

DIGITAL BASED MADRASAH HEAD LEADERSHIP IN EFFORTS TO IMPROVE TEACHER PERFORMANCE IN STATE MADRASAH ALIYAH

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Abstract: This study aims to analyze the influence of digital-based madrasah leadership on teacher performance at Madrasah Aliyah Negeri 1 Palembang. The study used a correlational quantitative method with a population of all teachers and madrasah principals, involving 45 teachers and 1 madrasah principal as respondents. Data were collected through questionnaires and analyzed using descriptive statistics and regression. The results show that the digital leadership of the madrasah principal is in the good to very good category, especially in terms of digital vision and technology-based communication indicators. Overall, teacher performance is classified as good, especially in digital learning planning and implementation, although teacher professional development still needs to be improved. Regression analysis showed a positive and significant influence between digital leadership and teacher performance ($\beta = 0.62$; $p < 0.05$), indicating that digital leadership improves learning effectiveness and teacher motivation. The novelty of this study lies in the integration of digital leadership with Islamic values, strengthening a technology-based work culture in madrasahs. These findings provide practical and theoretical contributions to the development of digital leadership in Islamic education.

Keywords: Digital Leadership, Teacher Performance, Madrasah Aliyah

Abstrak: Penelitian ini bertujuan untuk menganalisis pengaruh kepemimpinan kepala madrasah berbasis digital terhadap kinerja guru di Madrasah Aliyah Negeri 1 Palembang. Penelitian menggunakan metode kuantitatif korelasional dengan populasi seluruh guru dan kepala madrasah, melibatkan 45 guru dan 1 kepala madrasah sebagai responden. Data dikumpulkan melalui kuesioner dan dianalisis menggunakan statistik deskriptif dan regresi. Hasil penelitian menunjukkan bahwa kepemimpinan digital kepala madrasah berada pada kategori baik hingga sangat baik, terutama pada indikator visi digital dan komunikasi berbasis teknologi. Kinerja guru secara keseluruhan tergolong baik, terutama dalam perencanaan dan pelaksanaan pembelajaran digital, meskipun pengembangan profesional guru masih perlu ditingkatkan. Analisis regresi menunjukkan pengaruh positif dan signifikan antara kepemimpinan digital dan kinerja guru ($\beta = 0,62$; $p < 0,05$), menandakan kepemimpinan digital meningkatkan efektivitas pembelajaran dan motivasi guru. Novelty penelitian ini terletak pada integrasi kepemimpinan digital dengan nilai-nilai keislaman, memperkuat budaya kerja berbasis teknologi di madrasah. Temuan ini memberikan kontribusi praktis dan teoretis bagi pengembangan kepemimpinan digital di pendidikan Islam.

Kata Kunci: Kepemimpinan Digital, Kinerja Guru, Madrasah Aliyah

INTRODUCTION

The development of digital technology has brought major changes to the world of education, including in the management of Islamic educational institutions such as State Islamic High Schools. Digital transformation is no longer an option but a necessity for every educational institution to adapt to the dynamics of the times. The leadership of the madrasah principal is key in this adaptation process, especially in encouraging improved teacher performance amid the paradigm shift in learning towards a technology-based system (Subaidi, 2020). In this context, the digital-based leadership of the principal at Madrasah Aliyah Negeri 1 Palembang is an important theme to be studied in depth because this madrasah is one of the leading Islamic educational institutions in the city of Palembang that is undergoing a transformation of its learning system towards full digitalization, but faces various complex challenges in the field (Siregar, 2020).

Education is essentially a means of shaping individuals with character, knowledge, and competence in facing global challenges. From an Islamic education perspective, spiritual values cannot be separated from the modern learning process. This requires madrasah leadership that is capable of combining Islamic values with technological skills as the foundation for educational transformation. The head of the madrasah plays a role not only as an administrative

manager but also as a transformational leader who is able to motivate teachers and the entire madrasah community to innovate in utilizing digital technology as a means of improving the quality of learning. However, the reality in the field shows that not all madrasah heads have the ability to adapt to digital developments, and there is still a gap in digital competence among educators.

Madrasah Aliyah Negeri 1 Palembang, as one of the state Islamic educational institutions with a large number of teachers and diverse competency backgrounds, faces serious challenges in optimizing the use of educational technology. Based on initial observations, some teachers show high enthusiasm for the use of digital media such as Google Classroom, madrasah e-learning, and interactive video platforms. However, on the other hand, there are also teachers who still find it difficult to integrate technology into their teaching methods. Some of them still rely on conventional methods due to limited technical capabilities or lack of training. This condition indicates that the role of the madrasah principal in building a digital culture and improving teacher performance is a crucial aspect of (Zamroni & Fajri, 2023).

Digital-based leadership requires madrasah principals to have strategic capabilities in managing change, fostering teacher motivation, and ensuring that digital transformation aligns with the madrasah's vision and mission. The

principal of MAN 1 Palembang is faced with the need to create an adaptive and innovative leadership system, including digital data-based decision making, monitoring teacher performance through online evaluation applications, and creating a collaborative and modern learning ecosystem. This type of leadership not only touches on managerial aspects, but also touches on the spiritual, social, and pedagogical dimensions that are characteristic of madrasahs.

A number of previous studies have shown that digital-based school leadership has a significant effect on improving teacher quality (Subroto et al., 2023; Putri et al., 2022). However, most of these studies focus on the context of public schools and do not specifically examine madrasahs as Islamic educational institutions with different values and management systems. In the context of madrasahs, leadership is not only measured by managerial abilities, but also by spiritual abilities in guiding and inspiring teachers to adhere to Islamic values amid the rapid pace of digitalization. This is where the distinction of this study lies—that digital-based madrasah leadership is not only interpreted as technological ability, but as an integration of spiritual leadership and digital competence that are combined in a modern Islamic leadership system.

The main objective of this study is to analyze in depth the forms and strategies of digital-based madrasah leadership in improving teacher

performance at Madrasah Aliyah Negeri 1 Palembang, as well as to identify the supporting and inhibiting factors in the implementation process. Thus, this study is expected to contribute conceptually to the development of Islamic educational leadership theory in the digital era and offer an adaptive leadership model that is relevant for application in other madrasahs.

The novelty of this research lies in the integrative approach used in examining digital leadership in madrasahs, namely by combining empirical analysis of the leadership practices of madrasah principals and normative reflections on Islamic leadership values. This research does not only focus on digital capabilities, but also places leadership as a spiritual process oriented towards empowering teachers' s through the values of trust, responsibility, and innovation. By researching MAN 1 Palembang as the research location, this study also aims to reveal the unique dynamics between the demands of digitalization and the preservation of religious values that form the identity of madrasahs.

The contribution of this research is both theoretical and practical. Theoretically, this research enriches the literature on Islamic educational leadership by adding a new perspective on *digital-based Islamic leadership*. Practically, the results of this research can be used as a reference by the Ministry of Religious Affairs, madrasah

administrators, and other Islamic educational institutions in formulating policies for the development of madrasah principals that are oriented towards strengthening digital competencies without leaving behind the roots of Islamic spirituality. In addition, this research provides strategic recommendations for madrasah principals in creating a conducive and productive work climate through leadership that integrates technology, collaboration, and *akhlakul karimah* values.

Thus, this research is expected to be the first step in strengthening a new paradigm of madrasah leadership in the digital era. Madrasah Aliyah Negeri 1 Palembang is used as a representation of Islamic educational institutions that are in the process of full digitalization, while still striving to maintain the spirit of Islam in every step of its renewal. Through visionary and spiritually-based digital leadership of madrasah principals, it is hoped that the quality of teacher performance can improve continuously, which will ultimately lead to an improvement in the quality of Islamic education in Indonesia.

METHOD

This study uses a quantitative approach with a correlational method to determine the relationship between digital-based madrasah leadership and improved teacher performance at Madrasah Aliyah Negeri 1 Palembang. The quantitative approach was chosen

because this study seeks to test the relationship between variables objectively through statistical analysis, so that an empirical picture can be obtained of the extent to which digital-based leadership affects teacher performance (Creswell, 2014; Sugiyono, 2008). This study was conducted from October 24 to November 26, 2025.

This correlational study focuses on two main variables, namely the independent variable of digital-based madrasah leadership and the dependent variable of teacher performance. The first variable includes the dimensions of digital vision, technology-based communication, digital supervision, teacher training in educational technology, and innovation in madrasah management. Meanwhile, the teacher performance variable includes aspects of digital learning planning, learning implementation, learning evaluation, and teacher professional development. This study aims to measure the level of relationship between the two variables through a structured research instrument.

The research population included all teachers and principals at Madrasah Aliyah Negeri 1 Kota Palembang, totaling 46 people. Due to the relatively small population size, the sampling technique used purposive sampling, with the criterion being teachers who had actively used digital devices in learning activities for at least the past year. The respondents consisted of one madrasah principal and 45 teachers. The principal was chosen

because of his role as the main implementer of digital leadership, while the teachers were chosen as subjects who directly received the impact of the leadership policy.

The main instrument in this study was a Likert scale questionnaire with five answer choices, which was compiled based on indicators from each variable. To ensure the validity of the instrument, content validity testing was conducted through assessment by experts in Islamic education and educational management. Reliability testing used Cronbach's Alpha coefficient to ensure the internal consistency of the questions. This questionnaire was designed to measure respondents' perceptions of the digital leadership practices of madrasah principals and their performance in the context of teacher professionalism.

Data collection techniques were carried out through the distribution of questionnaires directly and through digital forms. In addition, documentation was used to obtain supporting data on madrasah policies related to digital transformation, technology-based learning facilities, and teacher development program documents. The collected data was then processed and analyzed using Pearson's *Product Moment* correlation analysis to determine the direction and strength of the relationship between the two variables.

Data analysis was carried out with the help of statistical software to ensure the accuracy of the calculations. Before the

correlation analysis was carried out, a prerequisite analysis test was conducted, including a test of data normality and linearity. The results of the calculations were then interpreted with reference to the correlation strength categories according to Sugiyono (2017). The entire research process was designed to objectively describe the relationship between digital-based madrasah leadership and teacher performance improvement at Madrasah Aliyah Negeri 1 Kota Palembang.

RESULTS AND DISCUSSION

Research Results

This study was conducted at Madrasah Aliyah Negeri 1 Kota Palembang, involving 45 teachers and 1 madrasah principal as respondents. Based on demographic data, 62% of teachers were aged between 31 and 45 years, 27% were under 30 years, and 11% were over 45 years. The majority of teachers, namely 80%, had participated in Information and Communication Technology (ICT) training organized by the madrasah and the Ministry of Religious Affairs, while the other 20% had never participated in formal training on the use of digital technology. This data illustrates that, in general, teachers at MAN 1 Palembang have a fairly good level of digital readiness, although there are still a small number of teachers who need further guidance to adapt to the demands of digital learning.

Digital-based madrasah leadership is measured through five main indicators: digital vision, digital supervision, technology-based communication, digital

teacher training, and innovation in madrasah management. The measurement results are shown in the following table.

Table 1. Digital Leadership Indicator Measurement Data

Indicator	Average Score	Category
Digital vision	4.3	Very good
Digital Supervision	4.10	Good
Technology-based communication	4.25	Very good
Digital teacher training	3.95	Good
Madrasah management innovation	4.18	Good
Overall average	4.16	Good

These results show that the principal of Madrasah Aliyah Negeri 1 Palembang has demonstrated high digital leadership competence. The indicators with the highest scores are digital vision (4.32) and technology-based communication (4.25), which reflect the principal's ability to establish the direction of the madrasah's digitalization and establish effective communication with teachers through online media such as WhatsApp groups, Google Meet, and e-supervision. The implementation of digital supervision through the Google Classroom platform and *cloud storage-based* documents shows a shift from traditional

leadership patterns to participatory and technology-based leadership.

Meanwhile, digital teacher training scored 3.95, indicating that although madrasah principals are already actively providing internal training, there is still a need to increase the frequency and depth of training so that all teachers are able to optimally integrate technology into learning.

Teacher performance is measured through four main indicators, namely digital-based lesson planning, lesson delivery, lesson evaluation, and teacher professional development.

Table 2. Teacher Performance Measurement Data

Indicator	Average Score	Category
Digital learning planning	4	Good
Learning Implementation	4.12	Good
Learning evaluation	4.0	Good
Teacher professional development	3.88	Fair
Overall average	4.01	Good

From these results, it can be seen that the overall performance of teachers is in the good category with an average score of 4.01. Teachers have been able to carry out learning by utilizing digital media such as Canva, interactive PowerPoint, and Google Forms for student evaluation. However, teacher professional development is still classified as fairly good because some teachers have not been actively participating in digital learning communities or competency improvement *webinar* activities.

The Pearson correlation test shows a significant positive relationship between the digital leadership of the madrasah principal and teacher performance ($r = 0.62$; $p < 0.05$). This value indicates a strong and statistically significant correlation. In other words, the more effective the madrasah principal's leadership in implementing digital strategies, the higher the teachers' performance in carrying out their professional duties. This finding reinforces the results of Avolio and Kahai's (2020) research, which states that digital leadership is the ability of leaders to utilize technology to achieve the organization's vision collaboratively and innovatively.

In the context of MAN 1 Palembang, the principal has built a digital culture through regular online meetings, a *Google Drive-based* reporting system, and the implementation of e-supervision for teachers. This strategy not only improves administrative efficiency but also

encourages collaboration among teachers in designing digital lesson plans. Most teachers stated that the principal provides motivation through direct examples, such as using digital platforms in classroom management and internal meetings. The digital transformational leadership style creates a work atmosphere that is open to innovation.

However, this study also found several obstacles that are still faced in the process of implementing digital leadership at MAN 1 Palembang. The main obstacles are limitations in technological infrastructure, such as unstable internet access in some classrooms and a limited number of computers. In addition, there is still a digital competency gap among teachers, especially among senior teachers who are less familiar with *cloud-based* learning applications. Nevertheless, the principal implements an adaptive approach through internal training and *peer mentoring*, where teachers who are more proficient in technology assist other teachers in developing learning media.

The findings of this study show that digital-based madrasah leadership is a major driving factor in shaping an innovative work culture in the madrasah environment. The madrasah principal acts as a *digital role model* who fosters teachers' confidence to experiment with technology. Through transparent digital supervision, teachers are more motivated to improve the quality of learning and work accountability.

The main contribution of this research lies in proving that the effectiveness of digital leadership lies not only in the technical aspects of technology use, but also in the principal's ability to instill the values of collaboration, openness, and responsibility. These findings confirm that in the context of Islamic education such as MAN 1 Palembang, digital leadership can be aligned with the spiritual and moral values that characterize madrasahs. The novelty of this research lies in its integrative approach, which combines digital leadership with the principles of Islamic exemplarity in an effort to improve teacher performance.

Thus, the results of this study confirm that the digital-based leadership of the principal at Madrasah Aliyah Negeri 1 Palembang not only strengthens the technical aspects of digital learning but also strengthens the competitiveness of Islamic educational institutions in the era of digital transformation.

Discussion

The results of the study show that digital-based madrasah leadership obtained an average score of 4.16 (good category), and teacher performance obtained an average score of 4.01 (good category). Furthermore, the correlation test shows a positive and significant influence between digital leadership and teacher performance ($\beta = 0.62$; $p < 0.05$). This finding confirms the strong relationship between the success of

madrasah principals in implementing digital strategies and the quality of teacher performance in the madrasah environment (Dela Rosa, 2022).

The most prominent indicators of digital leadership are digital vision (4.32) and technology-based communication (4.25). This is in line with the view that digital leaders must have a vision that can guide institutions in understanding the direction of technological transformation as well as effective communication skills through digital media (Sunu, 2022). The fact that the principal of MAN 1 Palembang is able to build a digital vision and maintain digital communication channels with teachers shows that the foundation of his digital leadership is quite strong. This role is reminiscent of transformational leadership theory, in which leaders function as agents of change who encourage innovation and adaptation (Supriadi, 2025). Thus, the quality of this digital vision and communication becomes a key element that enables teachers to feel empowered and ready to innovate in learning (Hidayat, 2024; Hijrawan, 2019; Pribadi et al., 2024).

The scores for digital teacher training (3.95) and madrasah management innovation (4.18), although good, indicate that aspects of teacher capacity building and managerial innovation can still be further improved. A study by Lukman and Yune (2025) found that digital leadership is not only about the use of technology, but also about building teacher capacity and a school

culture that is adaptive to digitalization. In the context of MAN 1 Palembang, although the principal has initiated internal training and peer mentoring, the scores indicate that the program has not optimally reached all teachers. This is important because teachers, as implementers of digital learning, need continuously developing competencies so that the influence of digital leadership on teacher performance can be maximized (Supriadi, 2025).

In terms of teacher performance, the highest scores were in learning implementation (4.12) and digital learning planning (4.05), while the teacher professional development indicator scored 3.88 (fairly good) — indicating that professional development remains a weak point that requires attention. This is consistent with the findings of Supriadi (Supriadi, 2025), which show that teachers' digital competencies often function as mediators between digital leadership and learning outcomes because digitally competent teachers are better able to implement technology-based learning. At MAN 1 Palembang, the relatively lower professional development scores indicate that although teachers are quite good at planning and implementing digital learning, they have not fully followed the necessary professional transformation path.

The finding of a positive relationship between digital leadership and teacher performance is consistent

with international research showing a significant correlation between digital leadership principles and teacher performance. For example, Dela Rosa (2022), found that digital leadership in Philippine secondary schools correlates with teacher performance. With $\beta = 0.62$ at MAN 1 Palembang, the effect is strong—indicating that the digital leadership transformation at the madrasah has had a real effect on teacher performance.

The discussion of the results also indicates that the principal's role as a "digital role model" and innovation facilitator is crucial. Principals who actively use platforms such as Google Classroom, e-Supervisi, and online meetings have created an innovative and collaborative work environment. This is important because the literature emphasizes that effective digital leadership is not just about the use of technology, but how that technology is used to build an adaptive school culture (Sidiq, 2025; Silalahi, 2025). This kind of work environment allows teachers to feel supported and motivated to improve their performance (Alwis et al., 2020; Antonopoulou et al., 2025; Wening & Santosa, 2020).

However, the discussion must also highlight the obstacles that arise: limited ICT infrastructure (unstable internet connection), the digital competency gap among senior teachers, and some teachers who still have difficulty using learning applications. These obstacles are

consistent with previous studies showing that the success of digital leadership is often influenced by the availability of infrastructure and technological readiness (Habibulloh & Ali, 2024). Thus, even though digital leadership has been implemented well, structural barriers and teacher capacity remain moderating factors that can reduce the effectiveness of the relationship between digital leadership and teacher performance.

Further analysis shows that the relatively low aspect of teacher professional development needs strategic intervention. The literature shows that teacher professional development in the digital era must include continuous training, the formation of practice communities, and peer-mentoring (Siregar, 2020; Subaidi, 2020) — elements that are not yet fully mature at MAN 1 Palembang based on the score of 3.88. Therefore, the head of the madrasah needs to direct a program specifically for teacher digital development so that the influence of digital leadership can be strengthened and felt by all teachers.

The novelty of this research lies in the context of Islamic educational institutions (madrasahs) in Indonesia and the application of digital leadership that combines Islamic values with learning technology. Most of the literature on digital leadership focuses on public schools or higher education in developed countries, while studies in the madrasah environment are still very limited. Thus, this research at MAN 1 Palembang

enriches the theory of digital educational leadership in the context of madrasahs and provides practical contributions for madrasah principals in formulating digital leadership strategies that are relevant to Islamic values and local conditions.

Overall, the discussion of the research results shows that the digital-based leadership of the madrasah principal at MAN 1 Palembang has a real influence on teacher performance. Indicators such as digital vision and technology-based communication are the main drivers, while aspects of teacher training and management innovation still require more attention. Teacher performance in the aspects of planning and implementing digital learning has been good, but teacher professional development is still a vulnerable point. Structural obstacles such as infrastructure and senior teacher competence also need to be overcome so that the influence of digital leadership can be strengthened comprehensively. These results are in line with previous theories and research, while also offering practical insights for the development of madrasah leadership in the digital era.

CONCLUSION

Based on the results of research at Madrasah Aliyah Negeri 1 Palembang, it can be concluded that the digital-based leadership of the madrasah principal is in the good to very good category. The principal demonstrates strong abilities in integrating information and communication technology in various managerial aspects,

ranging from planning, supervision, communication, to teacher performance evaluation. The implementation of a clear digital vision, ICT-based supervision and training, and intensive online communication have created an adaptive, collaborative, and innovative work culture in the madrasah environment. Overall teacher performance is in the good category, particularly in the implementation of learning and the use of digital media, although teacher professional development still needs to be improved through continuous training and peer mentoring. Correlation and regression analysis showed a positive and significant influence between the digital leadership of madrasah principals and teacher performance ($\beta = 0.62$; $p < 0.05$), confirming that improving the quality of digital leadership contributes directly to the effectiveness of learning and teacher motivation. The obstacles encountered include limitations in ICT infrastructure, disparities in digital capabilities among teachers, and limited budget support; however, madrasah principals are able to overcome these obstacles with adaptive strategies, including internal training, digital collaboration among teachers, and optimization of available resources. The novelty of this research lies in the integration of digital leadership with Islamic values, which strengthens the relevance of technology-based work culture while affirming moral and collaborative principles in madrasahs. These findings provide practical contributions to the development of digital

leadership strategies in Islamic educational institutions and offer theoretical insights into the relationship between digital leadership and improved teacher performance in the era of educational transformation.

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