Service Effectiveness and Customer Satisfaction in Municipal Water Services: Evidence from Perumda Tirta Giri Nata Cirebon

Heriyono
Department of Economics Science, Universitas 17 Agustus 1945 Cirebon, Cirebon, Indonesia

Abstract: This study aims to analyze the effect of service effectiveness on customer satisfaction in Perumda Tirta Giri Nata Cirebon. The research used quantitative explanatory approach, the number of samples as many as 55 customers selected with simple random sampling. Five-point Likert questionnaire was used for data collection, measuring service effectiveness by five dimensions: tangibles, reliability, responsiveness, assurance and empathy. Customer satisfaction was measured by loyalty, use of offered services, recommendation, willingness to pay more and feedback. Descriptive statistics, Pearson correlation, and simple linear regression were used for data analysis. The result showed that service effectiveness was 76.28 percent and Customer Satisfaction was 74.18 percent. The results showed that service effectiveness had a positive and significant correlation with customer satisfaction with a correlation coefficient of 0.548 and significance of 0.000. The regression analysis produced a coefficient of 0.269, a t-value of 4.773 and a significance value of 0.000, indicating a significant positive impact. The coefficient of determination was 0.301, meaning that the service effectiveness accounts for 30.1% of the variation in customer satisfaction. The results suggest that in an effort to increase satisfaction, service reliability, responsiveness, employee skills and customer orientation in municipal water services should be improved.

Keywords: Service Effectiveness, Customer Satisfaction, Public Service, Water Utility.

Introduction

Public service organizations are an integral part of the reliable and efficient delivery of essential services to the public. Among these services, municipal water utilities are in a special category, because water is a necessity and the quality of its supply directly influences the daily lives of consumers (Trischler & Westman Trischler, 2022; Zhao et al., 2022). Therefore, the effectiveness of public services is not only related to the ability of an organization to complete

Correspondents Author:
Heriyono, Department of Economics Science, Universitas 17 Agustus 1945 Cirebon, Cirebon, Indonesia
Email: heriyonobcc@gmail.com

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administrative and operational processes but also to its ability to respond to customer needs, provide reliable services, and maintain positive customer experiences. In such an environment, the effectiveness of services becomes an important managerial issue for public utility organizations. A key indicator to measure the success of service delivery is customer satisfaction (Gesk & Leyer, 2022). Customers generally evaluate services on how they are treated by the facilities, the reliability of employees, the sensitivity to their needs, the assurance provided during service interactions, and the attention paid to individual complaints. These dimensions show that customer satisfaction is not dependent on one aspect of service delivery. Instead, it is a measure of how well the delivered service matches customer expectations and perceived needs (Kaligis et al., 2024; Koay et al., 2022). For public utilities, customer satisfaction is especially important, because customers usually have ongoing relationships with their service providers. It has resulted in making service effectiveness an important consideration in public utility management. To be able to render effective services, organizations need to provide appropriate facilities, reliable procedures, responsive employees, adequate knowledge and attention to customer problems. The correct implementation of these elements may result in greater positive perceptions of the organization and its services by the customers. In contrast, deficiencies in reliability, employee competence, service responsiveness or complaint handling can reduce customer satisfaction even when other service aspects are evaluated positively (Talha Talukder et al., 2022; Taufiq-Hail et al., 2023). The relationship between service quality and customer satisfaction has been investigated in many service contexts. Past research generally indicated that improvements in service delivery are associated with increased levels of customer satisfaction. Studies of public and commercial service organizations have found positive relationships between service quality and customer satisfaction, including those involving water utilities and other public service institutions (e.g., These results indicate that service effectiveness continues to be an important determinant in explaining customer responses to organizational services. However, the strength and the real meaning of this relationship may vary among organizational settings and customer characteristics. Municipal water services provide an important context for studying this relationship, as customers depend on the continuity and reliability of water services, while having limited alternatives to obtain the same public utility service (Shbool et al., 2022; Wu et al., 2024). Service reliability, employee responsiveness, complaint handling, payment facilities and problems related to service interruptions may thus affect customer perceptions. Customers can also judge a water utility not only by the physical facilities it offers but by how well its employees respond to their needs. This makes the evaluation of service effectiveness relevant for both customer and management (Al-Bashayreh et al., 2022; Ferrer-Estévez & Chalmeta, 2023). This research empiric context is Perumda Air Minum Tirta Giri Nata Kota Cirebon. The organization provides water services to its customers in Cirebon and

is expected to maintain the effectiveness of service while responding to various customer needs. The five dimensions of service effectiveness are assessed at different levels, based on the customer responses considered in this study. The tangible dimension is rated the highest, while reliability is a comparatively weaker dimension. This difference indicates that the physical service attributes, in terms of availability and appearance, do not necessarily translate into the same level of perceived reliability in the delivery of the service. The results of customer satisfaction also show the variation in its dimensions. The highest evaluation is for customer loyalty, and the lowest evaluation is for willingness to pay more. This pattern is an important managerial signal as customers may continue to use and recommend a service and still show limited willingness to pay for additional service received. Thus, customer satisfaction is not to be viewed only in terms of general positive responses but also to be explored in terms of specific behavioral dimensions (Fahland, 2022; Goldstein-Piekarski et al., 2022). Although service quality and customer satisfaction have been widely discussed, empirical evidence from municipal water utilities at the local organizational level is significant. This study of Perumda Air Minum Tirta Giri Nata Kota Cirebon can be contextual specific evidence whether the perceived service effectiveness is statistically related to customer satisfaction. So, the present study not only describes customer perception but studies the relationship between service effectiveness and customer satisfaction by using quantitative analysis. This approach allows the study to determine the direction, magnitude and explanatory contribution of service effectiveness to customer satisfaction. Therefore, the objective of this study is to analyze the effect of service effectiveness on customer satisfaction of customers of Perumda Air Minum Tirta Giri Nata Kota Cirebon. The study examines the relationship between service effectiveness (independent variable) and customer satisfaction (dependent variable) using quantitative survey data from 55 respondents. The proposed relationship is assessed by simple linear regression and correlation analysis. The empirical results reveal that there is a positive and significant relationship between service effectiveness and customer satisfaction. Service effectiveness accounts for 30.1% of the variation of customer satisfaction. These findings offer empirical support that improvements in service effectiveness are relevant to customer satisfaction in the municipal water-service context (Li et al., 2022; Surget & Belzung, 2022). This study extends the service management literature by using empirical evidence from a municipal water utility in an Indonesian local-government context. From a managerial perspective, the results of this study can help Perumda Air Minum Tirta Giri Nata Kota Cirebon to find service dimensions that need more attention, especially related to reliability and customer-oriented service delivery. The study also offers a foundation for improving service policies and employee capabilities for customer satisfaction. This study offers a practical view on how public utility organizations can use feedback from consumers to sustain

continuous service improvement by linking service effectiveness with measurable customer responses.

Research Method

Research Approach and Design

This research used quantitative approach with explanatory research design. The quantitative approach was used because the research variables were measured in the form of numbers obtained from the answers of the customers, then analyzed by statistical procedures. Explanatory design was used to empirically investigate the relationship and effect of service effectiveness on customer satisfaction at Perumda Tirta Giri Nata, Cirebon City. There was one independent and one dependent variable in the study. The independent variable was service effectiveness ((X)), which was the perception of customers about the effectiveness of services provided by Perumda Tirta Giri Nata. The dependent variable ((Y)) was customer satisfaction, which was defined as the extent to which customers' expectations were met by the services provided. The operationalization of the two variables was based on the measurement framework used in the original study (Bandaru et al., 2015; Taherdoost, 2022).

Research Setting and Data Sources

The study was conducted at Perumda Tirta Giri Nata, a municipal water utility that serves customers in Cirebon City, Indonesia. The study focused on customers who had direct experience with the utility's services. The primary data were collected from the respondents directly through a structured questionnaire. Secondary data were collected from relevant institutional documents, records, journal articles, references and other sources related to the topic of research. The study used primary data at customer level to capture direct customer perceptions of service effectiveness and satisfaction. This approach permitted the study to link perception of service performance with customer satisfaction in the setting of a municipal water utility (Orgoványi & Karches, 2024; Robles-Velasco et al., 2022).

Population and Sampling

In this study there are 2 variables used, namely the independent variable is service effectiveness ((X)) and the dependent variable is customer satisfaction ((Y)). Service effectiveness is the perception of customers of services provided by Perumda Tirta Giri Nata. Service effectiveness was operationalized by five dimensions namely; tangibles, reliability, responsiveness, assurance and empathy. These dimensions were measured by ten questionnaire items on physical facilities and equipment, appearance of employees, reliability of service, accuracy and speed in handling customer needs, responsiveness of employees,

knowledge and skill of employees, and attention to customer complaints. Customer satisfaction was measured by five indicators: loyalty, willingness to use the offered services, willingness to recommend the service, willingness to pay more, and willingness to offer feedback or suggestions, and the extent to which customer expectations are met. All indicators were measured on a five-point likert scale. Each response was converted into a numerical score for quantitative analysis. The construct score for each respondent was calculated by summing the scores of all relevant indicators and then converting the sum into a percentage of the maximum possible score. The measurement procedure can be summarized as follows:

$$P_v = \frac{\sum_{i=1}^{N} \sum_{j=1}^{k_v} S_{vij}}{N \times k_v \times S_{\max}} \times 100\% \quad (1)$$

The percentage score for each research variable was obtained by summing the Likert scores given by all the respondents on all the indicators measuring the respective variable. The total score obtained from the respondents is divided by the maximum score obtained from the multiplication of the number of respondents, the number of indicators and the maximum score on the Likert scale multiplied by 100 percent. For this calculation we fixed the number of indicators to 10 for service effectiveness and 5 for customer satisfaction. This procedure ensures that the variable scores reflect the proportion of observed score over the maximum obtainable score. The percentage scores obtained were then interpreted descriptively and utilized as the basis for further inferential statistical analysis. The population and sample characteristics, the measurement instruments, and the scoring procedures were in accordance with the original research design consisting of 55 respondents and primary data obtained through questionnaires.

Data Collection, Instrument Testing, and Data Analysis

The data were collected by using a structured questionnaire which was distributed to 55 customers who were selected as research respondents. The questionnaire is designed to measure two major variables. They are service effectiveness as the independent variable (X) and customer satisfaction as the dependent variable (Y). Service effectiveness was measured using 10 questionnaire items representing five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Customer satisfaction was assessed by five indicators, namely customer loyalty, willingness to use the services provided, willingness to recommend the service to others, willingness to pay more for the service, and willingness to provide feedback or suggestions. All questionnaire items were rated on a five-point Likert scale, where 1 = strongly disagree and 5 = strongly agree. Secondary data were also collected from institutional records and relevant academic sources to provide context for the analysis

and interpretation of the findings. Before conducting the main statistical analysis, the quality of the research instrument was tested by conducting validity and reliability tests. To test validity, the Pearson Product-Moment correlation was used to examine the relationship between each questionnaire item and the total score of the corresponding variable. The item was considered valid when the correlation result was statistically significant in accordance with the established criterion. This procedure was used to ensure that each statement sufficiently represented the construct being measured. Then reliability testing was done through Cronbach's alpha to test the internal consistency of the items used in the questionnaire in every variable. The service effectiveness instrument comprised 10 items with a Cronbach's alpha coefficient of 0.917, and the customer satisfaction instrument had five items with a coefficient of 0.777. These results indicate that both instruments presented acceptable internal consistency and were adequate to subsequent analysis. Descriptive analysis was then carried out, after the instrument was validated and determined to be reliable, to put together the assessment of respondents to determine service effectiveness and customer satisfaction. For the descriptive analysis, the answers of each indicator and the corresponding research variables were considered. To render the results in percentages, the observed scores were compared with the maximum possible scores. This method has made it possible to present the level of the respondents' perception in a uniform manner on the dimensions and variables measured. Prior to hypothesis testing, prerequisite analysis was conducted to assess the appropriateness of the data for parametric statistical analysis. The normality of the regression residuals was tested by the One-Sample Kolmogorov-Smirnov test. The test yielded a Kolmogorov-Smirnov statistic of.755 and an Asymp. Sig. of.620. The significance value was greater than the 0.05 cut off, so the residuals were assumed to be normally distributed. A test for linearity was also conducted to determine whether the relationship between service effectiveness and customer satisfaction could be adequately captured by a linear relationship. These preliminary tests were used to support the correlation and regression analysis that followed. Pearson correlation analysis was performed to examine the relationship between service effectiveness and customer satisfaction. The analysis was used to determine the direction and strength of the relationship between the two variables. Because of the analysis, the Pearson correlation coefficient was 0.548, and the significance value was 0.000 for 55 observations. The positive coefficient indicates that customer satisfaction increases as perceived service effectiveness increases, and the significance result indicates that the relationship was statistically significant. The effect of service effectiveness on customer satisfaction was examined using simple linear regression analysis. The independent variable was service effectiveness, and the dependent variable was customer satisfaction. The estimated regression model indicated the constant of 8.122 and regression coefficient of 0.269. The regression equation is therefore: 8.122 0.269 The positive coefficient

indicates that increases in service effectiveness were accompanied by increases in customer satisfaction. The significance of the regression coefficient was tested using t-test. The analysis results indicated that the t-value was 4.773 with a significance value of 0.000. The null hypothesis was rejected as the p-value was less than 0.05, indicating that service effectiveness had a statistically significant positive effect on customer satisfaction. The coefficient of determination tested the explanatory contribution of service effectiveness. The analysis resulted in a R^2 of 0.301 and an adjusted R^2 of 0.287. The standard error of the estimate was 2.425. The R^2 value showed that service effectiveness could explain 30.1% of the variation in customer satisfaction among the respondents. The remaining 69.9% can be attributed to other factors not included in the research model. All statistical decisions were made at the 5% level of significance. Descriptive analysis, instrument testing, prerequisite testing, correlation analysis, simple linear regression, significance testing, and coefficient of determination analysis were combined to be a systematic basis to evaluate the relationship and effect of service effectiveness on customer satisfaction at Perumda Tirta Giri Nata Cirebon.

Result and Discussion

Respondent Characteristics

Research was conducted on 55 customer Perumda Tirta Giri Nata Cirebon Respondents were profiled according to age and sex. The age distribution shows that 22 (40%) respondents were aged 51–60 years, which is the largest age group. Next were the respondents in the 61–70-year age group, with 19 respondents (35%). Also, 9 respondents (16%) were between 40-50 years old, and 5 respondents (9%) were between 71-80 years old.

Table 1 Respondent Characteristics by Age

Age Group	Frequency	Percentage
40–50 years	9	16%
51–60 years	22	40%
61–70 years	19	35%
71–80 years	5	9%
Total	55	100%

In terms of gender, 28 respondents (51%) were male, and 27 respondents (49%) were female. The relatively balanced distribution indicates that the assessment of service effectiveness and customer satisfaction was obtained from both male and female customers.

Table 2 Respondent Characteristics by Gender

Gender	Frequency	Percentage
Male	28	51%
Female	27	49%
Total	55	100%

Service Effectiveness

The effectiveness of the service was measured by a 10-item questionnaire that represents five dimensions namely tangibles, reliability, responsiveness, assurance, and empathy. The results indicate that the mean percentage score of service effectiveness was 76.28%. The five dimensions were ranked as follows in terms of percentage score: tangibles (82.67%), responsiveness (79.09%), assurance (75.64%), reliability (72.36%) and empathy (71.64%). The detailed results are given in Table 3.

Table 3 Service Effectiveness by Dimension

Dimension	Mean Score	Percentage
Tangibles	12.40	82.67%
Reliability	7.24	72.36%
Responsiveness	7.91	79.09%
Assurance	7.56	75.64%
Empathy	3.58	71.64%
Service Effectiveness	7.74	76.28%

The comparative performance of the five service-effectiveness dimensions is presented in Figure 1.

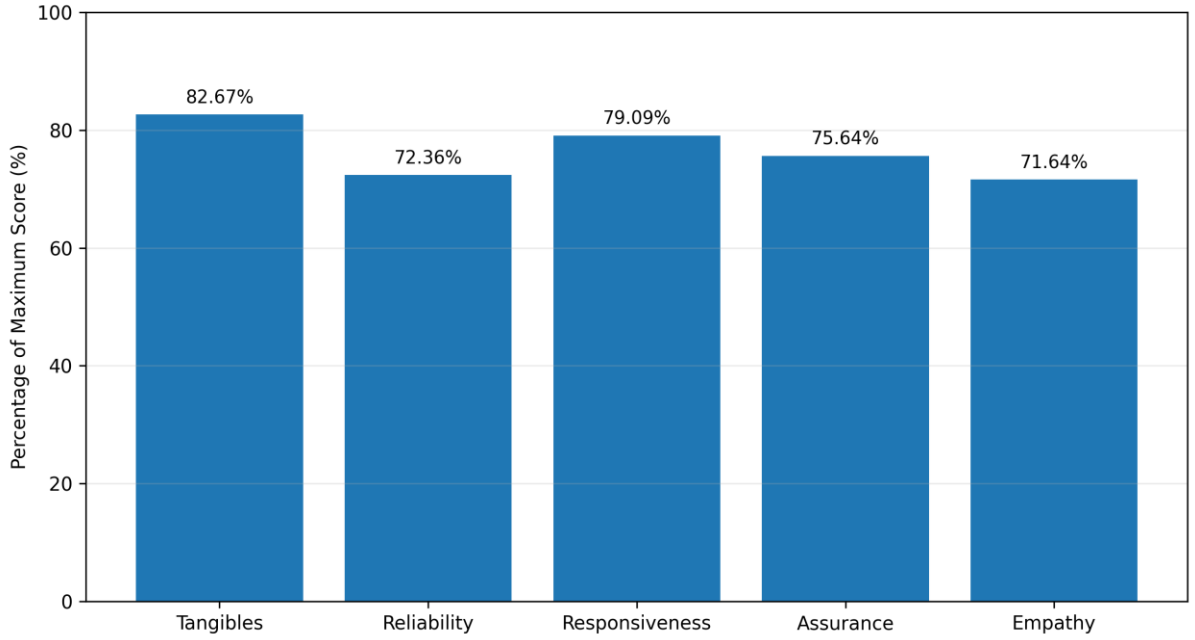

Figure 1 Service Effectiveness Across Five Dimensions

Among the factors, tangibles had the highest assessment of 82.67% as shown in Figure 1. This shows that the physical facilities, equipment and technology, and employee appearance provided by Perumda Tirta Giri Nata are perceived quite positively by the customers. Responsiveness received the second highest score of 79.09%, which shows that customers generally felt the employees were willing to help and respond to customer needs. Reliability (72.36%) and empathy (71.64%) had the lowest scores. These findings suggest that the physical aspects of service as well as consistency and customer orientation in service delivery need to be improved. Reliability is the ability to perform the promised service dependably and accurately and empathy is the caring, individualized attention the firm provides to its customers. Thus, better complaint management, service accuracy, employee competency, and personalized support can contribute to improved service effectiveness. The distribution of the responses also supports these results. Several of the tangible and responsiveness items produced high proportions of agreement and strong agreement whereas some of the items related to reliability, assurance and empathy generated relatively higher neutral responses. This pattern suggests that customers are more likely to observe the tangible and responsive aspects of service, but their judgments are more divergent in terms of service reliability and personal attention.

Customer Satisfaction

Customer satisfaction was measured using five indicators: loyalty, willingness to use services offered, willingness to recommend, willingness to pay more, and willingness to give feedback. The results indicate that the average customer-satisfaction score is 74.18% of the maximum

attainable score. Loyalty scored the highest (84.36%), followed by feedback provision (81.82%), willingness to use services offered (76.73%), willingness to recommend (74.18%) and willingness to pay more (53.82%), as shown in Table 4.

Table 4 Customer Satisfaction by Indicator

Indicator	Mean Score	Percentage
Loyalty	4.22	84.36%
Use Offered Services	3.84	76.73%
Recommend	3.71	74.18%
Pay More	2.69	53.82%
Provide Feedback	4.09	81.82%
Customer Satisfaction	3.71	74.18%

The comparison of the five customer-satisfaction indicators is presented in Figure 2.

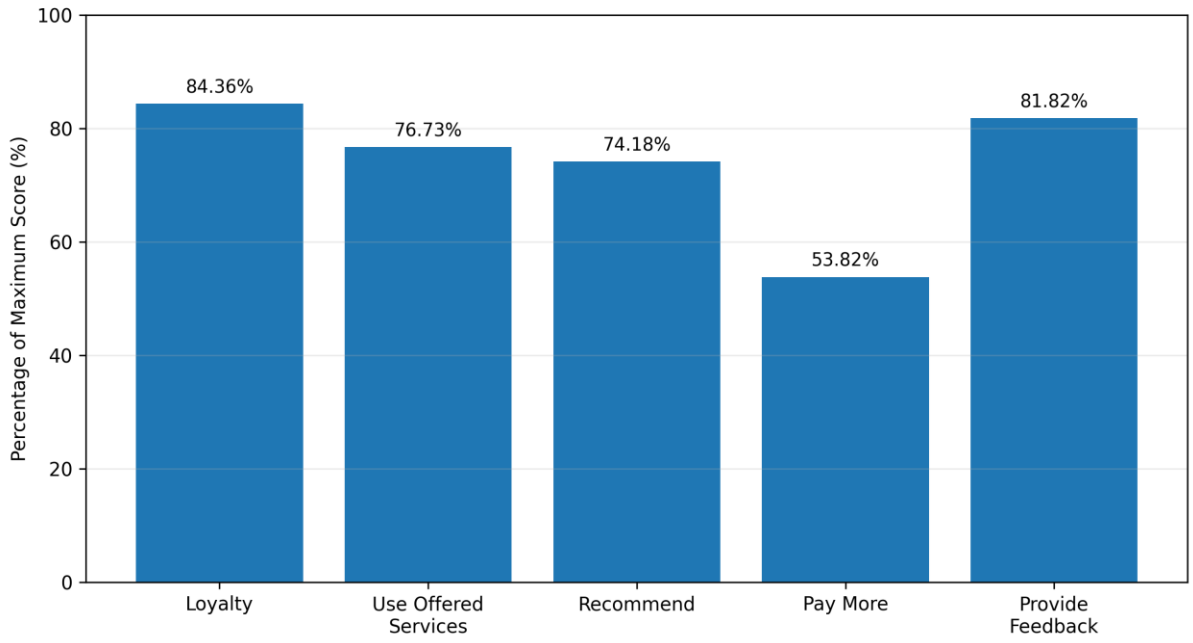

Figure 2 Customer Satisfaction Across Five Indicators

Figure 2 shows that loyalty was the strongest customer-satisfaction indicator, with a score of 84.36%. This finding indicates that customers tend to have willingness to continue using the services of Perumda Tirta Giri Nata. The second-highest indicator was providing feedback, at 81.82%, showing that customers are still willing to give suggestions and expectations about improvements to services. The willingness to pay more scored the lowest (53.82%). This result is important because the continued use of a municipal water service does not mean that customers are willing to pay more. Customers may be loyal as it is an essential service but may be sensitive to tariff increases. Therefore, improvement of quality of service should be

accompanied by transparent communication about tariffs, benefits of the services and complaint resolution. The results also suggest that customer satisfaction is not captured by continued service usage alone. The willingness to recommend the service and to provide feedback are reflections of customers' broader perceptions of their service experience. Therefore, customer satisfaction management must integrate service performance and the perceived value received by customers.

Normality Test

Before conducting simple linear regression, the normality of the regression residuals was examined using the One-Sample Kolmogorov–Smirnov test. The analysis involved 55 observations and produced a Kolmogorov–Smirnov statistic of 0.755 with an Asymp. Sig. value of 0.620. Because the significance value was greater than 0.05, the residuals were considered normally distributed.

Table 5 Normality Test

Test	N	K-S Statistic	Sig.	Decision
One-Sample Kolmogorov–Smirnov	55	0.755	0.620	Normally distributed

The Normal Probability Plot also indicates that the residual observations are distributed around the diagonal reference line, providing additional support for the normality assumption required for regression analysis.

Correlation Analysis

Pearson correlation analysis was conducted to examine the relationship between service effectiveness and customer satisfaction. The analysis produced a correlation coefficient of 0.548 with a significance value of 0.000 and 55 observations.

Table 6 Pearson Correlation between Service Effectiveness and Customer Satisfaction

Variables	Pearson r	Sig.	N	Interpretation
Service Effectiveness – Customer Satisfaction	0.548	0.000	55	Positive, moderate, significant

The coefficient shows a moderate positive relationship of 0.548 between service effectiveness and customer satisfaction. The positive direction means that the higher the perceived service effectiveness, the higher the tendency for customer satisfaction to be. The p-value is 0.000. This indicates a statistically significant relationship.

Simple Linear Regression

Simple linear regression was used to determine whether service effectiveness significantly affects customer satisfaction. The regression results are presented in Table 7.

Table 7 Simple Linear Regression Results

Predictor	B	Std. Error	Beta	t	Sig.
Constant	8.122	2.208	-	3.678	0.001
Service Effectiveness	0.269	0.056	0.548	4.773	0.000

The resulting regression equation is:

$$Y= 8.122 + 0.269 X$$

The coefficient of service effectiveness is 0.269 which implies that, for every one unit increase in the service-effectiveness score, customer satisfaction is expected to increase by 0.269 units, holding the model specification constant. The t-statistic for service effectiveness is 4.773, which is greater than the critical value used in the study, and the significance value is 0.000, less than the 0.05 threshold. The alternate hypothesis is therefore accepted, and the null hypothesis is rejected. The results of the study indicate that service effectiveness has a positive effect on customer satisfaction on Perumda Tirta Giri Nata Cirebon customers statistically significant.

Coefficient of Determination

The explanatory contribution of service effectiveness to customer satisfaction is shown in Table 8.

Table 8 Coefficient of Determination

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.548	0.301	0.287	2.425

The model produced a R Square value of 0.301 which means service effectiveness contributes 30.1% of the variance to customer satisfaction. The remaining 69.9% is explained by other factors not incorporated in the model. This result is important from a managerial perspective. While the contribution of service effectiveness to customer satisfaction is statistically significant, customer satisfaction is affected by many aspects of the customer experience. They may include water quality, continuity of supply, perceptions of tariffs, billing accuracy, infrastructure conditions, accessibility and performance in handling complaints within the scope of municipal water services.

Discussion

The empirical results establish a consistent relationship between service effectiveness and customer satisfaction. The Pearson correlation coefficient of 0.548 demonstrates a moderate positive association, while the regression coefficient of 0.269 and t-statistic of 4.773 confirm that service effectiveness has a statistically significant positive effect on customer satisfaction. The dimension-level findings provide a more detailed explanation of this relationship. Tangibles achieved the highest service-effectiveness score, indicating that customers respond positively to visible service facilities, equipment, technology, and employee appearance. Responsiveness also received a relatively high score, suggesting that employees' willingness to assist customers is an important positive aspect of service delivery. However, reliability and empathy received lower scores. This finding suggests that physical improvements alone may not be sufficient to increase customer satisfaction. Customers also require consistent service, accurate handling of their needs, effective complaint resolution, and attention to individual concerns. These aspects are particularly important for public utilities because customers often interact with the organization when they experience billing problems, service disruptions, tariff concerns, or other complaints. The customer-satisfaction results reinforce this interpretation. Loyalty achieved the highest score at 84.36%, indicating that customers generally remain willing to continue using the service. However, willingness to pay more was substantially lower at 53.82%. This difference suggests that customer loyalty should not automatically be interpreted as acceptance of higher tariffs. Customers may value the service because water supply is essential while still expecting service improvements and fair pricing. The coefficient of determination provides an additional managerial implication. Since service effectiveness explains 30.1% of customer-satisfaction variation, improving service effectiveness is important but cannot fully account for differences in customer satisfaction. Perumda Tirta Giri Nata therefore needs to address service effectiveness together with other elements of customer experience. Improvements in complaint handling, billing accuracy, communication, supply continuity, tariff transparency, and employee competence may complement improvements in the five service dimensions. Taken together, the findings indicate that effective municipal water-service management requires both operational performance and customer-oriented service delivery. Maintaining strong physical service attributes should therefore be accompanied by improvements in reliability, empathy, employee competence, and complaint resolution. This integrated approach is likely to provide a stronger basis for sustaining customer satisfaction than improvements in physical facilities alone.

Conclusions

The results show that the effectiveness of service at Perumda Tirta Giri Nata Cirebon is 76.28% and customer satisfaction is 74.18%. The tangibles dimension had the highest score (82.67%), responsiveness (79.09%), assurance (75.64%), reliability (72.36%) and empathy (71.64%) respectively. Loyalty received the highest score (84.36%) and willingness to pay more received the lowest score (53.82%) for customer satisfaction. The statistical results show the positive and significant relationship between service effectiveness and customer satisfaction. The Pearson correlation coefficient was 0.548, and the significance value was 0.000. The regression equation was Y=8.122+0.269X, with t-value=4.773 and significance=0.000. The coefficient of determination was R^2=0.301 which shows that 30.1% of the variation of customer satisfaction can be explained by service effectiveness while the other 69.9% is explained by other factors. There are some limitations of this study. The analysis was based on 55 respondents from one municipal water utility. A simple linear regression was used with only one independent variable. The findings, therefore, may not be representative of customers of other municipal water utilities, or reflect the influence of other determinants of satisfaction. Larger samples, multiple service providers and additional variables like water quality, service continuity, tariff perceptions, billing accuracy and complaint handling should be explored in future research.

References

Al-Bashayreh, M., Almajali, D., Al-Okaily, M., Masa'deh, R. e., & Samed Al-Adwan, A. (2022). Evaluating electronic customer relationship management system success: the mediating role of customer satisfaction. *Sustainability*, *14*(19), 12310.

Bandaru, S., Gaur, A., Deb, K., Khare, V., Chougule, R., & Bandyopadhyay, P. (2015). Development, analysis and applications of a quantitative methodology for assessing customer satisfaction using evolutionary optimization. *Applied Soft Computing*, *30*, 265-278.

Fahland, D. (2022). Process mining over multiple behavioral dimensions with event knowledge graphs. In *Process mining handbook* (pp. 274-319). Springer.

Ferrer-Estévez, M., & Chalmeta, R. (2023). Sustainable customer relationship management. *Marketing Intelligence & Planning*, *41*(2), 244-262.

Gesk, T. S., & Leyer, M. (2022). Artificial intelligence in public services: When and why citizens accept its usage. *Government Information Quarterly*, *39*(3), 101704.

Goldstein-Piekarski, A. N., Ball, T. M., Samara, Z., Staveland, B. R., Keller, A. S., Fleming, S. L.,...Ma, J. (2022). Mapping neural circuit biotypes to symptoms and behavioral dimensions of depression and anxiety. *Biological psychiatry*, *91*(6), 561-571.

Kaligis, J. N., Satmoko, N. D., Tahapary, G. H., Tawil, M. R., & Kusnadi, I. H. (2024). The effect of timely delivery on customer satisfaction with service quality as a moderating variable. *Innovative: Journal Of Social Science Research*, *4*(2), 4484-4493.

Koay, K. Y., Cheah, C. W., & Chang, Y. X. (2022). A model of online food delivery service quality, customer satisfaction and customer loyalty: a combination of PLS-SEM and NCA approaches. *British Food Journal*, *124*(12), 4516-4532.

Li, S., Li, X., Zhao, Q., Zhang, J., & Xue, H. (2022). An analysis of the dimensional constructs of green innovation in manufacturing enterprises: scale development and empirical testing. *Sustainability*, *14*(24), 16919.

Orgoványi, P., & Karches, T. (2024). GIS-based model parameter enhancement for urban water utility networks. *Urban Science*, *8*(2), 35.

Robles-Velasco, A., Rodríguez-Palero, M., Muñuzuri, J., & Onieva, L. (2022). Sustainable development and efficiency analysis of the major urban water utilities in Spain. *Water*, *14*(9), 1519.

Shbool, M. A., Al-Bazi, A., & Al-Hadeethi, R. (2022). The effect of customer satisfaction on parcel delivery operations using autonomous vehicles: An agent-based simulation study. *Heliyon*, *8*(5).

Surget, A., & Belzung, C. (2022). Adult hippocampal neurogenesis shapes adaptation and improves stress response: a mechanistic and integrative perspective. *Molecular psychiatry*, *27*(1), 403-421.

Taherdoost, H. (2022). What are different research approaches? Comprehensive review of qualitative, quantitative, and mixed method research, their applications, types, and limitations. *Journal of management science & engineering research*, *5*(1), 53-63.

Talha Talukder, A., Mahmud, M. A. I., Sultana, A., Pranto, T. H., Haque, A. B., & Rahman, R. M. (2022). A customer satisfaction centric food delivery system based on blockchain and smart contract. *Journal of Information and Telecommunication*, *6*(4), 501-524.

Taufiq-Hail, A.-M., Yusof, S. A. B. M., Al Shamsi, I. R. H., Bino, E., Saleem, M., Mahmood, M., & Kamran, H. (2023). Investigating the impact of customer satisfaction, trust, and quality of services on the acceptance of delivery services companies and related applications in Omani context: A Predictive model assessment using PLSpredict. *Cogent Business & Management*, *10*(2), 2224173.

Trischler, J., & Westman Trischler, J. (2022). Design for experience–a public service design approach in the age of digitalization. *Public Management Review*, *24*(8), 1251-1270.

Wu, M., Gao, J., Hayat, N., Long, S., Yang, Q., & Al Mamun, A. (2024). Modelling the significance of food delivery service quality on customer satisfaction and reuse intention. *PLOS ONE*, *19*(2), e0293914.

Zhao, Z., Pan, Y., Zhu, J., Wu, J., & Zhu, R. (2022). The impact of urbanization on the delivery of public service–related SDGs in China. *Sustainable Cities and Society*, *80*, 103776.