

Examining the Relationship Between Supervisory Control and Employee Service Quality at PERUMDA Tirtanadi, North Sumatra Province

Madina Sari, Abdi Sugiarto

Abstract

The increasing demand for high-quality public services requires organizations to strengthen internal control systems to ensure optimal employee performance. This study aims to examine the effect of Supervisory Control on Employee Service Quality at PERUMDA Tirtanadi. Effective supervision is considered an important managerial function to ensure that employees perform their duties according to established standards and procedures. This research employed a quantitative approach with an explanatory design. Data were collected from a saturated sample of 50 employees using a structured questionnaire with a Likert scale. The data were analyzed using Simple Linear Regression. The results showed that all research instruments were valid and reliable, with Cronbach's Alpha values of 0.907 for Supervisory Control and 0.867 for Employee Service Quality. The regression analysis revealed that the calculated t-value for Supervisory Control ($t = 8.923$) was greater than the critical t-table value (1.677) at the 0.05 significance level, indicating a positive and statistically significant effect. The regression equation $Y = 0.954 + 0.812X$ shows that Supervisory Control positively influences Employee Service Quality. Furthermore, the coefficient of determination ($R^2 = 0.642$) indicates that 64.2% of the variation in Employee Service Quality can be explained by Supervisory Control. These findings confirm that effective supervisory practices play a significant role in improving service quality and organizational performance at PERUMDA Tirtanadi.

Keywords: *Supervisory Control, Employee Service Quality, Simple Linear Regression*

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Introduction

PERUMDA Tirtanadi is a regional public enterprise responsible for providing clean water services to the people of North Sumatra Province. As a public service organization, PERUMDA Tirtanadi plays a strategic role in fulfilling one of society's most essential needs. The quality of service delivered by employees is a critical determinant of customer satisfaction and organizational reputation. In the context of increasingly demanding public service standards, employee service quality has become a key indicator of organizational effectiveness and accountability.

Employee service quality reflects the organization's ability to deliver services that are prompt, accurate, courteous, and responsible. According to Febriadi (2022), service quality is a strategic factor influencing public trust in service institutions [1]. Similarly, Zalzabila (2024) emphasizes that public organizations are required to continuously improve service standards to meet rising societal expectations [2]. However, in practice, several challenges remain, such as delayed responses to customer complaints, insufficient accuracy in administrative processes, and a lack of proactive behavior among employees. These conditions indicate the need for continuous internal improvement to enhance service performance.

One of the key factors presumed to influence employee service quality is supervisory control. Supervision is a managerial function aimed at ensuring that work implementation aligns with established standards, procedures, and organizational objectives. Bertilia et al. (2023) state that effective supervision enhances employee discipline and performance consistency through clear direction, evaluation, and continuous feedback [3]. Through structured supervision, employees gain a clearer understanding of performance expectations and their respective responsibilities.

Conversely, weak supervisory control can lead to various operational issues. Rasyidi et al. (2021) explain that insufficient monitoring and lack of assertiveness from supervisors may result in decreased work quality, as employees may lack clear guidance in performing their duties [4]. In a public service context, such shortcomings directly affect the quality of services delivered to the community. Therefore, the effectiveness of supervisory control becomes a crucial factor that warrants empirical examination.

In organizational practice, supervisory control extends beyond administrative monitoring. It also involves coaching, communication, evaluation, and performance reinforcement. Constructive supervision can motivate employees to work more responsibly, adhere to service standards, and maintain high levels of professionalism. When supervisors actively engage in guiding and evaluating employees, service performance is more likely to improve systematically and sustainably. In several operational units of PERUMDA Tirtanadi, observations indicate that monitoring intensity, periodic evaluation, and supervisor–subordinate communication are not yet fully optimized. These conditions may affect service standards and overall service quality delivered to customers. Considering that clean water services represent a fundamental public need, maintaining high-quality service performance is essential for organizational credibility and public trust.

From both theoretical and empirical perspectives, supervisory control appears to have a close relationship with employee service quality. Effective supervision is expected to improve compliance with procedures, reduce errors, enhance accountability, and ensure consistent service delivery. On the other hand, ineffective supervision may weaken performance standards and reduce customer satisfaction. This study aims to examine the influence of supervisory control on employee service quality at PERUMDA Tirtanadi, North Sumatra Province. This research is important given the increasing demand for professional, efficient, and accountable public services. The findings are expected to provide empirical insights for strengthening supervisory practices as a strategic effort to enhance employee service quality and overall organizational performance.

Literature Review

Supervisory Control

Supervisory control is one of the essential functions of management aimed at ensuring that all work activities are carried out in accordance with established standards, plans, and organizational targets. Through supervision, superiors monitor, evaluate, and regulate work implementation to ensure that it remains aligned with organizational objectives. In the context of public service organizations, supervisory control plays a crucial role in maintaining service quality and accountability to the community [5]. It can be understood as a systematic process conducted by leaders to assess the extent to which subordinates perform their duties in compliance with applicable procedures and regulations [6]. This process includes monitoring work behavior, examining performance outcomes, and providing direction when deviations occur. Effective supervision not only functions as a control mechanism but also serves as a developmental tool by offering feedback, guidance, and corrective actions that help employees improve their performance and develop their potential [7].

Furthermore, supervisory control contributes to the formation of a disciplined, transparent, and professional work culture. Consistent supervision enhances rule compliance, minimizes errors, and ensures that tasks are performed efficiently and responsibly [8]. Ultimately, effective supervisory practices serve as a strategic instrument for achieving organizational goals, as they enable employees to perform optimally and improve overall service quality [9]. According to Zai et al. (2022), the key indicators of supervisory control include [10]: (1) establishing standards, which refers to the supervisor's ability to determine benchmarks, procedures, and performance targets; (2) conducting measurement, involving the collection of data and information to assess work implementation; (3) comparing work results, which entails evaluating the conformity between actual performance and predetermined standards; and (4) taking corrective action, including providing direction, coaching, and necessary improvements to ensure that organizational objectives are effectively achieved.

Employee Service Quality

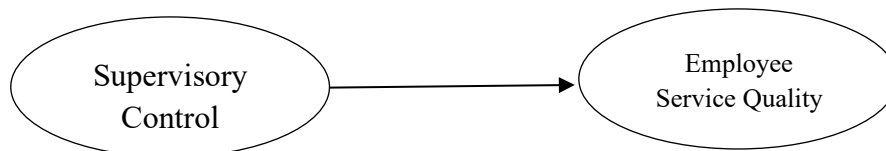
Employee service quality refers to the extent to which employees are able to deliver services in accordance with established standards, procedures, and customer expectations. In public sector organizations, service quality is assessed not only by the final outcomes received by the community but also by the service delivery process itself, including how employees interact with customers and provide solutions to their needs. High service quality reflects employees' professionalism in fulfilling their roles as public servants [11]. Quality service encompasses several important aspects such as timeliness, accuracy, courtesy, and politeness [12]. Public service users increasingly expect fast, simple, and efficient procedures; therefore, employees must possess both technical competence and a positive service attitude. Moreover, service quality is closely related to employees' ability to understand and respond to community needs [13]. Responsiveness, adaptability in handling complaints, clarity of explanation, empathy, and willingness to assist are essential elements shaping overall service quality [14][15].

In addition, employee service quality is influenced by individual competencies such as communication skills, knowledge of service products, and understanding of operational procedures. Competent employees can work independently, make appropriate decisions, and minimize errors that may hinder service processes. However, service quality is not solely determined by individual factors; it is also shaped by organizational conditions, including the work environment, organizational culture, and the effectiveness of supervisory control [16]. Organizations that foster a harmonious work environment, provide adequate facilities, and ensure strong supervisory support are more likely to enhance employee service quality [17]. Ultimately, service quality becomes a key indicator of organizational success, particularly in

public institutions, as it increases public satisfaction and trust [18]. According to Kotler and Keller (2016), service quality can be measured through five main indicators [19]: reliability (the ability to deliver services accurately and consistently as promised), responsiveness (the willingness to help customers promptly), assurance (employees' competence, courtesy, and trustworthiness), empathy (personalized attention and understanding of customer needs), and tangibles (the physical facilities, equipment, and visible evidence supporting service delivery).

Conceptual Framework and Hypothesis

This study conceptualizes Supervisory Control as the independent variable (X) and Employee Service Quality as the dependent variable (Y), as shown in the following figure.



The hypothesis:

Ha : Supervisory Control has a significant positive effect on Employee Service Quality at PERUMDA Tirtanadi, North Sumatra Province.

Ho : Supervisory Control does not have a significant positive effect on Employee Service Quality at PERUMDA Tirtanadi, North Sumatra Province.

Research Methodology

This study used a quantitative research approach to examine the relationship between Supervisory Control and Employee Service Quality at PERUMDA Tirtanadi. The research design is explanatory because it aims to test the proposed hypothesis and analyze the causal effect of the independent variable (Supervisory Control) on the dependent variable (Employee Service Quality).

The population of this study consists of 50 employees working at PERUMDA Tirtanadi. Since the total population is relatively small, this research applies a saturated sampling technique (census method), meaning that all 50 employees are selected as respondents. By involving the entire population, the data collected represent the actual condition of employees in the organization.

Data are collected using a structured questionnaire developed based on relevant theoretical indicators of Supervisory Control and Employee Service Quality. The responses are measured using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). In addition to primary data from questionnaires, secondary data such as institutional reports and official documents are also used to support the analysis. The data are processed and analyzed using SPSS version 26.0. The validity test is conducted to ensure that each questionnaire item measures what it is intended to measure. An item is considered valid if the calculated correlation value (r-count) is higher than the critical value (r-table). Reliability is tested using Cronbach's Alpha. A Cronbach's Alpha value above 0.70 indicates that the instrument is reliable and consistent [20]. To examine the effect of Supervisory Control on Employee Service Quality, this study uses a simple linear regression model with the following formula: $Y = a + bX$, Where: Y = Employee Service Quality, X = Supervisory Control, a = Constant, b = Regression Coefficient. The t-test is used to determine whether Supervisory Control has a statistically significant effect on Employee Service Quality. The hypothesis is accepted if the calculated t-value is greater than the t-table value or if the significance level (p-value) is less than 0.05 [21]. The R^2 value is used to measure how much variation in Employee Service Quality can be explained by Supervisory Control. A higher R^2 value indicates a stronger influence of the independent variable on the dependent variable.

Results Descriptive Analysis

Descriptive statistics were used to identify the minimum, maximum, mean, and standard deviation values of the research variables, namely Supervisory Control (SC) and Employee Service Quality (ESQ).

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Supervisory Control (SC)	50	3.40	5.00	4.28	0.38
Employee Service Quality (ESQ)	50	3.60	5.00	4.35	0.34

Source: SPSS output, version 26.0

Based on the descriptive analysis results, both Supervisory Control and Employee Service Quality show highly positive evaluations among the 50 employees of PERUMDA Tirtanadi. The mean score for Supervisory Control is 4.28, indicating that employees generally perceive supervisory practices such as setting standards, monitoring performance, evaluating results, and taking corrective actions as being implemented effectively. Meanwhile, Employee Service Quality records a mean score of 4.35, suggesting that employees consider their service performance to be at a very good level, especially in terms of reliability, responsiveness, assurance, empathy, and tangible aspects of service delivery.

The standard deviation values for both variables are relatively low (0.38 for Supervisory Control and 0.34 for Employee Service Quality). These small deviations indicate that responses are closely grouped around the mean, reflecting a high level of consistency among respondents. In other words, most employees share similar and positive perceptions regarding the effectiveness of supervisory control and the quality of service they provide. This consistency supports the conclusion that both variables are viewed positively across the entire sample.

Validity and Reliability Tests

Validity Assessment

The validity test was conducted using the Pearson Product Moment correlation (rvalue). Each item score was correlated with the total score of its respective variable to determine whether the instrument accurately measures the intended construct.

For a population of $N = 50$ respondents at a significance level of 5% ($\alpha = 0.05$, twotailed), the critical r-table value is 0.279 ($df = 48$). An item is considered valid if $r\text{-count} > r\text{table}$ (0.279). The results show that:

- Supervisory Control (SC): The four items (SC1–SC4) have r-values ranging from 0.753 to 0.942, all of which are higher than 0.279.
- Employee Service Quality (ESQ): The five items (ESQ1–ESQ5) have r-values ranging from 0.690 to 0.901, also exceeding 0.279.

Since all item correlation values are greater than the critical value, it can be concluded that all questionnaire items are valid and suitable for further statistical analysis.

Reliability Assessment

Reliability was measured using Cronbach's Alpha to assess the internal consistency of the instrument. According to Ghazali (2016), a variable is considered reliable if the Cronbach's Alpha value is greater than 0.60.

Table 2. Reability Results

Variable	Cronbach's Alpha	Benchmark	Result
Supervisory Control (SC)	0.907	> 0.60	Reliable

The Cronbach's Alpha value for Supervisory Control is 0.907, and for Employee Service Quality is 0.867. Both values are significantly higher than the required threshold of 0.60. These findings indicate that the measurement instruments have high internal consistency and reliability. Therefore, the questionnaire used in this study is both valid and reliable, and the collected data are appropriate for further analysis, such as regression testing.

Regression Analysis Simple Linear Regression

A simple linear regression analysis was conducted to examine the effect of the independent variable, Supervisory Control (SC), on the dependent variable, Employee Service Quality (ESQ) among the 50 employees of PERUMDA Tirtanadi.

Table 3. Regression Results

Model	B	Std. Error	Beta	t	Sig. (p)
(Constant)	0.954	0.389		2.453	0.018
Supervisory Control	0.812	0.091	0.801	8.923	0.000

Dependent Variable: Employee Service Quality

The regression coefficient (B) for Supervisory Control is 0.812. This positive coefficient indicates that Supervisory Control has a direct and positive effect on Employee Service Quality. It means that for every one-unit increase in Supervisory Control, Employee Service Quality is predicted to increase by 0.812 units, assuming other factors remain constant.

The significance value (p-value) for Supervisory Control is 0.000, which is lower than the 0.05 significance level ($0.000 < 0.05$). This result indicates that Supervisory Control has a statistically significant positive effect on Employee Service Quality. The t-value of 8.923 (greater than the t-table value) further confirms that the effect is significant.

The standardized beta coefficient (Beta = 0.801) shows that Supervisory Control has a strong influence on Employee Service Quality. These findings support the main hypothesis of this study, indicating that effective supervisory control through monitoring, evaluation, guidance, and corrective actions plays an important role in improving the quality of employee service.

Coefficient of Determination (R^2)

The coefficient of determination (R^2) was calculated to measure how much variation in the dependent variable, Employee Service Quality (ESQ), can be explained by the independent variable, Supervisory Control (SC).

Table 4. Coefficient of Determination

Model	R	R²	Adjusted R²
1	0.801	0.642	0.635

Source: SPSS output, version 26.0

The analysis shows that the R^2 value is 0.642. This means that 64.2% of the variation in Employee Service Quality can be explained by Supervisory Control. In other words, Supervisory Control contributes significantly to improving the quality of employee service. The remaining 35.8% is influenced by other factors not included in this study, such as employee motivation, organizational culture, work environment, or individual competence.

The correlation coefficient ($R = 0.801$) indicates a strong positive relationship between Supervisory Control and Employee Service Quality. This result is consistent with the regression analysis, which showed that Supervisory Control has a positive and significant effect on Employee Service Quality. Although the model does not explain 100% of the variation, the

relatively high R^2 value (0.642) indicates that Supervisory Control is an important and dominant factor in determining Employee Service Quality at PERUMDA Tirtanadi.

Hypothesis Testing (t-Test)

The hypothesis testing was conducted using the t-test from the simple linear regression model to determine whether the independent variable, Supervisory Control (SC), has a positive and significant effect on the dependent variable, Employee Service Quality (ESQ).

Table 5. t- Test Result

	Model	B	Std. Error	Beta	t
(Constant)	0.954 0.389	2.453	Supervisory Control	0.812 0.091	0.801 8.923

Dependent Variable: Employee Service Quality

Based on Table 5, the calculated t-value for Supervisory Control is 8.923. With a significance level of $\alpha = 0.05$ and degrees of freedom ($df = 50 - 1 - 1 = 48$), the critical t-table value is approximately 1.677. Since t-count (8.923) > t-table (1.677), the null hypothesis (H_0), which states that Supervisory Control has no significant effect on Employee Service Quality, is rejected. Meanwhile, the alternative hypothesis (H_a), which states that Supervisory Control has a positive and significant effect on Employee Service Quality, is accepted.

This result indicates that Supervisory Control significantly influences Employee Service Quality. In practical terms, effective supervision such as setting clear standards, monitoring employee performance, evaluating results, and providing corrective actions can improve the quality of services delivered by employees. Therefore, strengthening supervisory control mechanisms is an important strategy to enhance overall service quality at PERUMDA Tirtanadi.

Conclusion

This study was conducted to examine the effect of Supervisory Control on Employee Service Quality at PERUMDA Tirtanadi. Based on the analysis of data collected from 50 employees using a structured questionnaire and analyzed through simple linear regression, several important conclusions can be drawn. The research instruments were proven to be valid and reliable. All questionnaire items for both variables met the validity requirement, as the rcount values were higher than the r-table value (0.279). In addition, the reliability test showed high internal consistency, with Cronbach's Alpha values of 0.907 for Supervisory Control and 0.867 for Employee Service Quality. These values are above the minimum standard of 0.60, indicating that the instruments used in this study are accurate and consistent.

The hypothesis testing results indicate that Supervisory Control has a positive and significant effect on Employee Service Quality. The regression equation $Y = 0.954 + 0.812X$ shows that every one-unit increase in Supervisory Control increases Employee Service Quality by 0.812 units. The t-test result (t-count = 8.923) is greater than the t-table value (1.677) at a significance level of 0.05 ($df = 48$). This means that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. Therefore, Supervisory Control significantly improves Employee Service Quality.

The coefficient of determination (R^2) value of 0.642 indicates that 64.2% of the variation in Employee Service Quality can be explained by Supervisory Control, while the remaining 35.8% is influenced by other factors not examined in this study, such as motivation, organizational culture, leadership style, or employee competence. In conclusion, this study provides strong empirical evidence that effective Supervisory Control plays an important role in improving Employee Service Quality at PERUMDA Tirtanadi. Proper supervision through clear standards, monitoring, evaluation, and corrective action can enhance employees' ability to deliver reliable, responsive, and high-quality services. Therefore, strengthening supervisory

practices is a strategic effort to improve overall service performance and organizational effectiveness.

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