

Competency and Work Environment as Determinants of Teaching Staff Performance in Indonesian Public Primary Schools

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ABSTRACT

This study examines the association between employee competency, work environment, and teaching staff performance in a public primary school in South Jakarta, Indonesia. The revised manuscript rechecked the statistical outputs directly against the original respondent-level tabulations after peer review identified an impossible R² pattern in the earlier draft. Using a quantitative cross-sectional design and saturated sampling (N = 30), primary data from 42 Likert-scale items were analysed with bivariate and multiple linear regression. All instruments met the validity threshold and showed acceptable reliability. Competency showed a positive and significant bivariate association with performance. Work environment showed a positive but statistically non-significant bivariate association at the 5% level. In the corrected simultaneous model, the overall regression remained significant, but only competency retained an independent significant coefficient. The findings suggest that competency strengthening is the more robust immediate lever for improving teaching staff performance in this school, while environmental improvements should be treated as supportive managerial actions that warrant further multi-school verification.

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1. INTRODUCTION

Human capital remains central to organizational performance, and this proposition is especially salient in schooling, where the quality of teacher capability shapes instructional processes and downstream student development (Crook et al., 2011; Kunter et al., 2013). In Indonesia, this concern is reinforced by the National Education System Law and the Teacher and Lecturer Law, which require academic qualifications and competency standards for teachers. In such

settings, teacher performance is not merely an administrative outcome, but a school-level mechanism through which curriculum implementation and service quality are translated into classroom practice.

In this study, teaching staff performance refers to individual work performance reflected in the quality, quantity, timeliness, and effectiveness of task completion (Koopmans et al., 2011). For public primary schools, this performance construct is

relevant because teachers operate under simultaneous pedagogical, administrative, and relational demands, all of which influence day-to-day learning delivery.

Competency refers to the integrated knowledge, skills, values, attitudes, and professional interest that enable teachers to perform their roles effectively (Campion et al., 2011; Kunter et al., 2013). Recent evidence in Indonesian primary-school settings continues to show that pedagogical or professional competency is positively related to teacher performance, although effect sizes vary across contexts and measurement designs (Marsen et al., 2021; Dakhliatunnaviah & Adi, 2024).

The work environment encompasses the physical and social conditions surrounding employees, including facilities, noise exposure, air circulation, and collegial relations. In schools, working conditions are consistently associated with teacher job satisfaction and professional functioning, even though the magnitude and form of that relationship differ across systems and organizational settings (Toropova et al., 2021; Ker et al., 2022; Eryilmaz et al., 2025).

However, the Indonesian evidence base remains uneven. Many local studies focus on government offices, secondary schools, or larger multi-school samples with limited reporting of measurement details and regression diagnostics. Recent primary-school studies in Kuantan Singingi and Yogyakarta suggest positive links between pedagogical competence, work environment, and teacher performance, yet school-level census evidence from urban public primary schools remains limited (Marsen et al., 2021; Dakhliatunnaviah & Adi, 2024). This gap matters because working conditions and teacher certification profiles can vary substantially across schools.

This study therefore examines the association between competency, work environment, and teaching staff performance at SDN Grogol Utara 01, South Jakarta, a public primary school located in a dense urban residential corridor. In addition to testing the substantive relationships, the study rechecks the regression outputs directly against the original respondent-level tabulations after an inconsistency was detected during peer review.

Accordingly, the study pursues three objectives: (RO1) to examine the bivariate association between employee competency and teaching staff performance; (RO2) to examine the bivariate association between the work environment and teaching staff performance; and (RO3) to examine the joint association of competency and work environment with teaching staff performance.

2. THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

2.1 Theoretical Foundations

This study integrates two complementary theoretical streams to explain teaching staff performance. The first is the human capital perspective, which holds that knowledge, skills, and professional capability are

central determinants of productive output within organizations (Crook et al., 2011). In education, teacher competence has been shown to shape instructional quality and student development (Kunter et al., 2013). In the Indonesian context, this perspective also aligns with the statutory competency requirements imposed on teachers by UU No. 14/2005 and Government Regulation No. 19/2005.

The second stream is the person-environment fit framework, which posits that individual performance is a joint function of personal capability and the contextual conditions within which that capability is deployed (Kristof-Brown et al., 2005). In school settings, physical and psychosocial work conditions can amplify or attenuate teacher job satisfaction and performance-related outcomes (Toropova et al., 2021; Masoom, 2021). The convergence of both streams yields a parsimonious theoretical proposition: performance is shaped both by what employees can do (competency) and by the conditions under which they are asked to do it (work environment).

2.2 Teaching Staff Performance

Performance is understood in this study as individual work performance that contributes to organizational goals through observable behaviors and outputs (Koopmans et al., 2011). In educational settings, such performance is reflected in the quality and consistency of instructional practice and in the extent to which teachers are able to support student development (Kunter et al., 2013). In the present study, performance is operationalized through four observable questionnaire dimensions: quality of instructional output, quantity of task completion, timeliness of delivery, and effectiveness of resource utilization.

2.3 Employee Competency and Its Dimensions

Competency refers to a cluster of personal characteristics that produce effective and superior performance in a given role. Competency models generally integrate knowledge, skills, attitudes, motives, and other job-relevant attributes that differentiate effective performers from less effective ones (Campion et al., 2011). In teacher research, professional competence is closely tied to instructional quality and student development (Kunter et al., 2013). Accordingly, the present study measures competency through six dimensions in the questionnaire: knowledge, understanding, skill, values, attitude, and professional interest.

2.4 Work Environment and Its Dimensions

The work environment encompasses the physical and social conditions surrounding employees that may influence their job satisfaction, motivation, and output quality. In school settings, work environment includes tangible conditions such as facilities and ventilation as well as relational dimensions such as collegial and supervisory interactions (Masoom, 2021; Ker et al.,

2022). The present study operationalizes work environment through four indicators frequently discussed in school-environment research: facilities, noise, air circulation, and work relationships (Angrainy et al., 2020; Masoom, 2021).

2.5 Hypothesis Development

The theoretical link from competency to performance operates through two principal mechanisms. First, knowledge and skill endowments equip teachers with subject-matter mastery and pedagogical repertoires that improve instructional quality (Kunter et al., 2013). Second, competence development is associated with stronger teacher performance in Indonesian primary-school research (Marsen et al., 2021; Dakhliatunnaviah & Adi, 2024). Field observations at the study site likewise indicated that the six teachers who had not completed professional certification training displayed less varied instructional practices. Accordingly:

H1: Employee competency is significantly associated with teaching staff performance at SDN Grogol Utara 01 South Jakarta.

A conducive physical and non-physical work environment can reduce task friction and improve focus, comfort, and collaboration. Prior studies also report that school working conditions are linked with teacher outcomes such as job satisfaction, teaching quality, and performance-related measures (Toropova et al., 2021; Ker et al., 2022; Masoom, 2021). At the study site, noise from surrounding community activity, suboptimal air circulation, and facility limitations were documented during observation. Therefore:

H2: The work environment is significantly associated with teaching staff performance at SDN Grogol Utara 01 South Jakarta.

The joint argument follows from the person-environment fit framework: performance is shaped by both what teachers can do and the conditions under which they work (Kristof-Brown et al., 2005). Even so, cross-sectional school-level data should be interpreted as evidence of association rather than causation. Therefore:

H3: Employee competency and work environment are jointly associated with teaching staff performance at SDN Grogol Utara 01 South Jakarta.

2.6 Conceptual Framework

The theoretical relationships are summarized in Figure 1, mapping the two independent constructs — Competency and Work Environment — to the dependent construct of Teaching Staff Performance, both individually (H1, H2) and jointly (H3).

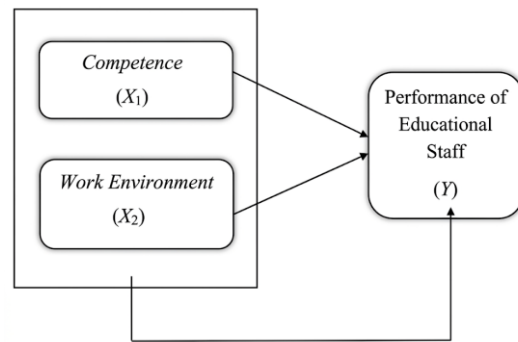


Figure 1. Conceptual Framework of the Study

3. METHODOLOGY

3.1 Research Design

This study adopts a quantitative cross-sectional design. Cross-sectional studies observe a population at a single point in time and are suitable for examining associations among variables in bounded populations, but they do not by themselves establish causal direction (Wang & Cheng, 2020). Primary data were collected through structured self-administered questionnaires, and the quantitative approach was selected because the objectives required hypothesis testing through inferential statistics.

3.2 Research Setting and Time Frame

The study was conducted at SDN Grogol Utara 01, a public primary school located at Jl. H. Muhtar No. 49, Grogol Utara, Kebayoran Lama, South Jakarta, Indonesia. This site was selected on the basis of purposive criterion: field observation identified concurrent competency gaps among a subset of uncertified teachers and documented physical work environment deficiencies — including noise intrusion, suboptimal air circulation, and facility adequacy concerns. Data collection was conducted from April to July 2023.

3.3 Population and Sampling

The study population comprised all 30-teaching staff (pegawai tenaga pendidik) employed at SDN Grogol Utara 01 South Jakarta. Given the small and bounded population size, the study applied a saturated sampling (census) technique, wherein all population members were enlisted as respondents. The final analytical sample was $N = 30$. Of these, 24 had completed certified professional training, while 6 had not.

3.4 Data Collection

Primary data were obtained through four complementary procedures: (1) a structured questionnaire comprising closed-ended statements measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree); (2) direct observation of the school's physical environment; (3) documentation review to obtain formal records of educational qualifications and certification status; and

(4) a literature review to ground the instrument dimensions. Data processing for the revised manuscript used the respondent-level tabulations reproduced in the thesis appendices because the original SPSS output file was not available.

3.5 Measurement Instruments

All constructs were operationalized using multi-item reflective scales drawn from established sources in the human-resource and teacher-performance literature. The questionnaire comprised 42 items: 18 for competency, 12 for work environment, and 12 for performance. Illustrative items included 'I am able to identify appropriate learning methods' (competency), 'The workplace is free from disturbing noise' (work environment), and 'I complete assigned work accurately' (performance). Table 1 presents the measurement specification.

Table 1. Measurement Instruments and Item Distribution

| Variable | Conceptual Definition | Indicators | Items | Source |
|------------------|--|--------------------|-------|--|
| Competency | Capacity of employee over job attributes — ability, skill, maturity, effectiveness | Knowledge | 3 | Campion et al. (2011); Kunter et al. (2013) |
| | | Understanding | 3 | |
| | | Skill | 3 | |
| | | Values | 3 | |
| | | Attitude | 3 | |
| | | Professional | 3 | |
| Work Environment | Physical and non-physical conditions surrounding employees that influence work results | Interest | 3 | Angrainy et al. (2020); Masoom (2021) |
| | | Facilities | 3 | |
| | | Noise | 3 | |
| | | Air Circulation | 3 | |
| | | Work Relationships | 3 | |
| Performance | Quality and quantity of work output achieved in fulfilling assigned responsibilities | Quality | 3 | Koopmans et al. (2011); Kunter et al. (2013) |
| | | Quantity | 3 | |
| | | Timeliness | 3 | |
| | | Effectiveness | 3 | |
| | | | 3 | |

Source: adapted from established scales and the original questionnaire used in the study

3.6 Validity and Reliability Testing

Instrument validity was assessed using item-total correlation, while internal consistency reliability was assessed using Cronbach's alpha. Questionnaire development and reporting guidelines recommend transparent presentation of item structure, validity, and reliability in survey-based studies (Taber, 2018; Yusoff et al., 2021). Given N = 30 and $\alpha = 0.05$, the critical r-table value is 0.374 (df = 28). All 42 items exceeded that threshold, and all scales were reliable: Competency $\alpha = 0.877$, Work Environment $\alpha = 0.847$, and Teaching Staff Performance $\alpha = 0.886$.

3.7 Regression Assumption Tests, Ethical Considerations, and Model Specification

Before estimating the final model, the reconstructed respondent-level dataset was checked for key regression assumptions. Multicollinearity was evaluated using tolerance and variance inflation factor (VIF); residual normality through Jarque-Bera diagnostics and visual inspection; heteroskedasticity through Breusch-Pagan and White tests; and autocorrelation descriptively using Durbin-Watson. The final model showed tolerance = 0.722 and VIF =

1.386 for both predictors, Jarque-Bera $p = 0.485$, Breusch-Pagan $p = 0.080$, White $p = 0.244$, and Durbin-Watson = 2.066, indicating no severe assumption violations. The study was conducted with school permission, and respondents were informed through the questionnaire cover sheet that participation was voluntary, responses would remain confidential, and data would be used only for academic purposes.

$$\hat{Y} = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$$

Where Y = Teaching Staff Performance; α = Constant; β_1 , β_2 = unstandardized regression coefficients; X_1 = Employee Competency; X_2 = Work Environment; e = error term. H1 and H2 are evaluated using t-tests, while H3 is evaluated using the omnibus F-test. Because the design is cross-sectional, statistically significant coefficients are interpreted as associations rather than proof of causality.

4. RESULTS

4.1 Respondent Profile

The study enrolled all 30-teaching staff at SDN Grogol Utara 01 South Jakarta, yielding a 100% response rate consistent with the saturated sampling design. The sample was predominantly female (n = 21; 70.0%), with male respondents accounting for 30.0% (n = 9). The age distribution was strongly skewed toward experienced personnel: 73.3% (n = 22) were aged above 40 years; 10.0% (n = 3) aged 26–30; 10.0% (n = 3) aged 36–40; and 6.7% (n = 2) aged 31–35. Educational attainment was uniformly high: 86.7% (n = 26) held an S1 degree; 10.0% (n = 3) had completed S2; and 3.3% (n = 1) held a Diploma. Notably, 24 of 30 (80.0%) had completed certified professional teacher training, whereas 6 (20.0%) had not. Table 2 summarises the respondent profile.

Table 2. Respondent Profile

| Characteristic | Category | n | % |
|----------------|-------------------|---------|------|
| Gender | Male | 9 | 30.0 |
| | Female | 21 | 70.0 |
| Age | 26–30 years | 3 | 10.0 |
| | 31–35 years | 2 | 6.7 |
| | 36–40 years | 3 | 10.0 |
| | >40 years | 22 | 73.3 |
| | Education | Diploma | 1 |
| Certification | S1 (Bachelor's) | 26 | 86.7 |
| | S2 (Master's) | 3 | 10.0 |
| Certification | Certified | 24 | 80.0 |
| | Not yet certified | 6 | 20.0 |

Note: N = 30. Source: Primary data, SPSS v.25 output (2023).

4.2 Descriptive Statistics

Table 3 presents the descriptive statistics for all three variables.

Table 3. Descriptive Statistics

| Statistic | Competency | Work Environment | Performance |
|-----------|------------|------------------|-------------|
| Mean | 81.300 | 52.830 | 50.770 |
| Median | 80.500 | 52.000 | 49.000 |

| | | | |
|-----------|--------|--------|-------|
| Mode | 76 | 52 | 48 |
| Skewness | 0.279 | -0.211 | 1.131 |
| Std. Err. | 0.427 | 0.427 | 0.427 |
| Skewness | | | |
| Kurtosis | -0.990 | -0.581 | 0.062 |
| Std. Err. | 0.833 | 0.833 | 0.833 |
| Kurtosis | | | |
| Sum | 2,439 | 1,585 | 1,523 |

Note: N = 30. Source: Primary data, SPSS v.25 output (2023).

For Competency (X1), the mean score of 81.300 exceeded the median (80.500), indicating a slight concentration of responses at the upper end of the scale. For Work Environment (X2), the mean (52.830) and median (52.000) were close, suggesting a relatively balanced distribution. Teaching Staff Performance (Y) returned a mean of 50.770 and median of 49.000. The skewness values (0.279, -0.211, and 1.131) and kurtosis values (-0.990, -0.581, and 0.062) do not indicate severe non-normality at a descriptive level.

4.3 Validity and Reliability

All 42 instrument items satisfied the validity criterion of $r_{\text{computed}} > r_{\text{table}}$ (0.374). For Competency (X1), Pearson coefficients across 18 items ranged from 0.414 to 0.784; for Work Environment (X2), across 12 items from 0.414 to 0.751; and for Teaching Staff Performance (Y), across 12 items from 0.423 to 0.855. Table 4 summarises the reliability results.

Table 4. Reliability Statistics Summary

| Variable | N | Cronbach's α | Decision |
|------------------|----|---------------------|----------|
| Competency | 18 | 0.877 | Reliable |
| Work Environment | 12 | 0.847 | Reliable |
| Performance | 12 | 0.886 | Reliable |

Source: Primary data, SPSS v.25 output (2023).

Because the reviewer identified an impossible R^2 pattern in the earlier draft, all regression coefficients below were recalculated directly from the original respondent-level tabulations reproduced in the thesis appendix. The corrected results are reported in Tables 5–8.

4.4 Hypothesis Testing

4.4.1 Bivariate Association of Competency with Performance

The bivariate regression of Performance on Competency yielded the results presented in Table 5. The significance value for Competency was $p = 0.002$, below $\alpha = 0.05$, and the t-computed value of 3.370 exceeded t-table = 2.049 ($df = 28$). The unstandardized coefficient $B = 0.463$ indicates that each one-unit increase in aggregate competency score is associated with a 0.463-unit increase in performance. The coefficient of determination $R^2 = 0.289$ indicates that competency alone accounts for 28.9% of the variance in teaching staff performance. H1 is supported.

Table 5. Bivariate Regression — Competency on Performance

| Variable | Coeff | Std. Err. | β | t test | Sig. |
|------------------------|--------|-----------|---------|--------|-------|
| (Constant) | 13.133 | 11.185 | | 1.174 | 0.250 |
| Competency | 0.463 | 0.137 | 0.537 | 3.370 | 0.002 |
| R | 0.537 | | | | |
| R ² | 0.289 | | | | |
| Adj. R ² | 0.263 | | | | |
| Std. Error of Estimate | 3.497 | | | | |

Source: Primary data, SPSS v.25 output (2023).

4.4.2 Bivariate Association of Work Environment with Performance

The bivariate regression of Performance on Work Environment yielded a positive but statistically marginal coefficient. The significance value for Work Environment was $p = 0.052$, which is slightly above $\alpha = 0.05$, and t-computed = 2.026 did not exceed the critical threshold with sufficient margin for conventional significance. The coefficient $B = 0.376$ indicates a positive direction, but the coefficient of determination $R^2 = 0.128$ shows that work environment alone explained only 12.8% of performance variance in this sample. Accordingly, H2 is not supported at the 5% significance level.

Table 6. Bivariate Regression — Work Environment on Performance

| Variable | Coeff | Std. Err. | β | t test | Sig. |
|---------------------|--------|-----------|---------|--------|-------|
| Constant | 30.921 | 9.821 | | 3.148 | 0.004 |
| Work Env. | 0.376 | 0.185 | 0.358 | 2.026 | 0.052 |
| R | 0.358 | | | | |
| R ² | 0.128 | | | | |
| Adj. R ² | 0.097 | | | | |
| Std. Error of Est. | 3.872 | | | | |

Source: Primary data, SPSS v.25 output (2023).

4.4.3 Joint Association with Performance

The simultaneous model yielded F-computed = 5.682, which exceeded F-table = 3.35 ($df_1 = 2, df_2 = 27$), with $p = 0.009$. The joint model was therefore statistically significant. Within that model, Competency remained significant ($p = 0.017, t = 2.542$), whereas Work Environment did not ($p = 0.593, t = 0.541$). The coefficient of determination $R^2 = 0.296$ indicates that the joint model explains 29.6% of the observed variance in teaching staff performance.

$$\hat{Y} = 11.226 + 0.416X_1 + 0.108X_2$$

Holding Work Environment constant, a one-unit increase in Competency score is associated with a 0.416-unit increase in Performance. Holding Competency constant, a one-unit increase in Work Environment score is associated with a 0.108-unit increase in Performance, but this coefficient is not statistically significant in the corrected model. Thus, H3 is supported at the omnibus model level, although only competency retained an independent significant association.

Table 7. Multiple Linear Regression Coefficients

| Variable | Coeff | Std. Err. | β | t test | Sig. |
|-----------|--------|-----------|---------|--------|-------|
| Constant | 11.226 | 11.865 | | 0.946 | 0.352 |
| Compet. | 0.416 | 0.164 | 0.483 | 2.542 | 0.017 |
| Work Env. | 0.108 | 0.200 | 0.103 | 0.541 | 0.593 |

| | |
|---------------------|-------|
| R | 0.544 |
| R ² | 0.296 |
| Adj. R ² | 0.244 |
| Std. Error of Est. | 3.542 |

Source: Primary data, SPSS v.25 output (2023).

Table 8. ANOVA and Coefficient of Determination

| Source | Sum of Sq. | df | Mean Sq. | F | Sig. |
|------------|------------|----|----------|-------|-------|
| Regression | 142.587 | 2 | 71.293 | 5.682 | 0.009 |
| Residual | 338.780 | 27 | 12.547 | | |
| Total | 481.367 | 29 | | | |

Source: Primary data, SPSS v.25 output (2023).

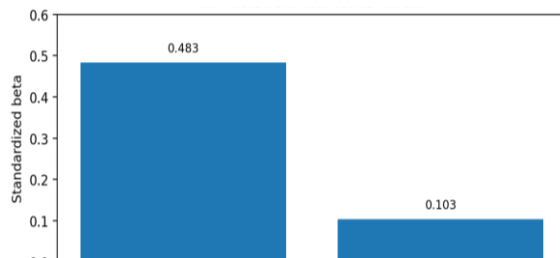


Figure 2. Standardized Beta Coefficients in the Simultaneous Regression Model. Source: Primary data, SPSS v.25 output

5. DISCUSSION

5.1 Competency and Teaching Staff Performance

The corrected results show that employee competency has a positive and statistically significant association with teaching staff performance. This aligns with the human capital proposition that knowledge and skill resources support stronger work outcomes (Crook et al., 2011) and with teacher research linking professional competence to instructional quality (Kunter et al., 2013). It is also broadly consistent with Indonesian primary-school evidence reported by Marsen et al. (2021) and Dakhliatunnaviah and Adi (2024).

The practical salience of this finding is strengthened by the local observation that six teaching staff had not completed certified professional training. In a small school setting, variation in instructional repertoire and classroom confidence may be more immediately visible than broader organizational differences, making competency a comparatively robust correlate of performance.

5.2 Work Environment and Teaching Staff Performance

In contrast, the corrected bivariate result for work environment is positive but not statistically significant at the conventional 5% threshold. This does not mean the school environment is irrelevant. Rather, it suggests that in this single-school sample, the observed variation in facilities, noise, ventilation, and work relationships may not have been large enough to produce a stable independent statistical association with performance.

This finding differs from studies that report significant work-environment effects in broader or multi-school samples (Toropova et al., 2021; Ker et al., 2022; Dakhliatunnaviah & Adi, 2024). One

plausible explanation is contextual restriction of range: teachers in the same institution may share similar exposure to environmental conditions, reducing between-respondent variability and attenuating the statistical signal.

5.3 Joint Association with Teaching Staff Performance

The corrected simultaneous model remains significant overall, but its explanatory power is substantially lower than that reported in the earlier draft ($R^2 = 0.296$ rather than 0.540). More importantly, only competency retained statistical significance after both predictors were entered together. This pattern suggests that competency is the more stable correlate of teaching staff performance in the present dataset.

The result is still compatible with person-environment fit reasoning, but it indicates that the environment variable in this school may operate more as a background enabling condition than as a strong standalone predictor. The remaining 70.4% unexplained variance also indicates that other factors—such as motivation, leadership, organizational culture, compensation, or job satisfaction—were not captured in the model.

5.4 Practical Implications

For school management at SDN Grogol Utara 01, the evidence supports prioritizing competency development, particularly through professional certification, mentoring, peer observation, and pedagogical upskilling for uncertified teachers. Environmental improvements remain managerially worthwhile—especially regarding cooling, noise control, and facility access—but the corrected model suggests they should be framed as supportive quality-improvement measures rather than as the main independently validated driver of performance in this sample.

6. CONCLUSION

6.1 Conclusion

This study examined the associations between employee competency, work environment, and teaching staff performance at SDN Grogol Utara 01 South Jakarta using a revised analysis based on the original respondent-level tabulations. Three conclusions emerge.

First, employee competency shows a positive and statistically significant bivariate association with teaching staff performance, supporting H1 ($t = 3.370$, $p = 0.002$, $R^2 = 28.9\%$).

Second, work environment shows a positive but statistically non-significant bivariate association with teaching staff performance at the 5% level, so H2 is not supported in the corrected analysis ($t = 2.026$, $p = 0.052$, $R^2 = 12.8\%$).

Third, competency and work environment are jointly associated with teaching staff performance at the omnibus model level, supporting H3 in that limited

sense ($F = 5.682$, $p = 0.009$, $R^2 = 29.6\%$). However, only competency retained an independent significant coefficient in the simultaneous model.

6.2 Implications

6.2.1 Theoretical and Methodological Implications

Theoretically, the study contributes bounded evidence from an urban Indonesian public primary school and shows the importance of separating substantive interpretation from statistical overstatement in small-sample cross-sectional research. Methodologically, the revised manuscript strengthens transparency by re-verifying regression outputs against respondent-level appendix tabulations, reporting assumption checks, and clarifying item operationalization and respondent consent procedures.

The study also illustrates the value of saturated sampling in small institutional populations, while showing that such designs should be interpreted cautiously because limited within-site variability can attenuate certain associations, especially for shared school-environment conditions.

6.2.2 Practical Implications

For school leadership and district educational authorities, the most defensible immediate priority is targeted competency strengthening. Environmental improvements should continue as part of school quality assurance, but future decisions about large facility investments would benefit from broader multi-school evidence.

6.3 Limitations and Future Research Directions

Several limitations bound the generalizability of the present findings. First, the cross-sectional design limits causal inference and cannot capture change over time. Second, the single-site, small-N design constrains external validity. Third, the corrected analysis was reconstructed from the respondent-level tabulations reproduced in the thesis appendices because the original SPSS file was unavailable. Fourth, the model omits potentially relevant factors such as motivation, leadership, organizational culture, compensation, and job satisfaction. Future studies should use larger multi-school samples, richer models, and archived analytic files to improve robustness and reproducibility.

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