra Province

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Abstract
Successful companies realize that basically business improvement is based on a system that is implemented consistently and efficiently so that it produces better company performance. The system needs to be written and documented so that employees can know the targets and what the company expects. The consistent implementation pattern is a principle in implementing quality management. The implementation of the ISO 9001:2015 Quality Management System can increase employee productivity so that effective and efficient company performance can be achieved so that it can increase the company's competitiveness. In the ISO 9001:2015 quality management system. Organizational Characteristics have a positive and significant effect on Performance with an original sample value of 0.343 and p values of 0.001. Human Resource Characteristics have an effect on Organizational Characteristics with an original sample value of 0.366 and p values of 0.001. Human Resource Characteristics have a positive and significant effect on Performance with an original sample value of 0.265 and p values of 0.042. ISO 9001:2015 Quality Management System has a positive and significant effect on Organizational Characteristics with an original sample value of 0.535 and p values of 0.000. ISO 9001:2015 Quality Management System has a positive and significant effect on Performance with an original sample value of 0.321 and p values of 0.004. HR characteristics have a positive and significant effect on Performance through Organizational Characteristics with an original sample value of 0.126 and a p value of 0.015. ISO 9001:2015 Quality Management System has a positive and significant effect on Performance through Organizational Characteristics with an original sample value of 0.184 and p values of 0.005.

Keywords: ISO 9001:2015 Quality Management System, Employee Performance, Organizational Characteristics

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Introduction

The implementation of a quality management system in a PDAM company is a benchmark for changing employee paradigms to improve quality in order to provide customer satisfaction. To improve customer service, management implements the ISO 9001:2015 quality management system. The development of PDAM at present has undergone many changes, the era of free trade (trade liberalization), requires every company to face fierce competition from all over the world. This condition encourages companies to immediately improve quality and competitiveness by making improvements consistently and continuously in order to meet the needs of customers and the company's own market.

During the implementation of the ISO 9001:2015 quality management system, especially in PDAM Tirtanadi, North Sumatra Province, there has been no research on the impact of the implementation of the ISO 9001:2015 quality management system on improving employee performance, so that the real effect of the certification has not been seen. In the routine performance of PDAM Tirtanadi, North Sumatra Province, there are still frequent cases where the completion time of the administrative and financial processes is not in accordance with the provisions set, this indicates that the level of achievement between the work plan and the work results has not been achieved, problems in the field of organization and human resources have also not been optimally implemented.

The visible phenomenon regarding the results of performance assessments has not been optimally followed up by management, there is still customer disappointment with administrative and financial services, there are still employees who have never been involved in training in the field they work in, so that employee competence still needs to be improved as well as facilities, work facilities and organizational support as supporting infrastructure for smooth work implementation also still need to be improved.

Literature review
ISO 9001:2015 Quality Management System

The definition of quality *can* be viewed from two conceptual perspectives. First, the concept of quality is absolute, second, the concept of quality is relative according to Sallis (in Ali, 2019). In the concept of absolute quality, quality refers to the nature that describes the degree of goodness of a good or service produced or supplied by a particular institution. In the concept of absolute quality, the degree of goodness of a product, good or service reflects the high price of the good or service, and the high assessment standards of the institution that produces or supplies the good. While the concept of relative quality, the degree of quality depends on customer assessment.

Quality assurance is an important concept in quality management that aims to provide assurance that the services or products produced by an organization have met the standards set and are in accordance with customer expectations. In implementing this concept, every organization, whether in the education, government, or private sectors, is directed to ensure that its work processes and results have consistent and accountable quality.

Indicators of Implementation of ISO 9001:2015 Quality Management System,

The ISO 9001:2015 Quality Management System indicators are:
1. Focus on customers
2. Leadership
3. Personnel involvement
4. Process approach
5. Systems approach to management
6. Continuous improvement
7. Evidence-based decision making
8. Mutually beneficial relationships with related parties

Characteristics of Human Resources

According to Mangkunegara (2018), HR characteristics include the abilities and characteristics of individuals that influence their performance in the organization, both physically and non-physically.

Human Resource Characteristics Indicators

According to Mangkunegara (2018) the indicators of HR characteristics are:
1. Intellectual Ability
2. Physical Ability
3. Attitude and Personality
4. Work motivation
5. Skills and Experience

Characteristics of Organization

According to Robbins and Coulter (2018) Organizational characteristics are the main features or essential elements that form an organization, which distinguish it from other forms of social groups. These characteristics reflect the structure, goals, work systems, and relationships between individuals in the organization.

Organizational Characteristics Indicators

According to Robbins and Coulter (2018) the indicators of Organizational Characteristics are:
1. Distinct Purpose
2. Organizational Structure (Deliberate Structure)
3. People in Organization (People)
4. Structural Contingency (Factors)

Performance

According to Kasmir (2016) Performance is the work result achieved by a person in carrying out the tasks and responsibilities given to him, which is based on skills, experience, and sincerity and time. Performance reflects the level of achievement of individual work results, both in terms of quantity and quality, in accordance with the responsibilities carried out.

Performance Indicators

According to Kasmir (2016) the performance indicators are as follows:
1. Quality of Work
2. Quantity of Work
3. Punctuality
5. Effectiveness
6. Independence in Work
7. Responsibility

Factors Affecting Performance

According to Robbins & Judge (2018), factors that influence performance:
1. Individual factors include intelligence, personality, perception and attitude.
2. Job factors, namely type of job, role clarity, workload
3. Organizational factors, namely organizational structure, work culture, reward system
4. Team factors, namely group dynamics, communication, and collaboration
5. Leadership factors include leadership style, trust in the leader, and the direction given.
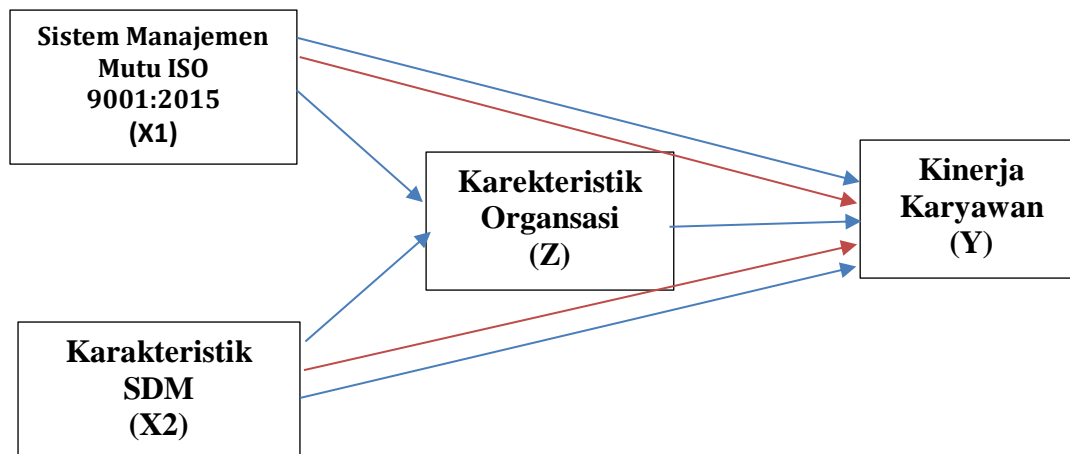
Conceptual Framework

Figure 1. Conceptual Framework

RESEARCH METHODS
Types of research
Researchers use quantitative research types. According to Sugiyono (2017), quantitative research methods are research methods based on the philosophy of positivism, used to examine certain populations or samples and collect data using research tools, analyze quantitative or statistical data with the aim of testing predetermined hypotheses.

Test Measurement Model (Outer Model)
To ensure that the variables, measuring instruments, and indicators used in this study have sufficient validity and reliability and that the measurements carried out are consistent across all research samples, this study uses a measurement model test as an external model. In PLS-SEM data analysis, the test measurement model consists of validity and reliability tests.

Validity Test
1. Convergent Validity Test

    One method to assess the correlation, or relationship between a measuring instrument and its research construct, is the convergent validity test (Cohen et al. 2018). This convergent validity test is intended to assess whether the measuring instrument in a questionnaire can measure certain variables reliably and consistently (Morling, 2017). The average variance extracted (AVE) and loading factors can be used to evaluate the convergent validity test. According to Latan's research (2015), an indicator is strongly correlated with the construct being tested if the factor loading value is greater than 0.6 and the AVE value is greater than 0.5.

2. Discriminant Validity Test

    To ensure that an instrument has validity that is able to measure a variable accurately and is not mixed with other variables, discriminant validity testing is a technique used to determine the extent to which a measuring instrument in a study can distinguish the measured variable from other variables that should be different (Sugiyono, 2020). The availability of cross-loading values for each evaluated indication provides an overview of the discriminant validity testing process. A variable is said to be valid according to Kock & Lynn (2015) if each indicator has a greater cross-loading value than other variables that are not measured.

Reliability Test

The process of determining how consistent and reliable a research measuring instrument is in assessing the same variables over time and among respondents is known as reliability testing. Reliability testing Its application in this study was by testing the composite reliability (CR) and Cronbach's alpha value. Henseler et al. (2016) stated that a variable can be If the composite reliability (CR) of a measuring instrument is greater than 0.7 and its Cronbach's alpha value is greater than 0.7 then it is considered reliable.

Structural Model Test (Inner Model)

The structural model in this study is used as an inner model in the PLS-SEM analysis to examine the relationship between constructs of the research model. This structural model will determine the relationship between constructs in terms of the magnitude and significance of the path coefficients between the constructs used in the study through several stages.

PLS-SEM Inner Model Assumptions

According to Henseler et al., (2016), the assumption or requirement of the inner model in PLS-SEM is the absence of multicollinearity problems between constructs measured using measurement instruments in the research model. The assumption of the inner model of PLS-SEM can be seen by evaluating the VIF (Variance Inflation Factor) value. The VIF value will show how strongly the independent variable is influenced by other independent variables in the research model and a VIF value below 5 will indicate that multicollinearity between constructs does not occur in the research model (Hair et al., 2017).

Coefficient of Determination Test (R^2)

In the structural model, the R-Square (R2) test in PLS-SEM is a metric to evaluate the variability of the dependent variable that can be explained by the independent variables (Henseler et al., 2016). Hair and colleagues (2017) clarified When assessing variability, the word "R-Square" can have a value between 0 and 1, with values of 0.75, 0.50, and 0.25, respectively, indicating categories of values that are considered strong, moderate, and weak in terms of explaining the variation of the dependent variable.

Hypothesis Testing

Hypothesis testing in the inner model of PLS-SEM is carried out using the bootstrapping technique in the SmartPLS application. After performing the bootstrapping technique, hypothesis testing can be carried out by looking at the path coefficient value, t-statistic, and p-value where a positive path coefficient value indicates a positive relationship between two variables and conversely a negative value indicates a negative relationship between variables (Hair et al., 2017). Then the t-statistic value greater than 1.96 and the p-value less than 0.05 indicate that the coefficient is statistically significant and reliable (Hair et al., 2017).

Results and Discussion

Outer Model Analysis

Measurement model testing (outer model) is used to determine the specifications of the relationship between latent variables and their manifest variables, this testing includes convergent validity, discriminant validity and reliability.

Convergent Validity

In the outer loading table, there are numbers or values that indicate the indicator shows similarity with its construct variable. The value for the indicator is said to be valid if the indicator explains its construct variable with a value >0.7. The structural model in this study is shown in the following figure:
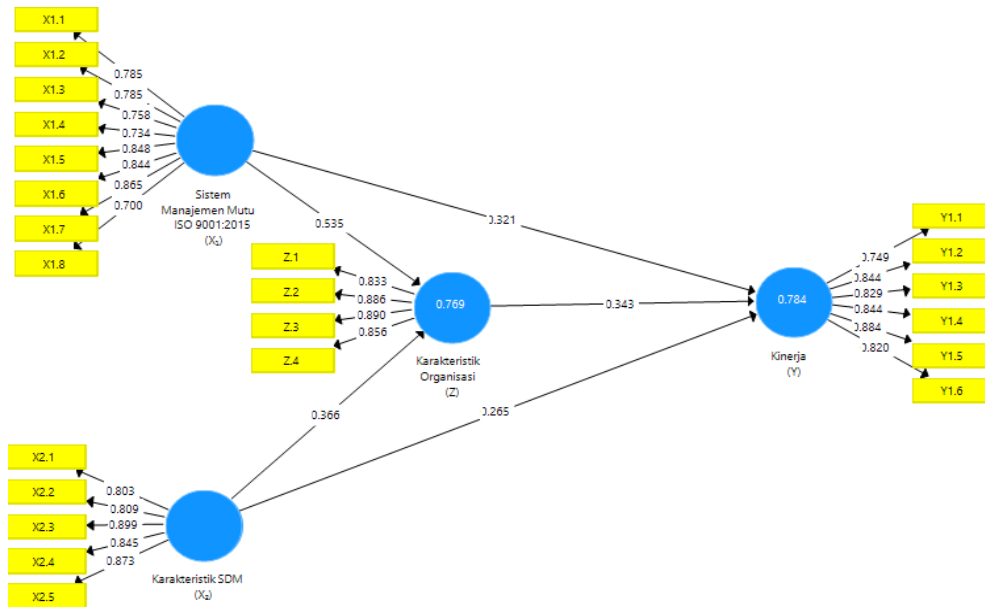
Figure 2. Outer Model

Source: Smart PLS 3.3.3

The Smart PLS output for loading factors gives the results in the following table: Outer Loadings

In this research there is an equation and the equation consists of two substructures for substructure 1

$Z = b1X1 + b2X2 + e1$

$Z = 0.535 + 0.366 + e1$

For substructure 2

$Y = b3X1 + b4X2 + b5Z + e2$

$Y = 0.321 + 0.265 + 0.343 + e2$

Table 1. Outer Loadings

	Characteristics of Organization_(Z)_	Characteristics of HR_(X₂)_	Performance _(Y)_	ISO 9001:2015 Quality Management System_(X₁)_
X1.1				0.785
X1.2				0.785
X1.3				0.758
X1.4				0.734
X1.5				0.848
X1.6				0.844
X1.7				0.865
X1.8				0.700
X2.1		0.803		
X2.2		0.809		
X2.3		0.899		
X2.4		0.845		
X2.5		0.873		
Y1.1			0.749	

	Characteristics of Organization_(Z)_	Characteristics of HR_(X₂)_	Performance _(Y)_	ISO 9001:2015 Quality Management System_(X₁)_
Y1.2			**0.844**	
Y1.3			**0.829**	
Y1.4			**0.844**	
Y1.5			**0.884**	
Y1.6			**0.820**	
Z.1	**0.833**			
Z.2	**0.886**			
Z.3	**0.890**			
Z.4	**0.856**			

Source: Smart PLS 3.3.3

It can be seen in table 1 above that the outer loading value of each outer loading indicator is greater than 0.7, so it is determined that the indicator in each variable has a value greater than 0.7, so each indicator is declared valid and can continue the research to the next stage.

2.Discriminant Validity

Discriminant Validity can be tested by looking at the cross loading table, this output is used to test discriminant validity at the indicator level with the provision that the correlation between the indicator and its latent variable is > compared to the correlation between the indicator and other latent variables (outside its block). For more details, see the table below:

Table 2. Discriminant Validity

	Characteristics of Organization_(Z)_	Characteristics of HR_(X₂)_	Performance _(Y)_	ISO 9001:2015 Quality Management System_(X₁)_
X1.1	0.614	0.629	0.601	0.785
X1.2	0.654	0.630	0.653	0.785
X1.3	0.636	0.673	0.621	0.758
X1.4	0.634	0.693	0.626	0.734
X1.5	0.710	0.715	0.683	0.848
X1.6	0.686	0.757	0.680	0.844
X1.7	0.855	0.789	0.802	0.865
X1.8	0.620	0.728	0.697	0.700
X2.1	0.592	0.803	0.617	0.672
X2.2	0.627	0.809	0.746	0.754
X2.3	0.773	0.899	0.765	0.831
X2.4	0.780	0.845	0.648	0.725
X2.5	0.770	0.873	0.762	0.771
Y1.1	0.685	0.632	0.749	0.708
Y1.2	0.712	0.656	0.844	0.761
Y1.3	0.681	0.725	0.829	0.684
Y1.4	0.779	0.797	0.844	0.767
Y1.5	0.687	0.676	0.884	0.695
Y1.6	0.628	0.672	0.820	0.603
Z.1	0.833	0.763	0.711	0.759

Z.2	0.886	0.833	0.766	0.818
Z.3	0.890	0.648	0.748	0.695
Z.4	0.856	0.658	0.689	0.701

Source: Smart PLS 3.3.3

Based on the results of table 2 above, it shows that the loading factor of the ISO 9001:2015 Quality Management System variable (X_1) is greater than the loading factor of other latent variables, for the loading factor of the HR Characteristics variable (X_2) it is greater than the cross loading factor of other latent variables, for the loading factor of the Organizational Characteristics variable (Z) it looks greater than the loading factor of other latent variables, for the results of the loading factor of the Performance variable (Y) the loading value is greater than the loading factor value of other latent variables. This means that this study is valid in terms of discriminate validity and continues other research.

3. Composite reliability

The next test determines the reliable value with *the composite reliability* of each construct, the construct value that is considered reliable is where the *composite reliability value* is above 0.6 or greater than 0.6. If the coranbasch alpha value is also greater than 0.7, then the value of each construct in the block is considered reliable in each variable construct and if the AVE value is also above 0.7, then each variable construct is considered valid. The following is a table of loading values for the research variable constructs generated from running the Smart PLS program in the following table:

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Organizational Characteristics (Z)	0.889	0.923	0.751
Characteristics of HR (X_2)	0.901	0.927	0.717
Performance (Y)	0.909	0.930	0.688
ISO 9001:2015 Quality Management System (X_1)	0.914	0.930	0.627

Source: Smart PLS 3.3.3

Based on table 3 above, there is a value from the Cronbach alpha column, each variable has a value greater than 0.7, which means that this study is reliable in terms of Cronbach alpha and seen from the composite reliability column with the value of each variable there is a value greater than 0.6 so that the reliability of each variable is stated and in the AVE column it looks greater than 0.7 so that this study is considered valid by the SVE column, it can be interpreted that all variables have valid values in all sectors.

Inner Model Analysis

Structural model evaluation (inner model) is conducted to ensure the structural model built is robust and accurate. The stages of analysis conducted in the structural model evaluation are seen from several indicators, namely:

Coefficient of Determination (R2)

Based on the data processing that has been carried out using the SmartPLS 3.0 program, the R Square value is obtained as follows:

Table4. R Square Result

	R Square
Organizational Characteristics (Z)	0.769
Performance (Y)	0.784

Source: Smart PLS 3.3.3

In table 4 above, there is an R square value for the Organizational Characteristics (Z) variable with a value of 0.769, the percentage is 76.9%, meaning that the influence of the ISO 9001:2015 Quality Management System (X_1), HR Characteristics (X_2) variable on Organizational Characteristics (Z) is 76.9% and the rest is on other variables. In the R square value of the Performance (Y) variable, the value is 0.784, the percentage is 78.4%, meaning that the influence of the ISO 9001:2015 Quality Management System (X_1), HR Characteristics (X_2), Organizational Characteristics (Z) on Performance (Y) is 78.4% and the rest is on other variables.

Hypothesis Testing

After assessing the inner model, the next step is to evaluate the relationship between latent constructs as hypothesized in this study. Hypothesis testing in this study was conducted by looking at the T-Statistics and P-Values. The hypothesis is accepted if the *T-Statistics value* is > 1.96 and P-Values < 0.05. The following are the results of *the Path Coefficients* of direct influence:

Table 5. Path Coefficients (Direct Effect)

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values	Results
Organizational Characteristics (Z) -> Performance (Y)	0.343	3,243	**0.001**	**Accepted**
Human Resource Characteristics (X_2) -> Organizational Characteristics (Z)	0.366	3,042	**0.001**	**Accepted**
HR Characteristics (X_2) -> Performance (Y)	0.265	1,730	**0.042**	**Accepted**
ISO 9001:2015 Quality Management System (X_1) -> Organizational Characteristics (Z)	0.535	4,506	**0,000**	**Accepted**
ISO 9001:2015 Quality Management System (X_1) -> Performance (Y)	0.321	2,645	**0.004**	**Accepted**

The results of the hypothesis are directly shown in the table above, so the explanation of the table above is as follows:

1. Organizational Characteristics have a positive and significant effect on Performance with an original sample value of 0.343 and p values of 0.001. These results indicate that organizational characteristics have a positive and significant effect on organizational performance. With a p value below 0.05 and T Statistics > 1.96, the hypothesis is

accepted. This means that the better the characteristics of the organization such as structure, culture, and system, the better the performance.

2. Human resource characteristics influence organizational characteristics with an original sample value of 0.366 and p values of 0.001. Human resource characteristics, such as competence, experience, and work attitude, have been proven to have a positive and significant effect on organizational characteristics. This means that quality human resources encourage the creation of a good and adaptive organization.

3. HR characteristics have a positive and significant effect on performance with an original sample value of 0.265 and p values of 0.042. Although the T-Statistic value is close to the minimum limit (1.96), the p-value is still below 0.05 indicating that HR characteristics also have a direct effect on performance. This means that HR quality still has a direct contribution to improving performance, although not as large as the indirect effect through organizational characteristics.

4. The ISO 9001:2015 Quality Management System has a positive and significant effect on Organizational Characteristics with an original sample value of 0.535 and p values of 0.000. These results indicate that the implementation of the ISO 9001:2015 Quality Management System has a very significant and strong influence on the formation of organizational characteristics. The implementation of a good quality system helps organizations become more structured, documented, and consistent in their operations.

6. The ISO 9001:2015 Quality Management System has a positive and significant effect on Performance with an original sample value of 0.321 and p values of 0.004. ISO 9001:2015 has also been shown to have a direct and significant impact on organizational performance. This standard helps organizations maintain the quality of processes and outputs, which ultimately improves overall performance.

Table 6. Path Coefficients (Indirect Effect)

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values	Results
Human Resource Characteristics (X₂) -> Organizational Characteristics (Z) -> Performance (Y)	0.126	2,166	**0.015**	**Accepted**
ISO 9001:2015 Quality Management System (X₁) -> Organizational Characteristics (Z) -> Performance (Y)	0.184	2,598	**0.005**	**Accepted**

7. HR characteristics have a positive and significant effect on Performance through Organizational Characteristics with an original sample value of 0.126 and a p value of 0.015. These results indicate that HR characteristics indirectly affect performance through organizational characteristics. The T-Statistic Value > 1.96 and P Value < 0.05 indicate that this mediation path is significant. This means that HR characteristics such as competence, expertise, and work attitudes will be more effective in improving performance if they first form strong organizational characteristics (e.g. work structure, organizational culture, and good coordination and communication systems). Thus, organizational characteristics act as a significant mediator in strengthening the influence of HR on performance.

8. ISO 9001:2015 Quality Management System has a positive and significant effect on Performance through Organizational Characteristics with an original sample value of 0.184 and p values of 0.005. This path shows that the ISO 9001:2015 Quality Management System also has an indirect effect on performance through organizational characteristics. The fairly large coefficient value and very significant P Value

strengthen the conclusion that the implementation of a quality system will be more effective in improving organizational performance if it is able to form professional, standardized, and systematic organizational characteristics first. In other words, organizational characteristics function as an important bridge connecting the quality of the quality management system with organizational performance results.

Conclusion
1. Organizational Characteristics have a positive and significant effect on Performance with an original sample value of 0.343 and p values of 0.001.
2. Human resource characteristics influence organizational characteristics with an original sample value of 0.366 and p values of 0.001.
3. HR characteristics have a positive and significant effect on performance with an original sample value of 0.265 and p values of 0.042.
4. The ISO 9001:2015 Quality Management System has a positive and significant effect on Organizational Characteristics with an original sample value of 0.535 and p values of 0.000.
5. The ISO 9001:2015 Quality Management System has a positive and significant effect on Performance with an original sample value of 0.321 and p values of 0.004.
6. HR characteristics have a positive and significant effect on Performance through Organizational Characteristics with an original sample value of 0.126 and a p value of 0.015.
7. ISO 9001:2015 Quality Management System has a positive and significant effect on Performance through Organizational Characteristics with an original sample value of 0.184 and p values of 0.005.

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