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Pengaruh Kinerja Pengawas dan Kepemimpinan Kepala Madrasah terhadap Mutu Sekolah Inklusif pada Era Transformasi Digital di MAN Bantaeng

The Influence of Supervisors' Performance and Madrasah Principals' Leadership on Inclusive School Quality in the Digital Transformation Era at MAN Bantaeng

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Kata Kunci: kinerja pengawas; kepemimpinan kepala madrasah; mutu sekolah inklusif; transformasi digital

Abstrak

Transformasi digital menuntut madrasah memperkuat tata kelola, kepemimpinan, supervisi, dan layanan yang inklusif. Penelitian ini bertujuan menganalisis pengaruh kinerja pengawas dan kepemimpinan kepala madrasah terhadap mutu sekolah inklusif di MAN Bantaeng, Kabupaten Bantaeng. Penelitian menggunakan pendekatan kuantitatif asosiatif dengan metode survei terhadap seluruh populasi guru sebanyak 16 orang melalui teknik sampling jenuh. Instrumen menggunakan skala Likert 1–5 dan data dianalisis dengan regresi linear sederhana dan berganda setelah pengujian prasyarat. Hasil menunjukkan bahwa kinerja pengawas berpengaruh positif dan signifikan terhadap mutu sekolah inklusif ($R^2 = 0{,}402$; $p = 0{,}007$), kepemimpinan kepala madrasah berpengaruh positif dan signifikan ($R^2 = 0{,}784$; $p < 0{,}001$), dan kedua variabel secara simultan menjelaskan 81,9% variasi mutu sekolah inklusif ($R^2 = 0{,}819$; $F = 25{,}723$; $p < 0{,}001$). Temuan menegaskan pentingnya sinergi supervisi dan kepemimpinan digital dalam memperkuat mutu layanan inklusif. Karena jumlah responden hanya 16 orang dari satu madrasah, generalisasi temuan perlu dilakukan secara hati-hati.

Keywords: supervisors' performance; madrasah principal leadership; inclusive school quality; digital transformation

Abstract

Digital transformation requires madrasahs to strengthen governance, leadership, supervision, and inclusive educational services. This study analyzes the effects of supervisors' performance and madrasah principals' leadership on inclusive school quality at MAN Bantaeng, Bantaeng Regency. An associative quantitative survey was conducted using saturated sampling of the entire teacher population ($N = 16$). Data were collected using a five-point Likert questionnaire and analyzed through simple and multiple linear regression after assumption testing. The results show that supervisors' performance had a positive and significant effect on inclusive school quality ($R^2 = .402$, $p = .007$), while principals' leadership also had a positive and significant effect ($R^2 = .784$, $p < .001$). Simultaneously, both predictors explained 81.9% of the variance in inclusive school quality ($R^2 = .819$, $F = 25.723$, $p < .001$). The findings highlight the importance of synergy between supervision and digital leadership in strengthening inclusive school quality. Given the small sample from a single madrasah, the findings should be generalized cautiously.

INTRODUCTION

Digital transformation in education has reshaped how schools and madrasahs manage teaching and learning, supervision, communication, and decision-making. This shift requires not only the availability of technology but also leadership capable of steering change and a supervisory system that is responsive, collaborative, and data-informed. Karakose identifies digital leadership as a strategic capability for school leaders in driving organizational transformation, while Altınok emphasizes that educational supervision must adapt to technological change and teachers' professional development needs.[1,2]

In the context of inclusive education, these demands become more complex because madrasahs must ensure that digital transformation does not widen service disparities among learners with diverse needs and abilities. Navas-Bonilla, Rončević, and Rieckmann show that technology supports inclusion only when accompanied by institutional design and policies that address accessibility. Similarly, Chalkiadakis, Karras, and Papadopoulos underscore the importance of deliberately integrating adaptive technologies into inclusive education.[3,4]

At the madrasah management level, supervisors and principals perform complementary roles. Supervisors are responsible for academic and managerial supervision, professional development, and quality monitoring, whereas principals translate policy directions into organizational culture, resource management, and instructional innovation. Studies by Rahmawati and Suryadi and Suratman et al. highlight the importance of digital leadership for school innovation, while Nurdin and Nurhidayati demonstrate the contribution of supervision to reflective culture and teacher professionalism.[5,6,7,8]

Nevertheless, most previous studies have examined digital leadership, supervision, or inclusive education separately. Research simultaneously testing the contributions of supervisor performance and madrasah principal leadership to inclusive school quality in the context of digital transformation remains limited. This gap defines the position of the present study. MAN Bantaeng was selected as the research setting to examine whether the quality of supervision and madrasah leadership is

[1] Karakose, T. (2022). Digital leadership in education: The future of school management in the age of transformation. Educational Technology Research and Development, 70(1), 35-52.

[2] Altınok, N. (2024). Educational supervision and digital transformation in schools: A systematic review. International Journal of Education Policy, 19(1), 22-35.

[3] Navas-Bonilla, D., Rončević, N., & Rieckmann, M. (2025). Inclusive education and sustainability in the digital era. Frontiers in Education, 10, 117-133.

[4] Chalkiadakis, E., Karras, T., & Papadopoulos, D. (2024). Technology integration and accessibility in inclusive education: The role of AI and VR. Journal of Research on Technology in Education, 56(2), 101-120.

[5] Rahmawati, N., & Suryadi, D. (2022). Kepemimpinan kepala sekolah dan inovasi digital madrasah. Jurnal Manajemen Pendidikan Islam, 7(1), 33-45.

[6] Suratman, S., Torres, J. M., Salehudin, M., Susmiyati, S., & Sugiyono, S. (2024). The influence of digital leadership toward digital transformation of education. Southeast Asian Journal of Islamic Education, 7(2), 139-153.

[7] Nurdin, M. (2021). Supervisi pengawas dan budaya reflektif guru. Jurnal Administrasi Pendidikan, 28(3), 221-230.

[8] Nurhidayati, L. (2023). Supervisi digital dalam peningkatan profesionalisme guru madrasah. Jurnal Pendidikan Islam Digital, 5(1), 11-25.

associated with teachers' perceptions of inclusive service quality.

Against this background, this study aims to: (1) analyze the effect of supervisor performance on inclusive school quality; (2) analyze the effect of madrasah principal leadership on inclusive school quality; and (3) analyze the simultaneous effects of both variables on inclusive school quality in the digital transformation era at MAN Bantaeng.

RESEARCH METHODS

This study employed an associative quantitative approach using a survey method. The study was conducted at MAN Bantaeng, located in the Dampang area of Bantaeng Regency. The population comprised all 16 teachers at the madrasah. Given the limited population size, all members were included as respondents through saturated sampling, resulting in a sample size of N = 16.

The research instrument was a five-point Likert-scale questionnaire measuring three variables: supervisor performance (X_1), madrasah principal leadership (X_2), and inclusive school quality (Y). Item validity was assessed using Pearson's Product-Moment correlation, while reliability was examined using Cronbach's alpha, with $\alpha > .70$ adopted as the criterion recommended by Hair, Black, Babin, and Anderson. All items included in the analysis were found to be valid and reliable.[9]

Data were analyzed using SPSS version 25. The analytical procedures included descriptive statistics, tests of normality, linearity, and multicollinearity, followed by simple and multiple linear regression. The significance level was set at $\alpha = .05$. Because the study involved only 16 respondents from a single madrasah, the inferential results were treated as context-specific estimates; the regression coefficients and coefficients of determination were not interpreted as a basis for broad generalization across madrasahs.

RESULTS AND DISCUSSION

1. Descriptive Statistics

All 16 teachers returned the questionnaire, yielding a response rate of 100%. Mean scores indicated that all three variables were rated in the very good category. A summary is presented in Table 1.

Table 1. Mean Scores for Each Variable

Variable	Mean	Category
Supervisor Performance (X_1)	4.21	Very Good
Madrasah Principal Leadership (X_2)	4.35	Very Good
Inclusive School Quality (Y)	4.28	Very Good

These scores indicate that respondents perceived supervisory practices, madrasah principal leadership, and inclusive service quality at a high level. However, because the data were derived from teachers' perceptions within a single institution, these descriptive findings should be interpreted as an internal profile of MAN Bantaeng rather than as a representation of the broader madrasah population.

2. Assumption Testing

The prerequisite tests showed a Kolmogorov-Smirnov significance value of .200 (> .05), indicating that the data satisfied the normality assumption. The linearity test indicated linear

[9] Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2020). Multivariate data analysis (8th ed.). Pearson Education.

relationships among the variables at the .05 significance level. The VIF values for X_1 and X_2 were 1.432 and 1.587, respectively (< 10), indicating no evidence of multicollinearity in the multiple regression model.

3. Effect of Supervisor Performance on Inclusive School Quality

Table 2. Simple Regression of Supervisor Performance on Inclusive School Quality

Statistic	Value
Correlation coefficient (r)	.634
Coefficient of determination (R^2)	.402
t statistic	3.150
Sig.	.007

Simple regression analysis showed a positive and significant relationship between supervisor performance and inclusive school quality ($r = .634$; $R^2 = .402$; $t = 3.150$; $p = .007$). Thus, in the simple model, supervisor performance explained 40.2% of the variance in inclusive school quality. This finding indicates that better supervision, professional guidance, and support received by teachers are associated with higher perceived quality of inclusive services.

This finding is consistent with Nurdin, who identifies supervision as a lever for developing teachers' reflective culture, and with Nurlinda, who demonstrates the importance of supervisory roles in improving inclusive school quality. Putra, Hasanah, and Dewi likewise emphasize that collaborative supervision supports teacher performance in inclusive settings. In the digital era, this function becomes increasingly important because supervisors are expected not merely to monitor administrative compliance but also to help teachers adapt pedagogy to technology and to the diverse needs of learners.[10,11,12,13]

4. Effect of Madrasah Principal Leadership on Inclusive School Quality

Table 3. Simple Regression of Madrasah Principal Leadership on Inclusive School Quality

Statistic	Value
Correlation coefficient (r)	.885
Coefficient of determination (R^2)	.784
t statistic	6.914
Sig.	< .001

Madrasah principal leadership showed a stronger positive and significant effect on inclusive school quality ($r = .885$; $R^2 = .784$; $t = 6.914$; $p < .001$). In the simple regression model, this variable explained 78.4% of the variance in inclusive school quality. The finding suggests that the principal's capacity to articulate a vision, mobilize teachers, facilitate technology use, and sustain an inclusive culture is an important element in perceptions of school quality.

This finding aligns with Rahmawati and Suryadi on the principal's role in fostering digital innovation, and with Suratman et al., who position visionary and adaptive leadership as a driver of digital transformation. In the context of

[10] Nurdin, M. (2021). Supervisi pengawas dan budaya reflektif guru. Jurnal Administrasi Pendidikan, 28(3), 221-230.

[11] Nurlinda. (2020). The principal's role as supervisor in inclusive schools. Jurnal Pendidikan dan Manajemen Sekolah, 7(2), 102-118.

[12] Putra, I. B., Hasanah, R., & Dewi, S. (2020). Collaborative supervision and teacher performance in inclusive schools. Journal of Education Development, 5(4), 210-220.

[13] Nurhidayati, L. (2023). Supervisi digital dalam peningkatan profesionalisme guru madrasah. Jurnal Pendidikan Islam Digital, 5(1), 11-25.

inclusion, Basri and Syamsuddin and Suprayitno emphasize that digital leadership should be directed toward access, participation, and support for learner diversity. The potential of accessibility technologies such as AI and VR, as discussed by Chalkiadakis et al., will likewise be realized only when such technologies are integrated through appropriate policies and leadership.[14,15,16,17,18]

5. Simultaneous Effects of Supervisor Performance and Madrasah Principal Leadership

Multiple regression analysis was used to examine the simultaneous effects of supervisor performance and madrasah principal leadership on inclusive school quality. The resulting model was $Y = 0.317X_1 + 0.642X_2 + e$.

Table 4. Multiple Regression Results

Statistic	Value
F statistic	25.723
Sig.	< .001
Coefficient of determination (R^2)	.819

The value $F = 25.723$ with $p < .001$ indicates that the two predictors jointly had a significant effect on inclusive school quality. The coefficient of determination $R^2 = .819$ shows that the model explained 81.9% of the variance in inclusive school quality within this sample, while the remaining 18.1% was associated with factors outside the model.

Substantively, these results show that supervision and leadership do not operate independently. Supervisors provide quality assurance, professional guidance, and oversight, whereas madrasah principals organize change at the school level. Setyati and Niron and Misbah, Aziz, and Kojin show that collaborative supervision can strengthen school climate and teacher capacity development. Faizin, Hariyadi, Setiadi, and Pratama likewise emphasize the importance of collaborative planning and evaluation in academic supervision. On the leadership side, transformational approaches can enhance motivation, innovation, and organizational readiness for change.[19,20,21,22]

The novelty of this study lies in examining both variables within a single model in the context of an inclusive

[14] Rahmawati, N., & Suryadi, D. (2022). Kepemimpinan kepala sekolah dan inovasi digital madrasah. Jurnal Manajemen Pendidikan Islam, 7(1), 33-45.

[15] Suratman, S., Torres, J. M., Salehudin, M., Susmiyati, S., & Sugiyono, S. (2024). The influence of digital leadership toward digital transformation of education. Southeast Asian Journal of Islamic Education, 7(2), 139-153.

[16] Basri, M., & Syamsuddin, R. (2021). Digital innovation and inclusive school management. Jurnal Manajemen Pendidikan Islam, 9(2), 77-90.

[17] Suprayitno, A. (2025). Digital leadership model for inclusive madrasah management. Jurnal Kepemimpinan dan Transformasi Pendidikan Islam, 9(1), 1-12.

[18] Chalkiadakis, E., Karras, T., & Papadopoulos, D. (2024). Technology integration and accessibility in inclusive education: The role of AI and VR. Journal of Research on Technology in Education, 56(2), 101-120.

[19] Setyati, I., & Niron, M. D. (2024). Leadership supervision and school climate: Their effects on teacher performance in Islamic education contexts in Indonesia. Belajea: Jurnal Pendidikan Islam.

[20] Misbah, M., Aziz, A., & Kojin, K. (2023). Fostering excellence in madrasah through collaborative supervision: A management perspective. International Journal of Science, Technology & Management, 5(5).

[21] Faizin, A., Hariyadi, A., Setiadi, G., & Pratama, H. (2023). Development of principal collaborative-based academic supervision at Madrasah Ibtidaiyah, Rembang Regency. Studies in Technology and Education, 3(3).

[22] Syahrir, S., Fandir, A., & Nurfidah, N. (2024). Transformational leadership in academic supervision: Implications for school development. Jurnal Ilmiah Mandala Education.

madrasah undergoing digital transformation. The findings indicate that inclusive quality is not solely a matter of technology or policy but also the product of interaction between the supervisory system and local leadership capacity. This is consistent with Navas-Bonilla et al.'s argument that inclusive digital transformation requires governance capable of connecting technology, policy, and learners' needs.[23]

RESEARCH LIMITATIONS

This study has several limitations. First, the sample comprised only 16 respondents because the study included the entire teacher population of a single madrasah. Although saturated sampling eliminates sampling error within that population, the small N limits statistical power and makes the regression coefficients, p-values, and R^2 more sensitive to the characteristics of the respondents. Second, the study was conducted in only one institution; therefore, the findings cannot be directly generalized to all inclusive madrasahs. Third, all variables were measured through perception-based questionnaires, which may introduce common-method bias. Future research should involve multiple madrasahs, larger samples, and complementary data from observation or objective quality indicators.

CONCLUSION AND IMPLICATIONS

This study demonstrates that supervisor performance had a positive and significant effect on inclusive school quality (R^2 = .402), while madrasah principal leadership also had a positive and significant effect (R^2 = .784). Simultaneously, the two variables explained 81.9% of the variance in inclusive school quality within the study sample. These results indicate that improving inclusive school quality at MAN Bantaeng requires synergy between professional supervision and madrasah leadership that is adaptive to digital transformation.

In practical terms, supervisors should strengthen technology-supported collaborative supervision and teachers' professional development, while madrasah principals should ensure that digitalization is integrated into an inclusive, accessible, and responsive organizational culture that accommodates learner diversity. For the Ministry of Religious Affairs, these findings may inform capacity-building programs for supervisors and madrasah principals. However, these implications should be interpreted contextually given the small sample size and the study's single-institution scope.

[23] Navas-Bonilla, D., Rončević, N., & Rieckmann, M. (2025). Inclusive education and sustainability in the digital era. Frontiers in Education, 10, 117-133.

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