
PUBLIC SERVICE QUALITY ANALYSIS OF CONSUMER SATISFACTION USING PDAM TIRTANADI CEMARA MEDAN BRANCH

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ABSTRACT

This study aims to analyze and determine the relationship problems of a variable product quality and service quality to customer satisfaction at PDAM Tirtanadi Cemara Medan branch. My research method is associative and quantitative. Where the population in my research is as many as 62 samples of respondents. Data collection techniques in this study were a list of questions, interviews and documentation studies. While the data analysis techniques used are classical assumption test, multiple linear regression, and hypothesis testing. The results showed that in the results of the study there was a significant influence between product quality on customer satisfaction, there was a significant influence between service quality on customer satisfaction, there is a joint influence between product quality and service quality on customer satisfaction. From the results of the analysis discussed, it is known that partially there is a significant effect of the independent variable (X1) on the variable (Y), there is a significant effect of the independent variable (X2) on the variable (Y) and there is a significant effect of the quality variable. product and service quality to customer satisfaction.

Keywords: Product Quality, Service Quality, customer satisfaction.

PRELIMINARY

Customer satisfaction can be felt after customers compare their experience in purchasing goods/services from sellers or providers of goods/services with the expectations of the buyers themselves. These expectations are formed through their first experience in buying an item/service, comments from friends and acquaintances, as well as promises and information from marketers and competitors. Marketers who want to excel in the competition must pay attention to customer expectations and customer satisfaction.

So to deal with such situations and circumstances, entrepreneurs must be able and fast and responsive in making decisions so that the business they establish can develop properly. Business actors are required to be able to maintain the market and win the competition. In



winning the competition, companies must be able to understand the needs and desires of their customers. By understanding the needs and desires of customers, it will provide important input for companies to design marketing strategies in order to create satisfaction for their customers and survive in competing in the market. According to Tjiptono (2012, p.146) "customer satisfaction is a person's feeling of pleasure or disappointment that arises after comparing the perception of the performance (result) of a product with his expectations".

At this time the customer is a very important role in the company, this is because customer satisfaction can provide benefits for the company. Customer satisfaction results from customer interactions with the company, therefore a better understanding of customers will lead to better levels of satisfaction and loyalty. Very satisfied customers believe that the company really understands and pays attention to the needs and expectations of each of its customers. To determine the level of satisfaction there are several factors that must be considered by the company, namely, factors related to product and service quality and factors related to prices and costs.

The service sector affects the condition of the community which is increasingly critical in obtaining the information they need. For this reason, service is the most important factor in a business world in the service sector because it is in the public interest.

According to Tjiptono (2012, p.51) suggests about "Product quality is a dynamic condition associated with products, services, people, processes, and the environment that meet or exceed expectations".

Many consumers complain that the water quality is not suitable for consumption. Where the quality of the water consumed is not clean and smells so that it makes consumers dissatisfied due to the water quality that is getting worse day by day.

This is one of the factors that the company does not pay attention to, namely the quality of service and product quality, so that customers will think again about using the product and will feel dissatisfied after buying or using the goods or services.

Meanwhile, according to Lupioyadi (2011, p. 158) states that "customers will be satisfied if the results of their evaluation show that the products they use are of high quality.

According to Lewis & Booms in Tjiptono, (2012, p. 157) said that "Service quality can be interpreted as a measure of how well the level of service provided is able to match customer expectations."

One of the public facilities that received attention is drinking water service. This is based on the fact that everyone needs water as a source of life. The drinking water service for Medan City in particular, and for several areas in North Sumatra Province is carried out by PDAM Tirtanadi, Cemara Medan Branch.

Tirtanadi Regional Drinking Water Company is a company engaged in the service of providing clean water. One of the goals in the form of PDAM is to meet the community's need for clean water, including the provision, development of advice and infrastructure services and

the distribution of clean water, while the other goal is to participate in developing the economy to support regional development by expanding employment opportunities, and

The company realizes the importance of quality service to provide satisfaction to its customers, but in practice the facilities and supplies to support quality services are still inadequate. Customer satisfaction is an important element in the effort to increase customer satisfaction in a customer's desires, expectations and needs are met. A service is considered satisfactory if the service can meet the needs and expectations of customers. Providing good service the company is able to maintain/improve the quality and service provided, therefore if the service is not in accordance with what the customer expects, the customer will be disappointed, so we can know that the customer wants quality service from the company in order to get satisfaction .

THEORETICAL BASIS

Customer satisfaction

Customer satisfaction can be felt after customers compare their experience in purchasing goods/services from sellers or providers of goods/services with the expectations of the buyers themselves. These expectations are formed through their first experience in buying an item/service, comments from friends and acquaintances, as well as promises and information from marketers and competitors. Marketers who want to excel in the competition must pay attention to customer expectations and customer satisfaction. The definition of customer satisfaction below is:

According to Kotler and Keller (2013, p. 14), argues that the notion, "Customer satisfaction is reflecting a person's assessment of the perceived product performance (or results) in relation to expectations. If the performance of the product does not meet expectations, the customer is dissatisfied and disappointed; otherwise, if the product's performance matches expectations, the customer is satisfied. If the product's performance exceeds expectations, the customer is happy."

Then according to Tjiptono (2012, p.146) "customer satisfaction is a person's feeling of pleasure or disappointment that arises after comparing perceptions of the performance (results) of a product with his expectations".

According to Kotler (2013, p. 150) Customer satisfaction is "Feelings of pleasure or disappointment that arise and after comparing the performance (outcome) of the product with the expected performance (or result).

From the several definitions above, it can be concluded that customer satisfaction is a fulfillment of expectations. Customers can be said to be satisfied with the products and services provided by PDAM that have met and even exceeded their expectations.

Product quality

Product in marketing terms is a physical form of goods offered with a set of images and services that are used to satisfy needs. Products are purchased by consumers because they can meet certain needs or provide certain benefits. Product characteristics include not only the physical aspects of the product (tangible features), but also non-physical aspects (intangible features) such as the image of the service that cannot be seen. Product quality is the ability of a product to carry out its functions, including durability, reliability, accuracy, ease of operation and repair, and its valuable attributes.

According to Mowen (2012, p.61) ", product quality is an evaluation process to customers for improving the performance of a product.

According to Kotler and Gery (2010, p. 115), "Product quality is one of the most reliable factors by a marketer in marketing a product".

According to Kotler and Armstrong (2010, p. 113) argues about "Product quality is to have a direct influence on customer satisfaction so that by increasing the ability of a product it will create a competitive advantage so that customers become more satisfied".

So from the description above it can be concluded that product quality is a dynamic condition that is interconnected although it can have different definitions, but the product essentially has a specification of an item or service that can lead to satisfaction that meets or exceeds expectations for consumers who use it.

Service quality

Service quality must start from customer needs and end with customer satisfaction and a positive perception of service quality. As the party who buys and consumes the product/service, the customer is the party who judges the level of service quality of a company. The challenge is that the customer's assessment of the performance of the service they receive is subjective, because it depends on the perception of each individual. Below are some definitions of service quality according to experts as follows;

According to Lewis & Booms in Tjiptono, (2012, p. 157) said that "Service quality can be interpreted as a measure of how well the level of service provided is able to match customer expectations".

Ratna Sari and Aksa (2011, p. 107) state "service quality is how far the difference between reality and customer expectations for the service received/obtained".

According to Kotler and Keller (2013, p. 214) "any act or performance that one party can offer another that is essentially intangible and does not result in the ownership of anything. It's production may or not be tied to physical product".

From the above definition, it can be concluded that service quality is a comparison between the expected service and the actual service received. If the service received or perceived by the customer matches or even exceeds customer expectations, then the service is considered quality and satisfactory. However, if the customer finds that the service received is not



appropriate or below customer expectations, then the service can be considered unqualified and disappointing.

RESEARCH METHODS

To retrieve the data that has been collected in accordance with the needs and objectives of the study, the method used is an associative and quantitative approach. The associative approach is an approach that uses two or more variables to determine the relationship or influence of one with another (Sugiyono, 2012, p. 62).

According to Sugiyono in Juliandi (2013, p. 14) quantitative research is research that is not carried out in depth, generally investigating the surface only, thus requiring a relatively shorter time. The reason for choosing this research is because it uses statistical analysis and is mathematical in nature.

RESEARCH RESULTS AND DISCUSSION

Research result

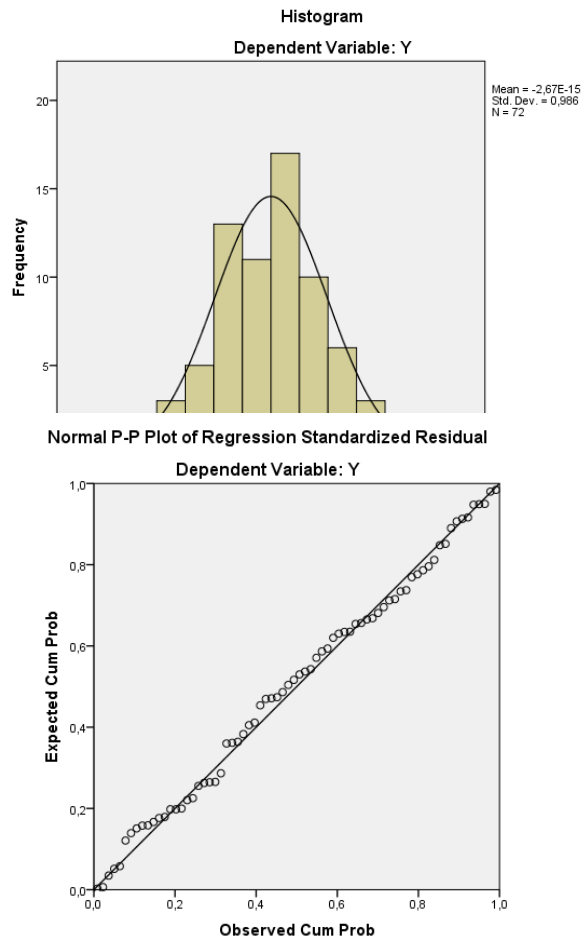
Normality test

The normality test of the data was carried out to see whether in the regression model, the dependent and independent variables had a normal distribution or not. If the data spreads around the diagonal line and follows the direction of the diagonal line, then the regression model meets the assumption of normality. Below are the results of the normality test to test all research variable data with a minimum ordinal scale using the provisions of the Kolmogorof-Smirnov test using the SPSS program.

**Table 1. Normality Test Results
 One-Sample Kolmogorov-Smirnov Test**

		Unstandardized Residual
N		62
Normal Parameters, b	mean	,0000000
	Std. Deviation	3,41378428
	Most Extreme Differences	
	Absolute	0.052
	Positive	.043
	negative	-,052
Test Statistics		0.052
asymp. Sig. (2-tailed)		,200c,d

The results in the table show that the Kolmogorof-Smirnov value is 0.05 and significant at 0.200, which means a significant value greater than 0.05, the resident data is normally distributed. For more details, see the Histogram graph and the normal PP Plot of Regression Standardized Residual below.



results

Figure 3. Standardized P-Plot Normal Test Results

Multicollinearity Test

Testing the multicollinearity of the variables in this study started counting independent tests between independent variables and the results of statistical collinearity analysis. A regression model is said to be free from multicollinearity problems if the VIF value is < 10 and has a tolerance value above 0.1. In this regression model, the results of multicollinearity can be seen in the following table:

Table2. Multicollinearity Test Results

Model	Collinearity Statistics	
	Tolerance	VIF
1. (Constant)		
Customer satisfaction	,955	1.047
Product quality	,977	1.023

Based on table 2. The multicollinearity test above, the VIF and Tolerance values indicate that all the variables used in this study have a VIF value of no more than 10 and a Tolerance that is close to 1, which means that the regression model does not occur multicollinearity.

Heteroscedasticity Test

Heteroscedasticity test is used to test whether in the regression model, there is an inequality of variance from another observation. If the residual variance from another observation is constant, it is called homoscedasticity, and if the variance is different it is called heteroscedasticity. A good model is that there is no heteroscedasticity.

The basis for making the decision is that if certain patterns, such as the existing points, form a certain regular pattern, then heteroscedasticity occurs. If there is no clear pattern, and the points (points) spread below 0 on the Y axis, there is no heteroscedasticity.

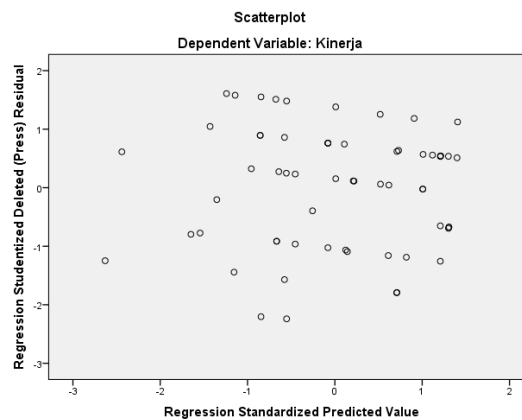


Figure 4. Heteroscedasticity Test



The picture above shows the points spread randomly, do not form a clear/regular pattern, and are spread both above and below the number 0 on the Y axis. Thus, "heteroscedasticity does not occur" in the regression model.

Multiple linear regression

The results of the interpretation of the regression analysis obtained with the help of SPSS use the form of an equation, where the equation or model contains the constants and regression coefficients obtained from the results of data processing that has been done previously. The regression equation that has been formulated later with the help of the SPSS program is carried out data processing so that the final equation is obtained as follows:

Table 3. Multiple Linear Regression Test Results

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
Model	B	Std. Error	Beta			
1	(Constant)	20.526	6,351		3.232	,006
	Customer satisfaction	,089	,134	,087	,660	,000
	Product quality	,144	,135	,140	1.070	,000

a. Dependent Variable: Y

Based on table 3 above, the multiple linear regression equation that can be formulated is as follows:

$$Y = 20.526 + 0.089X_1 + 0.144X_2$$

Information:

- a. The value of a = 20.526 indicates that if the independent variable is Customer satisfaction (X1), Product Quality (X2) is constant or does not change (equal to zero), then Performance (Y) is 20.526.
- b. The value of the regression coefficient X1 = 0.089 indicates that if Customer Satisfaction increases by 62%, it will result in an increase in Service Quality at the Deli Serdang National Narcotics Agency 8.90%. The contribution given by customer satisfaction to service quality is 8.90% seen from the standardized coefficients in table 3 above
- c. The regression coefficient value X2 = 0.144 indicates that the product quality has increased by 62%, it will result in an increase in the quality of service at the Deli Serdang National Narcotics Agency by 14.4%. The contribution given by product quality to service quality is 14.4% seen from the standardized coefficients in table 3 above.

Hypothesis testing t test

The t-test was conducted to determine the effect of each independent variable consisting of Customer satisfaction and Product Quality on the dependent variable, namely performance. The criteria for acceptance or rejection of the hypothesis are as follows:

**Table 4 T . Test Results
Coefficients^a**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	20.526	6,351		3.232	,006
Customer satisfaction	,089	,134	,087	,660	,000
Product quality	,144	,135	,140	1.070	,000

a. Dependent Variable: Y

Source: Research Data Processed by SPSS (2020)

Based on Table 4 above, it is known that the tcount for the Customer Satisfaction variable (X1) is 0.660 which is greater than t table, with a significance value of = 0.000 < 0.05. Thus, it means that the significance value of 0.000 is smaller than 0.05 which indicates that customer satisfaction has a significant effect on service quality. Furthermore, the tcount value for the Product Quality variable (X2) is 1.070 smaller than the t table, with a significance value of = 0.000 > 0.05. Thus, it means that the significance value of 0.000 is greater than 0.05 which indicates that product quality has a positive but not significant effect on service quality.

F Uji test

The results of simultaneously testing the hypothesis can be seen in table 5 as follows:

**Table 5. t test
ANOVA^a**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5,336	3	1,779	,605	,614b
	Residual	170.535	58	2,940		
	Total	175.871	61			

a. Dependent Variable: Performance

b. Predictors: (Constant), X2, X1

Source: Research Data Processed by SPSS (2020)

From the data above, the Fcount value is 0.605 and the Ftable value is 3.99 with a significant level of 0.000 (less than 0.05). Based on the value of the curve, it can be seen that $F_{count} > F_{table}$ ($0.605 > 3.99$), this means that H_0 is rejected and H_a is accepted. So it can be concluded that Customer Satisfaction (X1) and Product Quality (X2) together have a positive effect on the Service Quality of the Deli Serdang National Narcotics Agency.

Coefficient of Determination

Testing the coefficient of determination is carried out to determine the magnitude of the effect of Customer satisfaction and Product Quality on Service Quality. The value of the coefficient of determination is determined by the value of R square as can be seen in the table below:

Table 6. Coefficient of Determination Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,704a	,300	-,020	1.71472

a. Predictors: (Constant), Product Quality, Customer Satisfaction

b. Dependent Variable: Performance

Based on table 6, the results of the regression table for the coefficient of determination of the summary model in the table above, it can be seen that the coefficient of determination (R square) obtained in this study is 0.300, this shows the meaning that or is equal to 30.0%, meaning that the percentage of the influence of the variable Customer Satisfaction and Product quality is quite capable of explaining the quality of service at the National Narcotics Agency of Deli Serdang by 30.0%, and the remaining 70.0% is explained by other variables that are not included in this research model.

Discussion

The Effect of Customer Satisfaction on Service Quality

Based on the results of the above research on the effect of Customer Satisfaction on Service Quality H_1 is rejected in other words that H_1 is rejected in other words that Customer Satisfaction has a positive but not significant effect on Service Quality. The Sig value is $0.00 > 0.05$ and the $t_{count} = 0.660 < t_{table} 2,000$. This research can be concluded that customer satisfaction has a positive but not significant effect on service quality at the Deli Serdang National Narcotics Agency Office. This shows that a high level of customer satisfaction will greatly affect the level of service quality.

Effect of Product Quality on Service Quality

Based on the results of the above research on Product Quality on Service Quality, it shows that H1 is accepted in other words Product Quality has a positive and significant influence on Service Quality. Obtained Sig value of 0.000 <0.05 and tcount 1.070 > ttable 2,000. This shows that with a high level of Product Quality, it will greatly affect the level of Service Quality. In a study conducted by Bawelle & Sepang (2016) entitled The Effect of Product Quality, Work Passion and Work Discipline on Employee Performance, it was stated that Product Quality had a positive and significant effect on Service Quality.

The Influence of Customer Satisfaction and Product Quality on Service Quality

Based on the F test table data, it is known that customer satisfaction and product quality have a positive effect on service quality at the Deli Serdang National Narcotics Agency.

It can be concluded that customer satisfaction and product quality have a positive effect on service quality, thus customer satisfaction and product quality need to be maintained and improved so that service quality is getting better too. Customer Satisfaction and Product Quality are closely related to one another. If Customer Satisfaction is not implemented and Product Quality is declining, then Service Quality will also decrease.

Results

Based on the results of the analysis discussed in the previous chapter, it can be concluded that Customer Satisfaction has a positive and significant effect on Service Quality. Furthermore, the results showed that product quality had a positive but not significant effect on service quality. So it can be concluded that customer satisfaction and product quality simultaneously have a positive effect on service quality.

Which means that Good customer satisfaction and high product quality are needed to improve service quality at the Deli Serdang National Narcotics Agency, meaning that customer satisfaction and product quality determine the level of service quality in an agency and cannot be separated from each other.

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