



The Influence of Principals' Managerial Competence, Academic Supervision, and Technology Utilization on the Performance of Public Junior High School Teachers in Kuala Kampar District

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ABSTRACT

This study aims to comprehensively examine the influence of principals' managerial competence, academic supervision, and technology utilization on the performance of public junior high school teachers in Kuala Kampar District, Indonesia. Data were collected through a structured questionnaire validated for reliability and validity, measuring four main variables: principals' managerial competence, academic supervision, technology utilization, and teacher performance. Descriptive analysis revealed that most teachers, as well as principals' managerial competence, academic supervision practices, and technology utilization, fell within the moderate category. Prerequisite tests confirmed that the dataset met the assumptions required for regression analysis, including normality, linearity, and absence of multicollinearity. Technology utilization, although challenged by infrastructure and digital literacy issues, remains crucial for enhancing instructional creativity and access to diverse learning resources. In conclusion, the synergy between leadership, supervision, and technology adoption forms the foundation for sustainable improvements in educational quality.

INTRODUCTION

The improvement of national education quality in Indonesia is strongly determined by the competence of human resources, particularly the role of teachers as the forefront of successful learning in schools. Teachers are not only responsible for delivering content but also for character building, nurturing students' potential, and supporting the attainment of national education objectives as mandated by Law No. 20 of 2003 on the National Education System (Gunawan & Almukarranah, 2018; Mulyasa, 2015; Indartiningsih, 2023). Objective evaluation of teacher performance through instruments such as the Education Report Card is crucial for formulating data-based policies to enhance education quality overall (Yuliana, Sugiyono, & Prasajo, 2019; Safitri et al., 2022). With a systematic and data-driven evaluation system, all stakeholders are expected to continually enhance teacher professionalism and competence to achieve high-quality education. In summary, data-based evaluation of teacher performance is essential for strengthening national education competitiveness.

The 2024 Education Report Card at SMP Negeri 1 Kuala Kampar indicates that indicators such as literacy, numeracy, character, school safety, and diversity have reached the "good" category, but the quality of instruction remains at a moderate level. This is reflected in the lack of innovation in teaching methods, limited creative interaction between teachers and students, and suboptimal use of technology (Harahap, 2020; Munir, 2015; Majeed et al., 2024). The challenge of teacher certification is also prominent, with nearly half of the teachers uncertified, resulting in uneven distribution of instructional competence (Khoeriyah, 2015; Amelia et al., 2021). Such conditions demand systematic and strategic efforts to equalize teacher competence and strengthen data-based instructional innovation. Thus, optimal instructional quality requires equitable teacher competence distribution and the reinforcement of innovative, data-based teaching practices.

The managerial competence of school principals is a strategic factor that greatly influences teacher performance and the work atmosphere within schools. Principals are expected to act as administrators, change managers, and drivers of a positive work culture in educational settings (Meidiana et al., 2020; Spencer & Spencer, 2015; Romadhon & Ms, 2021). Managerial skills involve formulating vision and mission, managing resources, and making strategic decisions to foster a conducive work climate (Suyanto & Asep, 2016; Rahmat, 2017). However, obstacles such as limited funds, lack of teaching staff, and insufficient supervisory support remain challenges in practice (Yuliana, Sugiyono, & Prasajo, 2019; Wahjosumidjo, 2016). Principals who overcome these barriers can significantly motivate and professionalize teachers. In conclusion, the managerial competence of principals is a key element for effective and competitive educational governance.

Beyond managerial aspects, structured and consistent academic supervision plays a significant role in enhancing teacher professionalism. Quality academic supervision includes mentoring, providing constructive feedback, and motivating teachers to continuously innovate in their teaching practices (Amelia et al., 2021; Pujianto, 2020; Sutikno, 2019; Safrizal et al., 2024). Nevertheless,

implementation is often constrained by administrative workload and insufficient planning (Khoeriyah, 2015; Darling-Hammond et al., 2017; Saputra & Sulisawati, 2023). At SMPN 1 Kuala Kampar, academic supervision is conducted periodically, but improvements are still needed in terms of structure, frequency, and feedback quality (Prastojo & Sudiyono, 2015). Therefore, effective academic supervision serves as a fundamental foundation to reinforce teacher performance in schools.

The integration of technology in education has become a strategic agenda in the digital transformation era, with teachers expected to adapt to technological advances to increase efficiency, creativity, and learning effectiveness (Harahap, 2020; Munir, 2015; Fauzi, 2020; Hamidah & Supardi, 2024). At SMPN 1 Kuala Kampar, only about 46% of teachers routinely use technology in instruction, while the majority still rely on conventional methods (Setiawan, 2016; Purwanto, 2017). Challenges include limited training, inadequate digital infrastructure, and less-than-optimal motivation (Rizki, 2023). Teachers' readiness to integrate technology is crucial to support innovative and interactive learning. Consequently, strengthening teachers' digital literacy should be a priority to improve education quality in schools. In conclusion, optimal integration of technology is an urgent necessity to advance 21st-century education.

Previous studies have shown that principals' managerial competence, academic supervision, and technology utilization significantly contribute to improving teacher performance (Agus Tamami & Lutfiatul Azkia, 2023; Sugeng, 2022; Madinatun Minawati et al., 2020; Amelia et al., 2021; Rahmadhani et al., 2024). However, in coastal and 3T (frontier, outermost, and disadvantaged) areas such as Kuala Kampar, comprehensive studies examining the simultaneous effect of these three factors remain scarce (Hervina, 2023; Annabila et al., 2024). Geographic and resource constraints often hinder equitable access and improvement of teacher competence (Tamburaka & Handoko, 2025). Thus, integrative studies are needed to develop contextual and applicable strategies for educational quality improvement. In summary, integrative research on these three core factors is vital for designing strategies to enhance education quality in disadvantaged regions.

The role of school leadership in shaping the school's vision, mission, and improvement strategies is indisputable. Principals capable of empowering teachers, designing development programs, and nurturing a collaborative work culture will foster adaptive and innovative schools (Lia Yuliana et al., 2019; Wahjosumidjo, 2016; Fanani & Fadli, 2023). Research demonstrates that strong managerial competence among principals directly and indirectly affects teacher performance (Agus Tamami & Lutfiatul Azkia, 2023; Sugeng, 2022; Devi & Wiyasa, 2021). Principals who are adaptive and open to change can motivate teachers for continuous improvement. Therefore, strengthening the role of principals is a fundamental strategy for educational transformation.

Academic supervision that is systematic, reflective, and collaborative has been proven to enhance teacher professionalism, innovation, and commitment (Amelia et al., 2021; Madinatun Minawati et al., 2020; Rahmadhani et al., 2024; Sagala, 2016). Supervision that goes beyond administrative routines and focuses

on capacity building and teacher development has shown a significant impact on teacher performance (Nelitawati & Ginanjar, 2023). Thus, improving the quality of academic supervision must be a priority in school policy to build adaptive and innovative learning environments. In conclusion, teacher-development-oriented academic supervision is key to achieving quality education.

Digital transformation in schools is highly influenced by teachers' readiness to access, use, and integrate technology into instructional practice (Fauzi, 2020; Setiawan, 2016; Muaddab et al., 2024). Technology use not only supports administrative management but also accelerates communication, enhances creativity, and supports digital-based assessment (Purwanto, 2017; Warsita, 2018; Zahara et al., 2023). Studies confirm that technological skills among teachers are a distinguishing factor for 21st-century instructional effectiveness (Tamburaka & Handoko, 2025; Badaruddin, 2022). Strengthening digital infrastructure and increasing teachers' ICT competence should be an integral part of educational development policies. In summary, teachers' digital readiness and competence are foundational to technology-based educational transformation.

Based on these considerations, this study aims to comprehensively analyze the influence of principal managerial competence, academic supervision, and technology utilization—both partially and simultaneously—on the performance of junior high school teachers in Kuala Kampar District. The findings are expected to provide theoretical and practical contributions to educational management policy, capacity building for principals and teachers, and optimization of technology in schools, especially in coastal and 3T regions (Annabila et al., 2024; Tresta et al., 2023). Thus, a comprehensive research approach in education is necessary to address the challenges of sustainably improving national education quality.

METODE

Research Design

This study employed a quantitative approach with an ex post facto survey method. The quantitative approach emphasizes the use of measurable data, analyzed statistically to objectively examine hypotheses and the relationships among variables (Arikunto, 2016). The ex post facto design was chosen as the research aimed to explore the causal relationship between the managerial competence of principals, academic supervision, and the utilization of technology on teachers' performance without intervening in the independent variables (Sugiyono, 2017).

Research Setting and Duration

The research was conducted at all public junior high schools (SMP Negeri) in Kuala Kampar Subdistrict, Pelalawan Regency, Riau Province. This location was selected due to its alignment with the research focus, namely the presumed influence of principals' managerial competence, academic supervision, and technology utilization on teacher performance. Data collection was carried out from April to June 2025, considering the schools' academic calendar and respondent availability to ensure that the data collected was accurate and reflective of the actual conditions in the field.

Population and Sample

The population consisted of all public junior high school teachers in Kuala Kampar Subdistrict, spread across seven schools with a total of 78 teachers. Because the total population was relatively small, a total sampling technique was applied, so all teachers participated as research respondents (Arikunto, 2010). This approach ensured that the findings could be generalized to the whole target group in the area.

Research Variables

The study involved three independent variables—principals' managerial competence (X1), academic supervision (X2), and technology utilization (X3)—as well as one dependent variable, teacher performance (Y).

Indicators for Each Variable

Each variable was measured with a specific number of items (questions/statements) in the questionnaire, following established indicators:

1. Principals' Managerial Competence:

Measured with 30 items based on indicators such as school planning, leadership, curriculum management, learning environment, infrastructure, and administration (Suyanto & Asep, 2016).

2. Academic Supervision:

Measured with 25 items covering preparation, implementation, data analysis, feedback, and follow-up (Arikunto & Jabar, 2017).

3. Technology Utilization:

Measured with 20 items related to infrastructure readiness, digital competence, digital material development, and technology use for assessment and evaluation (Munir, 2017).

4. Teacher Performance:

Measured with 24 items assessing mastery of teaching materials, classroom management, lesson planning, use of media, interaction, evaluation, professionalism, and understanding the educational function (Mulyasa, 2015).

Data Collection Techniques and Instruments

Data were collected using a structured questionnaire distributed to all 78 teachers. The questionnaire was developed based on theoretical indicators for each variable, with item construction guided by expert validation. Respondents completed the questionnaires independently to minimize response bias and encourage honest, personal reflections.

Validity and Reliability Testing

Instrument validity was evaluated using the Pearson Product Moment correlation at a 0.05 significance level. An item was deemed valid if its calculated *r*-value exceeded the table value. Invalid items were excluded to ensure each instrument precisely measured its intended variable. The validity results indicated that all variables had sufficient valid items for data collection. Reliability was tested using Cronbach's Alpha, with a threshold of 0.70. All variables demonstrated high reliability, with Cronbach's Alpha coefficients above 0.80, indicating strong internal consistency and instrument dependability.

Data Analysis Techniques

Data analysis included several steps:

1. Descriptive analysis to explore the overall trends in the data, such as means, standard deviations, and range.
2. Classical assumption tests comprising normality tests (Kolmogorov-Smirnov and Shapiro-Wilk), linearity tests (ANOVA for linearity), and multicollinearity tests (VIF and Tolerance) to ensure the suitability of the data for regression analysis.
3. Regression analysis included both simple regression (to examine the effect of each independent variable individually) and multiple regression (to analyze the simultaneous effect of all independent variables on teacher performance).
4. Determination coefficient (R^2) was used to assess the extent to which the independent variables collectively explained the variance in teacher performance.

All significance decisions were based on a p-value of <0.05 . The results were interpreted accordingly to answer the research hypotheses and objectives.

Research Ethics

The study was conducted with permission from the respective schools. The confidentiality and anonymity of all respondents were guaranteed. Participation was voluntary, and all data collected were used solely for academic purposes.

RESULT

Descriptive Statistics

This study involved a total of 78 teachers from public junior high schools in Kuala Kampar District. Descriptive analysis was conducted on all main research variables, namely teacher performance, managerial competence, academic supervision, and technology utilization. The mean score for teacher performance was 62.00 (SD = 4.71), with a median and mode of 63.00, indicating a relatively symmetrical distribution. Most teachers (79.5%) fell into the moderate performance category, while only 9.0% were categorized as high and 11.5% as low. This result indicates that the majority of teachers demonstrated moderate performance levels, with a limited proportion classified as either very high or very low.

For the managerial competence variable, the mean score was 97.87 (SD = 6.08), with a median of 99.00 and a mode of 102.00. The spread of scores was classified as low, as indicated by a relatively small standard deviation. Most respondents (64.1%) were included in the moderate category, while 17.9% each fell into the high and low categories. This suggests that, in general, school principals' managerial competence was perceived as sufficient but not exceptional by the majority of respondents.

Academic supervision showed a mean score of 65.69 (SD = 5.13), with a median of 68.00 and a mode of 70.00. Most respondents (76.9%) were classified in the moderate category, while only 7.7% fell into the high category, and 15.4% into the low. This indicates that the implementation of academic supervision was generally consistent, but opportunities for improvement remain.

Technology utilization received a mean score of 51.05 (SD = 2.89), with most respondents (76.9%) again classified as moderate, and the remaining

distributed between the high (7.7%) and low (15.4%) categories. The relatively low standard deviation indicates a homogeneous response pattern among teachers regarding the use of technology in teaching and learning processes

Prerequisite Testing

Normality, linearity, and multicollinearity tests were carried out to ensure the assumptions of regression analysis were met. Shapiro-Wilk normality tests showed that all variables—managerial competence, academic supervision, technology utilization, and teacher performance—were normally distributed ($p > 0.05$ for all). Linearity testing revealed that all independent variables had a linear relationship with the dependent variable, teacher performance ($p < 0.05$ for each). Multicollinearity diagnostics showed Tolerance values above 0.10 and VIF values well below the threshold of 10, confirming that no multicollinearity existed among the independent variables. These results confirm that the data met the fundamental requirements for further regression analysis

Simple Linear Regression Analysis

The effect of each independent variable on teacher performance was analyzed separately using simple linear regression:

1. Managerial Competence: The regression equation $Y = 33.788 + 0.288X_1$ indicated that each one-point increase in managerial competence contributed to a 0.288-point increase in teacher performance ($p = 0.001$). The R Square value of 0.138 suggests that managerial competence alone accounted for 13.8% of the variance in teacher performance, with the remaining 86.2% explained by other variables outside the model.
2. Academic Supervision: The regression equation $Y = 6.506 + 0.845X_2$ revealed that each one-point increase in academic supervision resulted in a 0.845-point increase in teacher performance ($p < 0.001$). The R Square value of 0.846 indicated that academic supervision explained 84.6% of the variation in teacher performance, making it the most dominant single predictor in this study.
3. Technology Utilization: The regression equation $Y = 22.705 + 0.770X_3$ demonstrated that each one-point increase in technology utilization produced a 0.770-point increase in teacher performance ($p < 0.001$). The R Square value of 0.222 showed that technology utilization accounted for 22.2% of the variance in teacher performance

Multiple Linear Regression Analysis

A multiple linear regression analysis was performed to determine the combined effects of managerial competence, academic supervision, and technology utilization on teacher performance. The resulting regression equation was $Y = 6.135 + 0.020X_1 + 0.840X_2 + 0.053X_3$. This model indicated that academic supervision made the largest contribution to teacher performance ($\beta = 0.840$, $p < 0.001$), followed by technology utilization ($\beta = 0.053$, $p < 0.001$), and managerial competence ($\beta = 0.020$, $p = 0.003$).

The F-test for the regression model was significant ($F = 135.655$, $p < 0.001$), demonstrating that the combination of independent variables significantly predicted teacher performance. The model's R Square of 0.846 indicated that managerial competence, academic supervision, and technology utilization together explained 84.6% of the variance in teacher performance, with only 15.4%

explained by other factors not included in the model. This finding underscores the importance of academic supervision as the most influential predictor, while managerial competence and technology utilization also play significant, albeit smaller, roles

DISCUSSION

The findings of this research confirm that principals' managerial competence significantly influences teacher performance. Empirical evidence from this study reveals that each increase of one point in principals' managerial competence potentially improves teacher performance by 0.288 points ($p=0.001$, $R^2=0.138$). Principals possessing strong managerial skills effectively foster a positive work climate, deliver necessary professional support, and optimally implement teaching strategies (Setyaningsih & Suchyadi, 2021; Hou, 2023). Furthermore, studies by Tamami and Azkia (2023) and Sugeng (2022) reinforce the essential role of managerial competencies, particularly in coastal regions like Kuala Kampar, where educational resources and professional development opportunities are limited. Competent principals are instrumental in overcoming educational barriers by mentoring and motivating teachers to meet professional standards, thus significantly elevating their performance. Therefore, enhancing managerial competencies of principals should be prioritized as a strategic intervention for improving teacher performance, especially in resource-constrained contexts.

From a theoretical perspective, the results of this research align with educational management theories that emphasize effective leadership as a crucial driver of teacher motivation and professional growth (Sidabutar et al., 2023; Werdiningsih, 2024). Principals with robust managerial competence can systematically design development programs, foster collaborative and supportive work cultures, and efficiently allocate resources for optimal teacher productivity. The proactive management of school principals ensures adaptability and productivity within educational environments, ultimately translating into improved instructional quality and student achievement (Hou, 2023). Thus, it is concluded that reinforcing principals' managerial capabilities constitutes a fundamental strategy for enhancing teacher effectiveness and educational outcomes, particularly in disadvantaged areas.

This research also demonstrates that academic supervision has the strongest impact on teacher performance, accounting for 84.6% of performance variation (regression coefficient=0.845, $p=0.000$). Principals' consistent and structured supervision significantly improves teaching quality, promotes pedagogical innovation, and bolsters teacher professionalism (Firman et al., 2024; Rahmayanti et al., 2023). The theoretical framework by Glickman (2010) supports these findings by positing academic supervision as essential for teacher reflection, feedback, and continuous professional development. Additionally, research by Minawati et al. (2020) and Selamet (2017) confirms the positive implications of well-structured academic supervision on teacher morale and instructional quality. Hence, effective academic supervision, integrated with

professional mentoring, conclusively emerges as a primary mechanism for enhancing teacher performance.

In geographically isolated regions such as Kuala Kampar, academic supervision assumes greater significance due to limited access to external professional development resources. Studies by Rahmadhani et al. (2024) and Sujianto et al. (2023) highlight that adaptive, collaborative, and technology-integrated academic supervision effectively addresses the contextual challenges teachers face. Implementing innovative, contextual supervision strategies tailored to local conditions enhances teacher performance significantly, despite resource constraints. Therefore, it is concluded that academic supervision is pivotal for improving teaching effectiveness and ensuring educational quality in remote or disadvantaged regions.

Furthermore, this study establishes the significant positive impact of technology utilization on teacher performance, although its individual contribution ($R^2=0.222$) remains lower than academic supervision. Findings indicate that each incremental increase in technology utilization potentially improves teacher performance by 0.770 points ($p=0.000$). Teachers proficient in digital tools tend to exhibit higher adaptability, creativity, and professional efficacy in classroom management (Nursanty, 2022; Suyatno et al., 2023). According to modern educational theories advocated by Prensky (2010), optimal integration of ICT significantly enhances instructional effectiveness. However, infrastructural limitations and low digital literacy among teachers in coastal regions pose challenges, necessitating robust training programs and infrastructural improvements. Hence, ongoing digital competency training and resource provision remain essential strategies for maximizing the educational benefits of technology.

The practical implications of technology utilization extend to the necessity of systematic investment in ICT infrastructure, digital literacy enhancement, and collaboration among educational stakeholders (Syukri et al., 2023; Tamburaka & Handoko, 2025). Teachers' ability to integrate technology effectively into daily teaching routines requires comprehensive support from governmental and educational communities. Successful technological integration hinges on adaptive strategies responsive to specific regional constraints. In conclusion, sustainable and effective use of educational technology depends on continuous training, adequate facility provision, and ongoing institutional support.

Simultaneously, the combined effect of managerial competence, academic supervision, and technology utilization significantly predicts teacher performance, accounting for 84.6% of the observed variance ($F=135.655$, $p=0.000$). Within this integrated framework, academic supervision remains the dominant factor, supported by managerial competence and technology utilization. The synergy among these variables is critical to developing adaptive, competitive, and innovative educational environments, particularly within resource-challenged settings (Haryanto, 2024; Mubinan et al., 2024). This integrated approach is consistent with Sergiovanni's (2009) systems theory in educational management, emphasizing coherence among leadership, supervision, and technological innovation. Therefore, it is concluded that a comprehensive

educational strategy incorporating these elements is highly effective for enhancing teacher performance and educational quality.

This study offers novel insights by comprehensively exploring the collective impact of managerial competence, academic supervision, and technology use within Kuala Kampar District. Its practical contributions extend to informing educational policy aimed at strengthening managerial capacity, optimizing academic supervision effectiveness, and accelerating technological integration (Putri et al., 2022). Recommendations include further research on technology-based supervisory models and intensive digital literacy programs tailored to disadvantaged contexts. Consequently, simultaneous integration of managerial leadership, robust supervision, and technological innovation constitutes a strategic solution for improving teacher performance in underdeveloped educational settings.

Overall, this discussion underscores that principals' managerial competencies, structured academic supervision, and technological integration collectively constitute critical drivers of teacher performance. These elements not only improve instructional quality and professional development but also foster educational environments conducive to innovation, adaptability, and sustained growth (Arsal et al., 2024). Educational decision-makers are thus encouraged to adopt multidimensional, collaborative strategies addressing managerial skills enhancement, supervision effectiveness, and technological adoption comprehensively. Ultimately, such approaches significantly contribute to establishing equitable educational opportunities and improving overall educational outcomes, particularly in geographically isolated and resource-constrained regions.

CONCLUSION

The findings of this study confirm that principals' managerial competence, academic supervision, and technology utilization significantly impact teacher performance at SMP Negeri schools in Kuala Kampar District. Individually, academic supervision emerged as the most influential variable, followed by technology utilization, and then principals' managerial competence. Collectively, these three factors account for 84.6% of the variation in teacher performance, highlighting their importance as integrated elements within educational management systems.

Principals' managerial competence plays a crucial role by fostering supportive environments, motivating teachers, and facilitating professional development, especially in resource-limited coastal areas. Academic supervision, through structured and continuous guidance, significantly enhances teachers' instructional quality, pedagogical innovation, and professional growth. Meanwhile, optimal technology utilization strengthens teachers' adaptability, creativity, and instructional effectiveness, particularly when supported by adequate ICT infrastructure and continuous digital literacy training.

This study underscores the necessity for comprehensive, synergistic approaches integrating managerial leadership, robust academic supervision, and effective technological integration to improve educational outcomes.

Policymakers and educational leaders should therefore prioritize enhancing these areas to achieve sustained improvements in teacher performance and educational quality, particularly in geographically isolated and underdeveloped regions. Future research should explore innovative, technology-based supervision models and digital competency training programs tailored explicitly for remote educational settings.

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