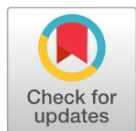


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The Influence of Principals' Managerial Competence, Madrasah Culture, and Teachers' Work Discipline on the Quality of Islamic Primary Schools

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ABSTRACT

Background. The quality of Madrasah Ibtidaiyah is a crucial indicator of the effectiveness of Islamic basic education in producing academically competent students with strong character. Improving madrasah quality requires the optimization of internal organizational factors, particularly managerial leadership, institutional culture, and teacher professionalism. However, variations in educational outcomes across madrasahs indicate that these factors may not contribute equally to institutional performance.

Purpose. This study aims to examine the influence of principals' managerial competence, madrasah culture, and teachers' work discipline on the quality of Madrasah Ibtidaiyah in Guntur District, Demak Regency, both partially and simultaneously.

Method. This research employed a quantitative ex post facto correlational design. The population consisted of 141 teachers and principals, with a sample of 105 respondents selected using proportional random sampling. Data were collected through Likert-scale questionnaires and analyzed using descriptive statistics and multiple linear regression, preceded by tests of validity, reliability, and classical assumptions.

Results. The findings revealed that all variables were in the good to very good category. Teachers' work discipline had the strongest positive and significant effect on madrasah quality, followed by madrasah culture. Principals' managerial competence did not show a significant partial effect when tested simultaneously with other variables. However, the three independent variables together significantly influenced madrasah quality, with a coefficient of determination of 0.908, indicating that 90.8% of the variance in quality could be explained by the model.

Conclusion. The quality of Madrasah Ibtidaiyah is primarily determined by operational factors directly related to teaching practice, especially teacher discipline and institutional culture, while managerial competence functions as a supporting factor that shapes the organizational environment. Improving madrasah quality therefore requires an integrated approach focusing on strengthening professional discipline, positive organizational culture, and effective leadership.

KEYWORDS

Managerial Competence, Madrasah Quality, School Culture

INTRODUCTION

Educational quality is a primary indicator of the success of an educational institution in producing graduates who are academically competent, socially responsible, and possess strong character.

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At the level of Islamic basic education, Madrasah Ibtidaiyah plays a strategic role in establishing both intellectual foundations and religious values for students. Improving the quality of madrasahs is not solely determined by students' academic achievement, but also by the quality of the learning process, institutional governance, and a supportive organizational environment. Research indicates that school effectiveness is strongly influenced by the quality of educational leadership and organizational conditions that facilitate optimal learning processes (Ozdogru et al., 2025). Furthermore, educational quality is shaped by the interaction between leadership factors, teacher capacity, and institutional conditions as a whole (Leithwood et al., 2020).

However, despite the strong emphasis on leadership in improving school quality, there remains an ongoing academic debate regarding whether leadership alone is sufficient to drive educational effectiveness, or whether teacher-related and organizational factors play a more dominant role. Some studies highlight leadership as the primary driver of school improvement, while others emphasize that teacher behavior and organizational culture may exert a more direct influence on instructional quality. This theoretical tension indicates that educational quality should be understood as a multidimensional outcome resulting from the interaction between leadership, organizational culture, and teacher-related factors rather than a single dominant variable.

In the context of Islamic education in Indonesia, madrasahs function as institutions that integrate the national curriculum with religious values. The success of madrasahs in achieving educational goals is largely determined by the managerial competence of the principal as the strategic leader of the organization. Empirical studies show that effective school leadership is positively correlated with improved teacher performance and learning quality (Khaqan & Redondo-Sama, 2024), while instructional leadership has a direct impact on student achievement through the strengthening of classroom practices (Chen & Bos, 2023). Managerial competence encompasses not only administrative skills but also visionary capacity, strategic decision-making, and teacher development, as transformational leadership significantly contributes to organizational effectiveness and teacher job satisfaction (Alzouebi et al., 2025; Özdemir et al., 2024).

In addition to leadership, madrasah culture is a crucial factor influencing educational quality. Madrasah culture reflects the values, norms, habits, and practices shared by all members of the institution. A positive organizational culture fosters a conducive learning environment, enhances discipline, and promotes the development of students' character in accordance with Islamic values. Research shows that strong school culture contributes to improved teacher performance, job satisfaction, and student achievement (Welsh et al., 2024), as well as students' psychological well-being and engagement in learning. However, weak leadership, low stakeholder participation, and external pressures may hinder the development of an effective culture, which in turn can reduce teacher motivation and learning quality (Heck, 2023).

Another critical factor determining madrasah quality is teachers' work discipline. Teachers are the primary actors in the educational process; therefore, the quality of their performance directly affects instructional effectiveness. Studies indicate that teachers' professional engagement and commitment are positively associated with student achievement and learning quality (Palaz et al., 2026), while teachers' psychological well-being also influences instructional performance (Zhao, 2024). Teacher discipline is shaped not only by individual factors but also by leadership and organizational culture, as positive school climate contributes to teachers' well-being and performance (Gebre et al., 2025) and job satisfaction (Ghbari et al., 2024; Nalipay, 2023).

Madrasah quality itself refers to the institution's ability to manage resources, instructional processes, and educational services effectively so that institutional goals and societal expectations are achieved. Research demonstrates that institutional quality is closely linked to internal management,

including leadership and school-based management practices (Elkaleh et al., 2025; Oppong & Oduro-Asabere, 2025), as well as school climate, organizational culture, and teacher performance (Altynbassov et al., 2024; Nguyen et al., 2025).

To provide a stronger theoretical foundation, this study adopts an organizational effectiveness perspective as the grand theory, which posits that institutional performance is the result of interactions among leadership, organizational culture, and human resource behavior. Within this framework, principals' managerial competence represents strategic leadership capacity, madrasah culture reflects the institutional environment, and teachers' work discipline represents behavioral outcomes at the individual level. These three components interact to determine the overall effectiveness and quality of the educational institution.

Managerial competence of madrasah principals refers to the ability to plan, organize, mobilize, supervise, and evaluate educational resources to achieve institutional goals (Darwis et al., 2025; Schiuma et al., 2024). Madrasah culture functions as both institutional identity and a social control mechanism influencing professional behavior (Emam et al., 2025; Hsieh et al., 2024; J. Li & King, 2026; Nkansah, 2026). Meanwhile, teachers' work discipline reflects compliance with professional standards and responsibilities, which is influenced by leadership, supervision, and organizational conditions (Alieto et al., 2024; Alonzo et al., 2025; Arviv Elyashiv & Rozenberg, 2024; Boudouaia et al., 2024).

Conceptually, the relationships among variables in this study are not merely linear but interactive. Principals' managerial competence is expected to influence madrasah culture, which in turn shapes teachers' work discipline. Furthermore, both madrasah culture and teachers' discipline act as mediating mechanisms through which leadership affects educational quality. This implies that improving school quality requires not only direct leadership intervention but also the strengthening of organizational culture and teacher behavior simultaneously.

Although numerous studies have examined these variables, most previous research has focused on general schools and has analyzed the variables separately rather than within an integrated framework. More importantly, existing studies tend to emphasize direct relationships, without explicitly examining the interaction or potential indirect effects among leadership, culture, and teacher behavior. This indicates a theoretical and empirical gap in understanding how these variables operate simultaneously within Islamic primary education settings.

In Guntur District, Demak Regency, Madrasah Ibtidaiyah institutions exhibit varying quality levels, accompanied by issues such as inconsistent teacher discipline, limited stakeholder participation, and relatively weak organizational culture. These conditions highlight the need for a more comprehensive analysis of the determinants of madrasah quality.

Based on these gaps, this study aims to analyze the influence of principals' managerial competence, madrasah culture, and teachers' work discipline on the quality of Madrasah Ibtidaiyah, both partially and simultaneously. Specifically, this study seeks to (1) examine the direct effects of each variable on madrasah quality, (2) analyze their combined influence, and (3) provide an integrated understanding of how leadership, culture, and teacher behavior interact in shaping educational quality.

Accordingly, this study proposes a conceptual framework in which principals' managerial competence influences madrasah quality directly and indirectly through madrasah culture and teachers' work discipline. This framework positions madrasah culture and teachers' discipline as key organizational mechanisms linking leadership to institutional outcomes.

RESEARCH METHODOLOGY

This study employed a quantitative approach with an ex post facto correlational design to examine the associations between principals' managerial competence, madrasah culture, and teachers' work discipline and the quality of Madrasah Ibtidaiyah without manipulating the variables under investigation. A quantitative approach was chosen because the study aimed to test hypotheses using numerical data analyzed statistically in order to obtain objective and measurable conclusions (Koskinen et al., 2024; Y. Liu et al., 2025; Mertens, 2023; Sarstedt et al., 2021).

The selection of an ex post facto design reflects the study's intention to analyze naturally occurring relationships among variables in an authentic educational context, where experimental manipulation is not feasible. Unlike experimental or longitudinal designs, this approach does not allow for strong causal inference. Therefore, the relationships examined in this study should be interpreted as associative or predictive rather than strictly causal (Ikegami & Monteiro, 2026; LaVigne-Jones, 2023).

The research was conducted in Madrasah Ibtidaiyah in Guntur District, Demak Regency, with a population consisting of all teachers and principals totaling 141 individuals. The sample size was determined using the Slovin formula with a 5% margin of error, resulting in 105 respondents selected through proportional random sampling (Foxfoot et al., 2025; Sharma, 2026).

Although the Slovin formula is commonly used in educational research, it does not incorporate statistical power considerations. Therefore, its use in this study is complemented by proportional random sampling to ensure adequate representation and to reduce sampling bias. Future studies are recommended to employ power analysis to strengthen methodological rigor.

To ensure proportional representation, the sample was distributed across madrasahs based on the number of teachers in each institution. The detailed distribution of respondents for each madrasah is presented in Table 1.

Table 1. Sample Distribution Based on Proportional Random Sampling

No	Name of School	Population (Teachers + Principal)	Calculation ($N_i/N \times n$)	Raw Result (ni)	Final Sample (Rounded)
1	MIN 2 Demak	18	$(18/141) \times 105$	13.40	13
2	MIN 3 Demak	19	$(19/141) \times 105$	14.15	14
3	MI Nurul Huda Blerong	9	$(09/141) \times 105$	6.70	7
4	MI Tholabiyah	10	$(10/141) \times 105$	7.45	7
5	MI Nurul Huda	13	$(13/141) \times 105$	9.68	10
6	MI Miftahul Athfal	11	$(11/141) \times 105$	8.19	8
7	MI Mu'abidin	14	$(14/141) \times 105$	10.43	10
8	MI Nurul Yaqin	10	$(10/141) \times 105$	7.45	7
9	MI Raudlatul Ulum	9	$(09/141) \times 105$	6.70	7
10	MI Al Hikmah Wuluh	9	$(09/141) \times 105$	6.70	7
11	MIS Sabilul Muttaqin	7	$(07/141) \times 105$	5.21	5
12	MI Bahrul Ulum	12	$(12/141) \times 105$	8.94	10
Total		141			105

Data Collection Techniques and Instruments

Data were collected using a closed-ended questionnaire with a five-point Likert scale to measure respondents' perceptions of each research variable (Shahat et al., 2024). The instrument was developed based on theoretical constructs underlying each variable. Principals' managerial competence was operationalized through planning, organizing, actuating, and controlling functions.

Madrasah culture was measured through shared values, norms, and institutional practices. Teachers' work discipline was reflected in punctuality, compliance, and professional responsibility, while madrasah quality was assessed through instructional effectiveness, management performance, and learning environment indicators.

Prior to the main data collection, a pilot test was conducted on a limited group of respondents to evaluate item clarity, reliability, and feasibility. The results of the pilot test were used to refine the questionnaire. Item validity was examined using Pearson Product-Moment correlation, while instrument reliability was tested using Cronbach's Alpha coefficient, with values ≥ 0.70 indicating good internal consistency (J. F. Hair et al., 2026; Sarstedt et al., 2021). In addition to the questionnaire, supporting data were obtained through documentation studies to strengthen the interpretation of the research findings. The questionnaires were distributed directly to respondents through coordination with madrasah principals. In several cases, the distribution was conducted in a supervised setting to ensure completeness and accuracy of responses.

Data Analysis Technique

Data analysis was conducted using multiple linear regression to determine the statistical relationships and predictive contributions of the independent variables to the dependent variable. Prior to regression analysis, classical assumption tests including normality, multicollinearity, heteroscedasticity, and linearity tests were performed to ensure that the regression model met the criteria for unbiased and reliable estimation (J. Hair & Sabol, 2025; Lee & Wooldridge, 2023).

Hypothesis testing was carried out using the t-test to examine the partial relationships of each independent variable, the F-test to assess the simultaneous relationship, and the coefficient of determination (R^2) to determine the magnitude of the independent variables' contribution to madrasah quality (Kaplan, 2023; Sharma et al., 2023).

It is important to emphasize that the regression analysis in this study is intended to identify statistical associations and predictive relationships rather than to establish definitive causal effects. Therefore, the interpretation of findings should be limited to the strength and direction of relationships among variables within the studied context.

In addition, this study acknowledges the potential influence of confounding variables such as teaching experience, school size, and institutional resources. Although these variables were not explicitly controlled in the regression model, efforts were made to minimize their variation by selecting a relatively homogeneous research setting within the same district and educational level. Future research is encouraged to incorporate control variables or advanced analytical techniques (e.g., structural equation modeling or longitudinal analysis) to strengthen causal inference.

RESULT AND DISCUSSION

This study was conducted in Madrasah Ibtidaiyah in Guntur District, Demak Regency, involving 105 respondents consisting of teachers and principals. Data were collected through a closed-ended questionnaire using a five-point Likert scale to measure principals' managerial competence, madrasah culture, teachers' work discipline, and madrasah quality as the research variables. The results of descriptive statistical analysis indicate that all variables fall within the good to very good category. A summary of the descriptive statistics for each variable is presented in Table 2.

Table 2. Descriptive Statistics of Research Variables

Variable	N	Min	Max	Mean	Standard Deviation	Category
Principal Managerial Competence (X ₁)	105	112	160	137.24	9.843	Very Good
Madrasah Culture (X ₂)	105	54	80	68.19	5.512	Good
Teachers' Work Discipline (X ₃)	105	55	80	68.44	5.103	Good
Madrasah Quality (Y)	105	70	100	85.00	6.215	Very Good

The data in Table 2 indicate that all variables have relatively high mean scores with low standard deviations, suggesting that respondents' perceptions are homogeneous and consistently positive. Principal managerial competence obtained the highest mean score, followed by teachers' work discipline and madrasah culture, while madrasah quality also falls within the very good category. However, this pattern of uniformly high responses raises a potential methodological concern regarding common method bias, as all variables were measured using self-reported data from the same respondents, which may artificially inflate correlations among variables.

The characteristics of respondents show that the majority were teachers (88.6%), while principals accounted for 11.4%, with most respondents holding a bachelor's degree and having more than ten years of experience. This indicates that respondents possess sufficient professional experience and educational qualifications to represent the madrasah context adequately.

The results of validity testing using Pearson correlation indicate that all questionnaire items are valid. Reliability testing shows that all variables have Cronbach's Alpha values exceeding 0.90, indicating high internal consistency. Nevertheless, Cronbach's Alpha values above 0.90 may also indicate item redundancy, suggesting that some items may overlap conceptually rather than reflect distinct aspects of the construct. Therefore, future research is recommended to employ Confirmatory Factor Analysis (CFA) to ensure construct validity and discriminant validity.

The testing of classical assumptions reveals several important methodological considerations. The Kolmogorov–Smirnov test produced a significance value below 0.05, indicating that the normality assumption is not statistically satisfied. Although visual inspection through histograms and P–P plots suggests an approximately normal distribution, such graphical methods cannot replace formal statistical testing. Therefore, this violation of normality is acknowledged as a limitation of the study rather than being considered acceptable.

Similarly, the linearity test indicates that madrasah culture and teachers' work discipline exhibit linear relationships with madrasah quality, whereas principal managerial competence shows statistical deviation from linearity. This suggests that the relationship between managerial competence and madrasah quality may not be strictly linear and could involve indirect or more complex mechanisms. This limitation is explicitly recognized in the interpretation of the findings.

Multicollinearity testing shows acceptable tolerance and VIF values, indicating no severe multicollinearity among the independent variables. However, given the exceptionally high coefficient of determination, the possibility of overlapping constructs or hidden multicollinearity cannot be entirely ruled out and should be interpreted with caution. The results of multiple linear regression analysis are presented in Table 3.

Table 3. Multiple Linear Regression Results

Variable	Coefficient (B)	t-value	Significance
Constant	0.004	0.021	0.983
Principal Managerial Competence (X ₁)	0.014	0.412	0.681
Madrasah Culture (X ₂)	0.474	6.821	0.000
Teachers' Work Discipline (X ₃)	0.741	9.214	0.000

The regression results indicate that madrasah culture and teachers' work discipline have statistically significant positive relationships with madrasah quality, whereas principals' managerial competence does not show a significant partial relationship. The regression equation obtained is $Y = 0.004 + 0.014X_1 + 0.474X_2 + 0.741X_3$. The very small constant value suggests that the coefficients are influenced by the scaling of variables derived from aggregated Likert scores. Therefore, the equation should be interpreted in terms of direction and relative strength rather than absolute numerical magnitude, and it is clarified that the coefficients presented are unstandardized (B), not standardized beta coefficients.

The previously reported contribution values (86.6%, 80.9%, and 56.6%) represent squared bivariate correlations (r^2) rather than partial regression contributions. These values therefore indicate the strength of individual relationships with madrasah quality and should not be interpreted as unique effects within the regression model.

The coefficient of determination ($R^2 = 0.908$) indicates that 90.8% of the variance in madrasah quality is explained by the model. This value is exceptionally high for social science research and suggests potential overestimation. Possible contributing factors include common method bias, overlapping constructs among variables, and potential multicollinearity effects. Consequently, the R^2 value should be interpreted cautiously and critically rather than as definitive evidence of model accuracy.

Furthermore, because all variables were measured using self-reported data from the same respondents, the study is at high risk of common method bias, which may artificially inflate the strength of relationships among variables. Future research is therefore recommended to apply statistical controls such as Harman's single-factor test or to utilize multi-source data to reduce this bias.

Overall, the findings indicate that madrasah quality is more strongly associated with operational variables, particularly teachers' work discipline and madrasah culture, while principals' managerial competence does not show a significant direct relationship when tested simultaneously. These findings should be interpreted within the limitations of the study, including non-normal data distribution, deviation from linearity, and potential measurement bias, and therefore represent statistical associations rather than definitive causal conclusions.

The findings indicate that madrasah quality in Guntur District is significantly associated with madrasah culture and teachers' work discipline, while principals' managerial competence does not show a significant partial association when analyzed simultaneously with other variables. This suggests that educational quality is more strongly related to operational factors directly linked to the teaching-learning process than to structural leadership factors alone. International studies indicate that school leadership tends to influence educational outcomes indirectly through organizational climate, teacher motivation, and classroom practices (Amsalu & Belay, 2024; Bellibaş & Karaferye, 2025). Effective principal leadership also enhances teacher commitment and morale, which ultimately relates to performance and student achievement (Ho, 2026; Massouti et al., 2024).

The dominant association of teachers' work discipline with madrasah quality aligns with school effectiveness theory, which positions teachers as the central actors in the educational process. High discipline reflects professional responsibility, consistency in instructional delivery, and adherence to academic standards, all of which are directly linked to improved teaching quality. Previous studies show a strong relationship between teacher discipline and instructional effectiveness as well as school performance (Y. Li et al., 2025; Marzano, 2025; Shu, 2022; Wartenberg et al., 2023).

Madrasah culture also shows a strong and significant relationship with educational quality. A positive organizational culture creates a conducive working environment, strengthens collaboration

among teachers, and fosters collective commitment to institutional goals. Empirical studies demonstrate that school culture is closely related to teacher performance and student achievement (Erdem & Koçyiğit, 2025; Tairab et al., 2025; M.-T. Wang et al., 2023). In the context of Islamic education, madrasah culture includes not only organizational norms but also religious values, ethics, and social practices that shape students' character development.

However, in contrast to several previous studies that emphasize the direct importance of leadership, this study finds that principals' managerial competence does not have a significant partial association with madrasah quality. This discrepancy highlights an important theoretical nuance: leadership may not operate as a direct predictor but rather as an enabling or contextual variable that shapes organizational conditions. Principals still play a crucial role in developing madrasah culture through policy direction, value internalization, and institutional guidance (Aydın et al., 2025; Fidan & Oztürk, 2015; Hallinger et al., 2025).

Therefore, instead of interpreting managerial competence as a direct determinant, this study repositions it as an indirect or facilitative factor whose influence is likely transmitted through organizational culture and teacher discipline. It is important to emphasize that this interpretation is theoretical and not empirically tested within this study, as mediation analysis was not conducted. Thus, the explanation of indirect influence should be viewed as a conceptual interpretation rather than statistical evidence. This position is consistent with studies showing that leadership is significantly associated with teacher discipline and performance in a simultaneous and systemic manner (Alzouebi et al., 2025; P. Liu et al., 2025; Shengnan & Hallinger, 2021).

This finding also challenges overly simplistic assumptions that leadership alone is the primary driver of school quality. Instead, it supports a more nuanced perspective in which teacher-related and organizational variables may have stronger direct associations with educational outcomes than leadership variables in isolation. This aligns with modern educational leadership theory, which emphasizes the principal's role as an instructional leader who facilitates organizational learning rather than acting merely as an administrator (Bush, 2023; Mifsud, 2024; Nadeem, 2024).

The very high coefficient of determination ($R^2 = 0.908$) indicates that the three variables collectively explain a large proportion of variance in madrasah quality. However, this value is exceptionally high for social science research and should be interpreted critically. Several methodological factors may contribute to this inflated explanatory power, including common method bias, overlapping constructs among variables, and potential multicollinearity effects that are not fully captured by standard diagnostic tests.

In particular, the use of self-reported data for all variables introduces a high risk of common method bias, as respondents evaluated both predictor and outcome variables within the same instrument. This may artificially strengthen correlations among variables and inflate the R^2 value. Future research is therefore recommended to apply statistical techniques such as Harman's single-factor test or to collect data from multiple sources to mitigate this bias.

Furthermore, although multicollinearity diagnostics indicated acceptable values, the possibility of conceptual overlap among variables especially between madrasah culture and teacher discipline may contribute to the high explanatory power of the model. This suggests that the constructs may not be entirely independent, which should be considered in interpreting the findings.

Despite these limitations, the findings still support the school effectiveness model, which emphasizes that school quality is largely determined by internal institutional factors, particularly teacher-related behavior and organizational conditions (Liu et al., 2025; Wang & Wang, 2023). However, these results should be interpreted as indicative of strong statistical associations rather than definitive causal relationships.

From a policy perspective, the findings imply that improving madrasah quality cannot rely solely on enhancing principals' managerial competence but must prioritize strengthening teachers' work discipline and fostering a positive organizational culture. Professional development programs, continuous supervision, and value-based institutional development should be emphasized. Research also indicates that improvement efforts are more effective when focusing on teacher quality and work environment rather than organizational structure alone (Karreinen et al., 2025; Marfán et al., 2023).

Overall, this study shows that madrasah quality in Guntur District is associated with the interaction of leadership, organizational culture, and teacher discipline, with the strongest associations found in variables directly related to instructional practice. These findings reinforce the importance of adopting an integrated perspective on school improvement while also acknowledging methodological limitations that may influence the strength of observed relationships

CONCLUSION

Based on the findings of this study, it can be concluded that the quality of Madrasah Ibtidaiyah in Guntur District, Demak Regency is significantly associated with internal organizational factors, particularly madrasah culture and teachers' work discipline. Teachers' work discipline was found to be the most dominant factor related to madrasah quality, followed by madrasah culture, which also contributes significantly to the overall quality of educational implementation. Meanwhile, principals' managerial competence did not demonstrate a significant partial association when tested alongside other variables; however, it remains an important supporting factor in shaping the work environment, organizational culture, and teachers' professional behavior.

Simultaneously, principals' managerial competence, madrasah culture, and teachers' work discipline show strong associations with madrasah quality, indicating that educational quality is related to the interaction of multiple internal components within the institution. These findings emphasize that improving the quality of Madrasah Ibtidaiyah requires a holistic approach that includes strengthening leadership, developing a positive organizational culture, and enhancing teachers' discipline and professionalism.

The practical implication of this study highlights the need for madrasah management policies that prioritize strengthening teachers' work discipline and reinforcing madrasah culture as key strategies for improving educational quality. More specifically, these efforts may include implementing structured teacher supervision systems, developing clear performance-based evaluation indicators, providing continuous professional development programs, and establishing institutional policies that promote discipline and accountability. In addition, principals should be supported through targeted leadership training programs that emphasize instructional leadership, data-based decision-making, and school culture development.

This study, however, has several important limitations that need to be acknowledged. First, the statistical assumption of normality was not fully satisfied, and the linearity assumption for principals' managerial competence was also not met, which may affect the robustness of the regression model. Second, the use of self-reported data for all variables introduces a high risk of common method bias, which may inflate the observed relationships among variables. Third, the exceptionally high coefficient of determination ($R^2 = 0.908$) indicates the possibility of overestimation due to overlapping constructs or methodological bias. Therefore, the findings should be interpreted with caution and not as definitive causal conclusions.

In addition, the generalizability of the findings is limited to the specific context of Madrasah Ibtidaiyah in Guntur District, Demak Regency. Differences in institutional characteristics, socio-cultural context, and educational management practices may limit the applicability of these findings

to other regions or educational settings. Therefore, caution should be exercised in extending these results beyond the studied context.

Future research is recommended to address these limitations by employing more rigorous methodological approaches, such as incorporating control variables, using multi-source data to reduce common method bias, and applying advanced analytical techniques such as structural equation modeling (SEM) to test mediation effects among variables. Longitudinal or mixed-methods designs are also suggested to provide deeper insights into the dynamic relationships among leadership, organizational culture, and teacher behavior in shaping educational quality.

Overall, this study contributes to a better understanding of the factors associated with madrasah quality, particularly by highlighting the stronger role of teacher-related and organizational factors compared to leadership variables in isolation. These findings provide both theoretical and practical implications for improving the quality of Islamic primary education, while also emphasizing the importance of methodological rigor in future research.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work the author(s) used Gemini in order to Improve article grammar. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Writing – original draft; Writing – review and editing.

Author 2: Conceptualization; Supervision; Validation; Methodology; Writing – review and editing.

Author 3: Supervision; Validation; Resources; Writing – review and editing.

Author 4: Supervision; Validation.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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