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The Effect of Servant Leadership and Teacher Pedagogical Competence on Teacher Performance through Quality Culture in Private Elementary Schools in Serang City

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ABSTRACT

This study aims to examine and explain the influence of servant leadership and teacher pedagogical competence on teacher performance, both directly and indirectly through quality culture, in private elementary schools in Serang City. The study used a quantitative approach with a survey design. Primary data were collected through a five-point Likert-scale questionnaire distributed to 200 teachers from 13 private elementary schools in Serang City, selected using a purposive sampling technique and allocated proportionally to each sub-district. Data were analyzed using descriptive statistics using the three-box method and Partial Least Squares Structural Equation Modeling (PLS SEM) with the help of SmartPLS software. All instrument items were declared valid and reliable. The results of the structural model test showed that servant leadership and teacher pedagogical competence had a positive and significant influence on quality culture, with teacher pedagogical competence as the most dominant predictor. Servant leadership, teacher pedagogical competence, and quality culture each had a positive and significant influence on teacher performance, with quality culture as the strongest predictor. Quality culture was also proven to significantly mediate the influence of servant leadership and teacher pedagogical competence on teacher performance. The research model has a high suitability rating. Improving teacher performance in private elementary schools requires strengthening the principal's servant leadership and teachers' pedagogical competencies simultaneously, both directly and through strengthening the school's quality culture as a connecting mechanism. This study was limited to private elementary school teachers in one urban area, used a cross-sectional design, and included only three main variables, thus failing to address other factors that could potentially influence teacher performance.

Article Information

Keywords:
Servant leadership; kompetensi pedagogik; budaya mutu; kinerja guru; PLS SEM

ABSTRACT

Penelitian ini bertujuan menguji dan menjelaskan pengaruh servant leadership dan kompetensi pedagogik guru terhadap kinerja guru, baik secara langsung maupun tidak langsung melalui budaya mutu, pada sekolah dasar swasta di Kota Serang. Penelitian menggunakan pendekatan kuantitatif dengan desain survei. Data primer dikumpulkan melalui kuesioner berskala Likert lima poin yang disebarkan kepada 200 orang guru dari 13 sekolah dasar swasta di Kota Serang, yang dipilih dengan teknik purposive sampling dan dialokasikan secara proporsional pada tiap kecamatan. Data dianalisis menggunakan statistik deskriptif metode three box dan Partial Least Squares Structural Equation Modeling (PLS SEM) dengan bantuan perangkat lunak SmartPLS. Seluruh butir instrumen dinyatakan valid dan reliabel. Hasil pengujian model struktural menunjukkan bahwa servant leadership dan kompetensi pedagogik guru berpengaruh positif dan signifikan terhadap budaya mutu, dengan kompetensi pedagogik guru sebagai prediktor paling dominan. Servant leadership, kompetensi pedagogik guru, dan budaya mutu masing masing berpengaruh positif dan signifikan terhadap kinerja guru, dengan budaya mutu sebagai prediktor paling kuat. Budaya mutu juga terbukti memediasi pengaruh servant leadership dan kompetensi pedagogik guru terhadap kinerja guru secara signifikan. Model penelitian memiliki nilai kecocokan yang tergolong tinggi. Peningkatan kinerja guru pada sekolah dasar swasta memerlukan penguatan servant leadership kepala sekolah dan kompetensi pedagogik guru secara bersamaan, yang bekerja baik secara langsung maupun melalui penguatan budaya mutu sekolah sebagai mekanisme penghubung. Penelitian ini terbatas pada guru sekolah dasar swasta di satu wilayah kota, menggunakan desain potong lintang, serta hanya melibatkan tiga variabel utama sehingga belum menjangkau faktor lain yang berpotensi memengaruhi kinerja guru.

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1. INTRODUCTION

The world of education today continues to change, both in terms of theory, methods, and management methods. These changes come from within, for example, demands for teacher quality and the welfare of educational staff, as well as from outside, such as social change, competition between institutions, and technological developments. Amidst these changes, teacher performance remains the cornerstone of educational success, as teachers are the ones who interact directly with students in the classroom every day. Teacher performance can be understood as the tangible results demonstrated by a teacher in carrying out the duties of teaching, educating, and evaluating students, which is reflected in both the quantity and quality of the resulting learning process.

Principals play a crucial role in directing, empowering, and motivating teachers to perform optimally. Servant leadership, a leadership style that has recently been widely studied because it is considered relevant to the educational context, is servant leadership, a leadership style that prioritizes service to teachers, students, and other school members, rather than simply exercising structural authority. Principals who implement servant leadership strive to meet teachers' needs, listen to their concerns, and create a comfortable work environment so that teachers feel supported in carrying out their duties (Wati et al., 2022). Research at the elementary and secondary education levels shows that servant leadership contributes to teacher job satisfaction and teaching performance, as teachers feel more valued and their professional needs are taken care of (Dami et al., 2022; Saepurohman & Satori, 2021).

In addition to leadership, teacher pedagogical competence is also an equally important determinant. Pedagogical competence is a teacher's ability to understand student characteristics, design learning, apply appropriate methods, and conduct objective evaluations. Teachers who master pedagogical competence well are better able to adapt their teaching methods to students' needs, resulting in a more meaningful learning process and improved student learning outcomes (Krisnawati et al., 2022; Witarsa & Rizki, 2022). Several studies at the elementary and secondary school levels also show that mastery of pedagogical competence is closely related to teachers' daily performance in the classroom (Ekawati et al., 2023; Welana & Suryani, 2024).

In addition to these two factors, a school's quality culture is seen as a bridge between leadership, teacher competence, and teacher performance. A quality culture is a system of values shared by all school members, prioritizing quality in every aspect of education delivery, from establishing the school's vision and mission, developing work plans, implementing learning, and conducting ongoing evaluations. Schools with a strong quality culture tend to encourage teachers to work in a more disciplined, collaborative manner, and be oriented toward continuous improvement (Alauddin & Yamada, 2022; Parveen et al., 2024). Studies at the higher education level also show that a quality culture can act as a mediator between managerial practices and educational institution performance (Iqbal et al., 2024; Mahmood et al., 2024).

Although servant leadership and teacher pedagogical competence have been widely studied as factors related to teacher performance, previous research findings have not been entirely consistent. Some studies have found that servant leadership has a positive and significant effect on teacher performance (Bayangkari et al., 2024; Meilando et al., 2023), while others suggest that this relationship may be influenced by organizational conditions and intermediary mechanisms within the school environment. A similar pattern is also found for teacher pedagogical competence, which has been shown to be related to teacher performance in several studies (Ekawati et al., 2023; Mu'arif, 2023). However, the direct relationship between these two factors and teacher performance does not fully explain how leadership support and pedagogical competence translate into consistent, quality-oriented work practices. Therefore, a more comprehensive explanation is needed regarding the organizational mechanisms that can link these two factors to teacher performance.

In this context, quality culture is seen as a theoretically relevant mediating mechanism because it reflects shared values, commitments, and habits that place quality as part of daily work practices. Unlike the broad concept of school culture, quality culture more specifically emphasizes collective commitment to quality standards, shared accountability, evaluation, and continuous improvement. Meanwhile, school climate focuses more on the school community's perceptions of their conditions and experiences in the work environment. This distinction is important because this study seeks not only to explain the general organizational conditions of schools but also to examine how a shared quality orientation can bridge the gap between leadership and teacher competence and their performance. Through servant leadership, principals can build trust, empower teachers, and encourage engagement in achieving quality standards. At the same time, pedagogical competence enables teachers to implement learning, assessment, and evaluation professionally. When these two factors are integrated within collective, quality-oriented values and habits, they have the potential to support more consistent teacher performance.

Previous studies have discussed the role of variables related to organizational culture in relation to performance and quality management in education. For example, Budiarto et al. (2024) examined school culture in relation to teacher efficacy through teacher leadership, while Mahmood et al. (2024) examined the mediating role of school climate and job satisfaction in the relationship between total quality management and school performance. Iqbal et al. (2024) also examined quality culture as a mediator in the relationship between accreditation and higher education performance, while Parveen et al. (2024) positioned school culture as a mediator in the relationship between quality management practices and student performance. Although these studies provide important foundations regarding the role of organizational and cultural factors in quality management in education, the focus of the relationships between variables and the research context differ from this study. Specifically, this study integrates servant leadership and teacher pedagogical

competence as two distinct but complementary factors, positioning quality culture as a mediator linking both to teacher performance in private elementary schools. Thus, the contribution of this study lies in testing an integrated model that includes the direct and indirect influences of both factors on teacher performance through quality culture, not in claiming that the mediating relationship of quality culture has not been studied before.

The need to test this model is increasingly relevant in the context of private elementary schools in Serang City. Educational report card data from several private elementary schools in Serang City in 2025 showed variations in achievement across literacy, numeracy, student character, and learning quality. This situation highlights the importance of understanding how principal leadership and teacher pedagogical competence can be linked to quality-oriented work practices. Based on this argument, this study aims to examine the direct influence of servant leadership and teacher pedagogical competence on teacher performance and the indirect influence of both through quality culture in private elementary schools in Serang City. This research is expected to contribute to the study of educational management by clarifying the role of quality culture as a connecting mechanism at the school level, while also providing an empirical basis for developing strategies to improve teacher performance.

This issue becomes even more relevant when linked to real-world conditions. Educational report card data from several private elementary schools in Serang City in 2025 show wide variations in achievement across literacy, numeracy, student character, and learning quality. Some schools performed well across nearly all indicators, while others remained moderate to poor, particularly in learning quality and student numeracy. This indicates that principal leadership and teacher competency have not yet fully translated into a culture of quality and consistent teacher performance across all schools.

The contribution of this study lies in the integration of servant leadership and teacher pedagogical competence into a single research model that positions quality culture as a mediating variable and teacher performance as the dependent variable. While previous research has examined school culture, school climate, and quality culture in relation to educational performance, this study specifically examines the role of servant leadership and teacher pedagogical competence in relation to teacher performance through quality culture. This model allows for the examination of the direct influence of servant leadership and pedagogical competence on teacher performance, as well as the indirect influence of both variables through quality culture. Furthermore, this study provides empirical evidence in the context of private elementary schools in Serang City, Indonesia, which can complement previous research findings in different educational contexts. Thus, the novelty of this study is not based on the claim that quality culture has never been used as a mediating variable, but rather on the combination of the variables studied, the examination of direct and indirect relationships within a single integrated model, and the empirical context of the study, which specifically focuses on private elementary schools in Serang City.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Servant Leadership

Servant leadership is a leadership style that places service to others at the core of a leader's role. In the school context, principals who adopt this style strive to meet teachers' needs, listen to their aspirations, and provide space for their professional development, without relying solely on structural power. This approach has been shown to build trust, psychological safety, and healthier working relationships between principals and teachers, which in turn lead to better job satisfaction and performance (Dami et al., 2022; Ghasemy et al., 2022). In both higher education and schools, studies have also shown that servant leadership contributes to increased psychological empowerment, work commitment, and organizational citizenship behavior among teachers (Du et al., 2024; Gao & Huang, 2024).

2.2 Teacher Pedagogical Competence

Pedagogical competence is a teacher's ability to manage the learning process, encompassing understanding student characteristics, designing learning, implementing appropriate teaching strategies, utilizing learning technology, and evaluating learning outcomes. Teachers with strong pedagogical competence are able to adapt their teaching methods to the diverse needs of their students, making learning more relevant and meaningful. Several studies at the elementary and secondary school levels have shown that strengthening pedagogical competence is closely related to increased student learning motivation and the quality of teachers' daily teaching performance (Krisnawati et al., 2022; Welana & Suryani, 2024; Witarsa & Rizki, 2022).

2.3 School Quality Culture

A quality culture is a collection of values, beliefs, and habits shared by the school community, making quality the primary reference point in all educational activities. Schools with a strong quality culture generally have a collective commitment to continuous improvement, stakeholder satisfaction, and discipline in implementing work standards. The Total Quality Management framework developed in the educational context emphasizes that quality is not merely an end result, but rather a process and work culture that must be consistently developed by all school members (Alauddin & Yamada, 2022). Research at the higher education level, as well as elementary and secondary schools, also shows that a quality culture can act as a mediator, bridging managerial practices with institutional performance achievements (Iqbal et al., 2024; Mahmood et al., 2024; Parveen et al., 2024).

2.4 Teacher Performance

Teacher performance is the tangible achievement demonstrated by teachers in carrying out their duties of teaching, educating, guiding, and evaluating students, as

reflected in discipline, creativity in teaching, the ability to collaborate with colleagues, and consistency in conducting learning evaluations. Teacher performance is influenced by internal factors, such as teacher motivation and competence, as well as external factors, such as the principal's leadership style, school work culture, and a supportive work environment (Budiarto et al., 2024; Huda & Alderite, 2024).

2.5 Hypothesis Development

Servant leadership implemented by principals, including attention to teacher needs, openness in discussions, and transparent management of school resources, is believed to foster shared values about the importance of quality in schools. When principals consistently demonstrate a servant attitude, teachers tend to feel more valued and more motivated to participate in maintaining school quality standards (Ghasemy et al., 2022; Wati et al., 2022). Based on this description, the first hypothesis is formulated.

H1: Servant leadership has a positive and significant influence on quality culture in private elementary schools in Serang City.

Teachers with strong pedagogical competence tend to more consistently implement student-centered learning practices, conduct regular evaluations, and are open to improvements in teaching methods. These habits, when implemented collectively by many teachers, can establish shared work standards that ultimately strengthen the school's culture of quality (Krisnawati et al., 2022; Welana & Suryani, 2024). Based on this description, the second hypothesis is formulated.

H2: Teachers' pedagogical competence has a positive and significant influence on quality culture in private elementary schools in Serang City.

Principals who practice servant leadership create space for teachers to develop, provide emotional support when they face difficulties, and create a harmonious work environment. This can motivate teachers to perform optimally because they feel supported both professionally and personally (Dami et al., 2022; Meilando et al., 2023; Saepurohman & Satori, 2021). Based on this description, the third hypothesis is formulated.

H3: Servant leadership has a positive and significant influence on teacher performance in private elementary schools in Serang City.

Strong pedagogical competence enables teachers to design more effective learning, manage their classes better, and adapt teaching methods to students' needs. These abilities are directly reflected in the quality of teachers' daily teaching performance (Ekawati et al., 2023; Mu'arif, 2023). Based on this description, the fourth hypothesis is formulated.

H4: Teachers' pedagogical competence has a positive and significant influence on teacher performance in private elementary schools in Serang City.

A strong quality culture provides a shared system of values and work standards that encourage teachers to consistently maintain the quality of learning, be disciplined in carrying out their duties, and commit to continuous improvement. A quality-oriented work environment has been shown to contribute to improved performance of educators at various levels of education (Iqbal et al., 2024; Parveen et al., 2024). Based on this description, the fifth hypothesis is formulated.

H5: Quality culture has a positive and significant influence on teacher performance in private elementary schools in Serang City.

In addition to its direct impact, servant leadership is also thought to indirectly influence teacher performance by strengthening the school's culture of quality. Principals who serve the school community well can instill values of humility, accountability, and commitment to quality, which then become shared habits within the school and ultimately contribute to teacher performance (Alauddin & Yamada, 2022; Budiarto et al., 2024). Based on this description, the sixth hypothesis is formulated.

H6: Servant leadership has a positive and significant influence on teacher performance through quality culture in private elementary schools in Serang City.

Similarly, teacher pedagogical competence is thought to not only directly influence teacher performance but also through strengthening a school's quality culture. Good pedagogical practices, when consistently implemented by many teachers, can become a shared work standard that strengthens a quality culture, ultimately contributing to overall teacher performance (Mahmood et al., 2024; Parveen et al., 2024). Based on this description, the seventh hypothesis is formulated.

H7: Teachers' pedagogical competence has a positive and significant influence on teacher performance through quality culture in private elementary schools in Serang City.

The seven hypotheses form a research framework that places servant leadership and teacher pedagogical competence as exogenous variables, quality culture as an intervening variable, and teacher performance as an endogenous variable, as further tested using the PLS SEM approach in the methodology and research results sections.

3. RESEARCH METHODOLOGY

3.1 Research Approach and Design

This study used a quantitative approach with a correlational survey design to analyze the relationship between servant leadership, teacher pedagogical competence, quality culture, and teacher performance. This design was used to identify patterns of relationships between variables based on data collected from respondents. Analysis of direct and indirect relationships through quality culture was conducted to determine the statistical relationship between variables in the research model. However, because the data were obtained

through a correlational survey without measurements that specifically establish the time sequence between variables, the results of the study should not be interpreted as evidence of cause and effect. Thus, the research findings describe patterns of relationships supported by the data, rather than confirming that the relationships between variables reflect causal relationships.

3.2 Place and Time of Research

The study was conducted at private elementary schools in Serang City, Banten Province, spread across six sub-districts: Serang, Cipocok Jaya, Taktakan, Walantaka, Kasemen, and Curug. According to data from the Serang City Education and Culture Office, there are 49 private elementary schools with a total of approximately 915 teachers. Data collection was conducted in the even semester of the 2025–2026 academic year, starting with instrument development, initial validity and reliability testing, and questionnaire distribution to research respondents.

3.3 Population, Sample, and Sampling Techniques

The population in this study was all private elementary school teachers in Serang City, Banten Province, spread across six sub-districts. Based on data from the Serang City Education and Culture Office, the population includes 49 private elementary schools with approximately 915 teachers. Sampling was conducted using a non-probability sampling technique with a purposive sampling method, based on respondent criteria relevant to the research objectives, namely permanent foundation teachers, having a minimum of a bachelor's degree, and having a minimum of two years of service in their last position.

The study involved 13 private elementary schools selected from the total school population. School selection was based on [explain the reasons and criteria for selecting the 13 schools according to the actual procedures]. After the schools were selected, respondents were allocated to each school proportionally based on the number of teachers who met the research criteria. Thus, respondent selection was conducted purposively based on predetermined characteristics, while the distribution of the number of respondents in the selected schools took into account the proportion of teachers in each school.

The sample size analyzed in this study was 200 teachers. This number corresponds to initial calculations based on 40 research indicators, using a ratio of five respondents for each indicator. However, sample adequacy for Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis also needs to be considered based on model complexity, the number of predictors leading to endogenous constructs, and the expected level of statistical power. Therefore, sample adequacy is not only determined by the number of indicators but also needs to be supported by statistical considerations appropriate to the research model.

The sample size analyzed in this study was 200 private elementary school teachers in Serang City. Respondents were selected based on predetermined criteria, namely permanent foundation teachers, having a minimum of a bachelor's degree, and having worked for at least two years in their last position. The study involved 13 private elementary schools from a population of 49 schools. The selection of these 13 schools was based on [explain the reasons for selecting the schools according to the actual research procedure]. The allocation of respondents to each school was carried out proportionally based on the number of teachers who met the research criteria. The number of questionnaires distributed was [fill in the actual number], with [fill in the actual number] of questionnaires returned by respondents. After checking the completeness and appropriateness of the data, a total of 200 questionnaires were used in the analysis. The response rate was calculated based on the number of returned questionnaires compared to the number of questionnaires distributed.

3.4 Operational Definition of Variables

Operational definitions of the variables in this study are used to explain the boundaries and measurement indicators for each variable studied. This study includes four variables: servant leadership, teacher pedagogical competence, quality culture, and teacher performance. Each variable is measured using 10 statements on a five-point Likert scale.

Servant leadership is operationalized through five dimensions: prioritizing others, empowerment, vision, humility, and trust. Teacher pedagogical competence is measured based on indicators of student understanding, learning theory, learning strategies, curriculum development, and utilization of educational technology.

The quality culture variable is operationalized through stakeholder satisfaction, continuous improvement, collective responsibility, commitment to quality, and internal school strengths. Meanwhile, teacher performance is measured based on classroom management, positive discipline, feedback, attention to students, and learning quality.

The questionnaire was piloted on 30 respondents before being used in the main study. Validity and reliability tests were conducted to evaluate the appropriateness of the items used to measure each variable.

3.5 Data Collection and Analysis Techniques

Primary data was collected through a closed-ended questionnaire distributed online using Google Forms with the assistance of the principals at each school. Before being used on the main sample, the instrument was piloted on 30 respondents to determine its validity and reliability.

Data analysis was conducted in two stages: descriptive statistical analysis using the three-box method and inferential statistical analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM). Descriptive analysis was used to describe the tendency of respondents' answers to each research variable and indicator. The index calculation was based on [state the index formula actually used in data processing], with a theoretical range of [state the minimum and maximum index values]. The low, medium, and high categories were determined based on dividing the theoretical range into three equal intervals, with category boundaries adjusted to the formula and index scale used.

PLS-SEM analysis was used to evaluate the measurement and structural models and to test the research hypotheses. Testing the measurement model included validity and reliability, while testing the structural model included the coefficient of determination, predictive relevance, effect size, and the significance of the relationships between variables through a bootstrapping procedure.

4. RESULTS AND DISCUSSION

4.1 Respondent Characteristics

The research respondents were 200 private elementary school teachers in Serang City. Based on gender, the majority of respondents were female, namely 158 people or 79 percent, while male respondents numbered 42 people or 21 percent. In terms of age, most respondents were in the age range of 26 to 35 years, namely 117 people or 58.5 percent. In terms of the latest education, the majority of respondents had a bachelor's degree, namely 184 people or 92 percent. In terms of length of teaching, most respondents had a work period of between two and five years, namely 124 people or 62 percent.

Table 1. Demographic Characteristics of Respondents

Characteristics	Category	Amount	Percentage
Gender	Man	42	21.0%
	Woman	158	79.0%
Age	Less than or equal to 25 years	27	13.5%
	26 to 35 years old	117	58.5%
	36 to 45 years old	35	17.5%
	46 to 55 years old	18	9.0%
	Over 55 years	3	1.5%
Education	Diploma	7	3.5%
	S1	184	92.0%
	S2	9	4.5%
Length of teaching	2 to 5 years	124	62.0%
	6 to 10 years	38	19.0%
	11 to 15 years	13	6.5%
	16 to 20 years	19	9.5%
	Over 21 years	6	3.0%

Source: Processed primary data (2026)

4.2 Results of Instrument Validity and Reliability Tests

Initial validity testing was conducted on 30 respondents using a 10 percent significance level, resulting in an r table value of 0.306. The test results showed that all statement items in the four research variables had a calculated r value greater than the r table, so that all instrument items were declared valid. Reliability testing using the Cronbach alpha coefficient also showed good results, namely 0.933 for the servant leadership variable, 0.893 for the teacher pedagogical competence variable, 0.861 for the quality culture variable, and 0.922 for the teacher performance variable. Because all these values were above the threshold of 0.6, all instruments were declared reliable and suitable for use in data collection on the main sample.

4.3 Descriptive Analysis Results

The results of descriptive analysis using the three-box method show that the average index values reported for servant leadership, teacher pedagogical competence, quality culture, and teacher performance were 172.76, 175.12, 177.12, and 179.90, respectively. The category assignment for each variable refers to the index category limits used in the study.

For the servant leadership variable, the indicator with the highest index value was the principal's habit of engaging teachers in discussions without coercion, while the indicator with the lowest value was providing unsolicited assistance when teachers encountered difficulties. For teacher pedagogical competence, the highest indicator was the appropriateness of learning activities to student needs, while the lowest indicator was mastery of various learning theories. For quality culture, the highest indicator was awareness of maintaining school accreditation, while the lowest indicator was the implementation of school management that involves the community. Meanwhile, for teacher performance, the highest indicator was collaboration with colleagues and the lowest indicator was active participation in teacher working groups (KKG).

Differences in index values reflect variations in respondents' responses to the measured indicators. The ranking of indicators by index value does not, in itself, indicate that the differences are practically important or statistically significant. Therefore, interpretation of the results is limited to the observed differences in descriptive values, unless additional analysis supports conclusions about the magnitude or significance of the differences.

Table 2. Summary of Descriptive Analysis Results of Index Figures

Variables	Average Index Figure	Category	Highest Indicator	Lowest Indicator
Servant Leadership	172.76	Tall	Inviting teachers to discuss without coercion	Unsolicited assistance when teachers are struggling
Teacher Pedagogical Competence	175.12	Tall	Learning according to student needs	Mastery of various learning theories
Quality Culture	177.12	Tall	Awareness of maintaining school accreditation	School management involves the community
Teacher Performance	179.90	Tall	Collaboration with colleagues	Active participation in KKG

Source: Primary data processed using the three box method (2026)

Descriptively, the research results indicate variations in respondents' assessments of several indicators of servant leadership, teacher pedagogical competence, quality culture, and teacher performance. Several indicators directly related to the implementation of learning and interactions between teachers received relatively high rankings, while others, such as community involvement and participation in teacher work groups, were ranked relatively low. However, this ranking only indicates differences based on observed index values. Because the magnitude of the differences between the indicators has not been presented in detail, these results are not sufficient to conclude that internal aspects related to learning are valued substantively higher than external aspects or aspects requiring additional initiative. Therefore, these findings should be understood as descriptive trends that require more detailed data support before being interpreted as practically meaningful differences.

4.4 Results of Measurement Model Testing (Outer Model)

Initial testing of the measurement model on 40 indicators indicated that one indicator in the quality culture variable had a loading factor value below 0.70 and was therefore removed from the model. The decision to remove an indicator was based on the results of the convergent validity evaluation. However, this decision also needed to consider the indicator's suitability to the conceptual definition of quality culture so that the removal would not statistically reduce the representativeness of the construct being measured. Theoretically, the removal of the indicator was considered based on [explain the conceptual rationale that aligns with the indicator and the theoretical basis of the research]. After removal and retesting, the AVE value for the quality culture variable was 0.572 and the composite reliability was 0.923. Although these results indicate adequate measurement quality based on the criteria used, the impact of the removal on the conceptual scope of quality culture still needs to be evaluated based on the dimensions represented by the indicator.

Table 3. Summary of Convergent Validity and Composite Reliability Test Results

Variables	Average Variance Extracted (AVE)	Composite Reliability	Cronbach Alpha
Servant Leadership	0.639	0.947	0.937
Teacher Pedagogical Competence	0.675	0.954	0.946
Quality Culture	0.572	0.923	0.906
Teacher Performance	0.647	0.948	0.939

Source: SEM PLS data processing results (2026)

All AVE values are above the threshold of 0.50, all composite reliability values are above 0.70, and all Cronbach alpha values are above 0.60, so the measurement model is declared to meet the requirements of good validity and reliability. The results of discriminant validity also show that the indicator loading value on its own latent variable is always higher than the cross loading value on other latent variables, which confirms that each variable has a fairly clear measurement uniqueness compared to other variables in the model.

4.5 Structural Model Test Results (Inner Model)

The results of the structural model test showed an R2 value of 0.680 for the quality culture variable and 0.818 for the teacher performance variable. These values indicate that the constructed structural model can explain 68.0% of the variance in quality culture based on servant leadership and teacher pedagogical competence, and 81.8% of the variance in teacher performance based on servant leadership, teacher pedagogical competence, and quality culture. These values describe the proportion of variance that can be accounted for by the model, not evidence that these variables causally determine quality culture or teacher performance. Given that this study used a correlational survey design, interpretation of the results needs to consider the possibility of other variables not included in the model, such as school organizational climate, work motivation, support for facilities and infrastructure, teaching experience, and professional development opportunities.

These factors are potentially related to variations in teacher performance, but their influence was not directly tested in this study. Therefore, the R2 value should be understood as the ability to explain variance based on the tested model, not as definitive evidence of a causal relationship.

The results of the predictive relevance test using the Q Square value showed a value of 0.380 for the quality culture variable and 0.518 for the teacher performance variable, both of which were greater than zero, so the research model had good predictive relevance. The results of the overall model fit test using the Goodness of Fit Index produced a value of 0.688, which is in the high category, so it can be concluded that the research model built has a good level of fit between the field data and the proposed theoretical model.

Table 4. Summary of Path Coefficient Test Results and Hypothesis Tests

Relationship between variables	Path Coefficient	T Statistics	P Value	Information
Servant Leadership to Quality Culture	0.176	2,264	0.024	Significant
Teacher Pedagogical Competence to Quality Culture	0.690	10,050	0,000	Significant
Servant Leadership to Teacher Performance	0.124	2,000	0.046	Significant
Teacher Pedagogical Competence to Teacher Performance	0.746	13,526	0,000	Significant
Quality Culture to Teacher Performance	0.599	8,948	0,000	Significant
Servant Leadership to Teacher Performance through Quality Culture	0.105	2,186	0.029	Significant
Teacher Pedagogical Competence to Teacher Performance through Quality Culture	0.413	6,632	0,000	Significant

Source: Results of SEM PLS data processing with bootstrapping procedure (2026)

4.6 Hypothesis Testing

The H1 test results show a path coefficient of 0.176 between servant leadership and quality culture, with T = 2.264 and p = 0.024. This relationship is positive and statistically significant at the 5% level. In the context of a cross-sectional survey, these results indicate a positive association according to the tested model, not evidence that servant leadership causally improves quality culture. Standard error values or bootstrap confidence intervals and f^2 effect sizes are not yet available in the accompanying tables and will need to be added from SmartPLS output before the manuscript is finalized. These findings align with the view that servant leadership can build trust and shared commitment to good work standards (Ghasemy et al., 2022; Wati et al., 2022).

The results of the H2 test show a path coefficient of 0.690 from pedagogical competence to quality culture, with T = 10.050 and $p < 0.001$ (the software output displays 0.000). This coefficient is numerically greater than the coefficient for servant leadership to quality culture (0.176). Thus, in this model and sample, pedagogical competence has a stronger path relationship with quality culture. However, claims of substantive dominance need to be supplemented by an f^2 effect size and bootstrap confidence interval; coefficient comparison alone is not sufficient to conclude a significant difference in strength. This finding confirms that teachers' habits in consistently designing, implementing, and evaluating learning are an important foundation for the formation of a school quality culture, in line with studies showing a close relationship between teaching competence and learning quality orientation (Krisnawati et al., 2022; Welana & Suryani, 2024).

The results of the H3 test show a direct path coefficient of servant leadership to teacher performance of 0.124, with T = 2.000 and p = 0.046. This direct path is positive and significant at the 5% level, although its magnitude is relatively small compared to the direct path coefficients of pedagogical competence (0.746) and quality culture (0.599). The indirect effect of servant leadership on performance through quality culture is also positive and significant ($\beta = 0.105$; T = 2.186; p = 0.029). Summing the direct and indirect coefficients yields a total effect estimate of 0.229. This result is consistent with the possibility that quality culture is one of the intermediary

pathways, but does not prove that the indirect effect is greater than the direct effect. Bootstrap confidence intervals for the direct, indirect, and total effects and the f^2 effect size need to be taken from SmartPLS output before claims about precision and effect size can be made. This shows that the principal's support is felt more indirectly by teachers, namely through the creation of a quality work environment, compared to its direct influence on teachers' daily performance (Meilando et al., 2023; Saepurohman & Satori, 2021).

The results of the H4 test show a path coefficient from pedagogical competence to teacher performance of 0.746, with $T = 13.526$ and $p < 0.001$. Among the three reported direct paths to teacher performance, this coefficient is numerically the largest; the coefficient for quality culture is 0.599 and servant leadership is 0.124. Therefore, pedagogical competence has the numerically largest direct relationship in this model. However, to evaluate the precision and magnitude of the effect, the manuscript still needs to report the bootstrap confidence interval or standard error and the f^2 effect size from the SmartPLS output. The results of this survey indicate a statistical relationship, not proof of causation. This finding reinforces the view that mastery of teaching skills is a key determinant of the quality of daily teacher performance, in line with various studies at the primary and secondary education levels (Ekawati et al., 2023; Mu'arif, 2023).

The results of the H5 test indicate a path coefficient of quality culture to teacher performance of 0.599, with $T = 8.948$ and $p < 0.001$. This coefficient is numerically larger than the direct path of servant leadership to performance (0.124), but smaller than the path of pedagogical competence to performance (0.746). Therefore, based on the reported direct path coefficients, quality culture is not accurately described as the strongest predictor among all direct paths to teacher performance; pedagogical competence has the largest coefficient. Quality culture still shows a relatively large and significant positive relationship. A more robust comparison requires an f^2 effect size and bootstrap confidence interval. Furthermore, quality culture is measured from individual teacher perceptions; its interpretation as a characteristic of school organizations should be approached with caution unless there is a basis for school-level aggregation and evidence of agreement among teachers. These findings confirm that a work environment oriented towards quality, discipline, and continuous improvement is the main determining factor for teachers' success in carrying out their duties, in line with the Total Quality Management framework in education (Alauddin & Yamada, 2022; Parveen et al., 2024).

The results of the H6 test showed an indirect effect of servant leadership on teacher performance through quality culture of 0.105, with $T = 2.186$ and $p = 0.029$. The direct effect of servant leadership on performance was 0.124 ($T = 2.000$; $p = 0.046$), while the total effect estimate based on the sum of the direct and indirect effects was 0.229. Thus, both direct and indirect paths were reported as significant, which is consistent with the partial mediation pattern according to the path significance-based approach. However, this conclusion needs to be confirmed using bootstrap confidence intervals for the indirect and total effects, as well as explicitly stated mediation criteria. Confidence intervals and f^2 effect sizes are not provided in the provided text and cannot be determined from T and p values alone. These findings suggest that quality culture acts as a connecting mechanism that strengthens the influence of principal leadership on teacher performance, so that the influence of servant leadership is not only direct but also channeled through the reinforcement of quality values and habits in schools (Budiarto et al., 2024).

The results of the H7 test indicate an indirect effect of pedagogical competence on teacher performance through quality culture of 0.413, with $T = 6.632$ and $p < 0.001$. The direct effect of pedagogical competence on performance is 0.746 ($T = 13.526$; $p < 0.001$), so the total effect estimate based on the sum of the two coefficients is 1.159. Because the direct and indirect paths are both reported to be significant, the pattern is consistent with partial mediation, provided that the bootstrap confidence interval confirms the indirect effect. The indirect coefficient of pedagogical competence (0.413) is numerically larger than the indirect coefficient of servant leadership (0.105), but this comparison does not automatically prove a significant difference between the two effects. Bootstrap confidence intervals and f^2 effect sizes need to be added from SmartPLS output; formal comparisons require appropriate procedures if the author wants to state that one effect is statistically larger than the other. These findings confirm that teachers' pedagogical competence not only has a direct impact on performance, but also forms a culture of quality that then strengthens overall teacher performance (Mahmood et al., 2024; Parveen et al., 2024).

4.7 General Discussion

Overall, all seven tested paths exhibited positive and significant coefficients based on the reported T and p values. Pedagogical competence had the largest direct path coefficient to teacher performance ($\beta = 0.746$), while quality culture was also positively related to performance ($\beta = 0.599$) and served as an intermediary path in the relationship between servant leadership and pedagogical competence and performance. These findings support the relevance of the proposed relationship model, but should not be interpreted as evidence that these variables cause or reinforce each other, as the data were collected cross-sectionally. Interpretation also needs to consider the possibility of omitted variables and the shared measurement sources, namely teacher perceptions of leadership, quality culture, and performance.

The practical implications of this research are best understood as preliminary input based on the patterns of perception and statistical relationships found. Relatively low scores on indicators, such as community involvement in school management and participation in the Working Group (KKG), can be used to identify areas for further review, but do not prove that interventions on these indicators will directly improve performance. School administrators can follow up through discussions with teachers and stakeholders and program evaluations, while the Education Office can consider pedagogical training based on identified needs.

5. CONCLUSIONS, LIMITATIONS, AND SUGGESTIONS

5.1 Conclusion

Based on an analysis of 200 teachers in 13 private elementary schools in Serang City, the tested path coefficients showed a positive and significant relationship between servant leadership and quality culture ($\beta = 0.176$; $p = 0.024$), pedagogical competence and quality culture ($\beta = 0.690$; $p < 0.001$), servant leadership and teacher performance ($\beta = 0.124$; $p = 0.046$), pedagogical competence and teacher performance ($\beta = 0.746$; $p < 0.001$), and quality culture and teacher performance ($\beta = 0.599$; $p < 0.001$). Indirect effects through quality culture were also reported to be significant for servant leadership ($\beta = 0.105$; $p = 0.029$) and pedagogical competence ($\beta = 0.413$; $p < 0.001$). Numerically, pedagogical competence has the largest direct coefficient on teacher performance, while quality culture acts as an intermediary variable in the model. This conclusion reflects the association in the sample and the model tested, not a confirmed causal relationship. Bootstrap confidence intervals and f^2 effect sizes should be reported to strengthen the evaluation of the precision and magnitude of the relationship.

5.2 Research Limitations

This study has several limitations. First, respondents were limited to private elementary school teachers in Serang City, so generalizations to public schools or other regions require caution. Second, the cross-sectional design does not establish a time sequence and does not support causal inferences. Third, the variables of leadership, quality culture, and performance were measured through questionnaires answered by the same source, so common-method bias and shared perceptions may influence the observed relationships. Fourth, quality culture was treated as a school-related construct, but the available data were individual teacher perceptions; interpretation at the organizational level requires aggregation justification, such as evidence of agreement among respondents within each school. Fifth, the model does not include other factors that may be related to performance, such as work motivation, compensation, organizational climate, and resource support. Furthermore, the manuscript needs to report bootstrap confidence intervals and f^2 effect sizes from SmartPLS output to more fully assess the results.

5.3 Suggestions

For school administrators, it is recommended to expand school management programs that involve the surrounding community, considering that this aspect remains the weakest point in the quality culture variable, while continuing to encourage school principals to practice a consistent service attitude towards all teachers. For the Serang City Education and Culture Office, it is recommended to conduct ongoing training on learning theory and effective teaching principles, develop a service leadership training center for school principals, and establish a regular school quality culture mentoring program. For future researchers, it is recommended to add other variables that have the potential to influence teacher performance, expand the scope of the research area to the district or provincial level, and consider using a longitudinal or mixed methods research design to gain a deeper understanding of the dynamics of teacher performance over time.

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