

Data-Based Education Management: An Empirical Study on Modern Islamic Educational Institutions

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Received: 20 April 2026	Accepted: 15 Mei 2026	Published: 21 Mei 2026
Link Citation: https://writelabindonesia.org/index.php/daneshgah/article/view/9/version/9		

ABSTRACT

This study investigates the implementation of data-based educational management at SD IT Al Barokah as a modern Islamic educational institution adapting to the demands of digital transformation in education. The research employed a qualitative approach using an empirical case study design to explore how educational data are utilized in academic and administrative management processes. Data were collected through observations, in-depth interviews, and documentation analysis involving school leaders, teachers, administrative staff, and school operators. The findings reveal that educational data have been gradually integrated into student attendance monitoring, academic evaluation, teacher administration, and institutional reporting systems. The implementation of data-based educational management contributed positively to institutional transparency, accountability, and administrative efficiency. However, several challenges were identified, including limited digital literacy among staff, fragmented data systems, increasing administrative workloads, and technological adaptation barriers. The study also found that leadership commitment and organizational culture played significant roles in supporting the implementation process. Furthermore, the findings indicate that educational modernization within Islamic educational institutions involves not only technological transformation but also organizational and cultural adaptation. This study contributes to the discourse on educational management by providing contextual insights into the integration of data-driven governance and Islamic educational values within modern educational institutions.

Keywords: Data-Based Educational Management, Islamic Educational Institutions, Digital Transformation, Educational Leadership, Educational Governance

ABSTRAK

Penelitian ini mengkaji penerapan manajemen pendidikan berbasis data di SD IT Al Barokah sebagai lembaga pendidikan Islam modern yang beradaptasi dengan tuntutan transformasi digital dalam pendidikan. Penelitian ini menggunakan pendekatan kualitatif menggunakan desain studi kasus empiris untuk mengeksplorasi bagaimana data pendidikan digunakan dalam proses manajemen akademik dan administrasi. Data dikumpulkan melalui observasi, wawancara mendalam, dan analisis dokumentasi yang melibatkan pimpinan sekolah, guru, staf administrasi, dan operator sekolah. Temuan tersebut mengungkapkan bahwa data pendidikan secara bertahap telah diintegrasikan ke dalam pemantauan kehadiran siswa, evaluasi akademik, administrasi guru, dan sistem pelaporan kelembagaan. Penerapan manajemen pendidikan berbasis data berkontribusi positif terhadap transparansi kelembagaan, akuntabilitas, dan efisiensi administrasi. Namun, beberapa tantangan diidentifikasi, antara lain keterbatasan literasi digital di kalangan staf, sistem data yang terfragmentasi, peningkatan beban kerja administrasi, dan hambatan adaptasi teknologi. Studi ini juga menemukan bahwa komitmen kepemimpinan dan budaya organisasi memainkan peran penting dalam mendukung proses implementasi. Lebih lanjut, temuan menunjukkan bahwa modernisasi pendidikan dalam lembaga pendidikan Islam tidak hanya melibatkan transformasi teknologi tetapi juga adaptasi organisasi dan budaya. Studi ini berkontribusi pada wacana tentang manajemen pendidikan dengan memberikan wawasan kontekstual tentang integrasi tata kelola berbasis data dan nilai-nilai pendidikan Islam dalam lembaga pendidikan modern.

Kata kunci: Manajemen Pendidikan Berbasis Data, Lembaga Pendidikan Islam, Transformasi Digital, Kepemimpinan Pendidikan, Tata Kelola Pendidikan

A. Introduction

The rapid development of digital technology has significantly transformed the landscape of educational management across various institutional settings, including Islamic educational institutions. In recent years, educational organizations have increasingly relied on data to support strategic planning, academic evaluation, policy formulation, and institutional quality assurance. Data is no longer viewed merely as administrative archives, but rather as an important instrument for improving organizational effectiveness and educational decision-making. Within modern educational systems, data-based management has become closely associated with accountability, transparency, efficiency, and sustainable institutional development. Nevertheless, despite the growing importance of data utilization in education, many Islamic educational institutions still face substantial challenges in implementing systematic and integrated data-driven management practices.

In the context of modern Islamic educational institutions, such as Islamic boarding schools, integrated Islamic schools, and Islamic higher education institutions, educational management often remains heavily dependent on conventional leadership patterns and intuition-based decision-making. Administrative activities are sometimes conducted manually, fragmented across different departments, and insufficiently integrated into digital systems capable of generating meaningful institutional insights (Faridatul Faridatul & M Bambang Purwanto, 2025). This condition creates difficulties in monitoring student achievement, evaluating teacher performance, mapping institutional needs, and formulating evidence-based educational policies (Vivin Afini, Fitri Nurdianingsih, Ridayani, 2025). Interestingly, some institutions already possess abundant educational data, including attendance records, academic scores, financial reports, and student discipline records, yet these data are rarely optimized as a strategic foundation for institutional improvement. As a result, educational policies frequently become reactive rather than predictive.

The urgency of this research emerges from the increasing demand for educational institutions to adapt to the era of digital transformation and Society 5.0. Educational management today requires institutions not only to collect data, but also to interpret, analyze, and utilize data effectively to support institutional competitiveness and educational quality improvement (Dita Rahmawati et al., 2025). Modern Islamic educational institutions are currently facing multidimensional pressures, ranging from curriculum adaptation, quality assurance, digital governance, public accountability, and stakeholder trust (Ariya Agustin, M Bambang Purwanto, 2025). Without effective data-based management systems, educational institutions may encounter inefficiency, inaccurate policy formulation, poor institutional monitoring, and reduced competitiveness in the contemporary educational environment (Despita et al., 2025). Therefore, strengthening data-based educational management is no longer optional, but rather an essential requirement for institutional sustainability and development.

This issue is closely connected to real practical needs within educational institutions. School leaders, administrators, and educators require accurate and accessible information to support decision-making processes in academic and non-academic sectors. For example, data regarding student learning achievement can be used to identify students requiring additional support, while teacher performance data may assist institutional leaders in designing professional development programs (Purwanto, Firdaus, et al., 2024). Similarly, administrative and financial data can help institutions allocate resources more effectively and transparently (Ardianto et al., 2025). In practice, however, many Islamic educational institutions still encounter obstacles related to limited digital literacy, inadequate

technological infrastructure, fragmented information systems, and organizational resistance toward technological change (Purwanto et al., 2025). These practical challenges demonstrate the necessity of conducting empirical studies that specifically explore how data-based educational management is implemented within modern Islamic educational institutions.

Several previous studies have discussed digital transformation, educational management systems, and data-driven decision-making in general educational contexts. However, most existing studies primarily focus on public schools, higher education institutions, or technologically advanced educational systems in developed countries (M Bambang Purwanto, 2025; Netti Herawati et al., 2025). Research specifically examining data-based educational management within modern Islamic educational institutions remains relatively limited (Fitria Marisya et al., 2025). Furthermore, previous studies often emphasize technical dimensions of information systems without deeply exploring the cultural, organizational, and value-based characteristics unique to Islamic educational institutions. In fact, Islamic educational institutions possess distinctive managerial values rooted in accountability, ethical leadership, collective responsibility, and spiritual principles. These characteristics create a unique institutional environment that requires a more contextualized understanding of data-based educational management practices.

Based on these conditions, this study aims to analyze the implementation of data-based educational management within modern Islamic educational institutions and to identify the supporting as well as inhibiting factors influencing its effectiveness. Additionally, this study seeks to examine the impact of data utilization on institutional decision-making processes, educational quality improvement, and organizational effectiveness. To achieve these objectives, the study formulates several research questions: (1) How is data-based educational management implemented in modern Islamic educational institutions? (2) What factors support and hinder the implementation of data-based management practices? and (3) How does data utilization influence institutional effectiveness and educational quality improvement?

The novelty of this study lies in its specific focus on the empirical implementation of data-based educational management within modern Islamic educational institutions, an area that has received relatively little scholarly attention. Unlike previous studies that predominantly discuss technological systems or general educational governance, this research integrates perspectives of digital educational management with the unique organizational culture and ethical foundations of Islamic educational institutions. This study also attempts to construct a contextual understanding of how Islamic educational values can coexist with modern data-driven governance practices. In this sense, the research contributes not only to the field of educational management, but also to the broader discourse on the modernization of Islamic educational institutions in the digital era.

It is expected that the findings of this research will provide both theoretical and practical contributions to the development of educational management studies, particularly within Islamic educational contexts. Theoretically, this study may enrich discussions regarding data-driven educational governance and institutional transformation in faith-based educational environments (Komerendo et al., 2025; M Bambang Purwanto et al., 2025). Practically, the research findings are expected to become a strategic reference for school leaders, policymakers, educational administrators, and researchers in designing more adaptive, transparent, and evidence-based educational management systems. In the long term, this study is also expected to encourage the development of sustainable digital management practices capable of enhancing the quality, accountability, and competitiveness

of modern Islamic educational institutions in an increasingly data-oriented educational landscape.

B. Methodology

This study employed a qualitative research approach using an empirical case study design to investigate the implementation of data-based educational management at SD IT Al Barokah. The qualitative approach was selected because the research aimed to explore deeply the real experiences, institutional practices, and managerial processes related to the utilization of educational data within the school environment. Rather than focusing solely on numerical measurement, this study attempted to understand how educational stakeholders interpret, manage, and utilize data as part of institutional decision-making processes (K et al., 2025). The empirical case study design was considered appropriate because it allowed the researcher to examine naturally occurring phenomena within a specific institutional setting while capturing the social, managerial, and cultural dimensions surrounding educational management practices.

The research was conducted at SD IT Al Barokah, a modern Islamic elementary school that integrates Islamic educational values with contemporary administrative and academic management systems. The institution was purposively selected because it has implemented various forms of educational digitalization and administrative data management, including student attendance systems, academic evaluation records, digital reporting systems, and institutional documentation processes (Purwanto, 2022). These conditions made the institution highly relevant to the focus of this study, particularly in understanding how modern Islamic educational institutions adapt to the increasing demands of data-driven governance in the era of digital transformation.

The participants involved in this study consisted of school stakeholders who were directly connected to educational management and institutional data utilization. The participants were selected through purposive sampling techniques, meaning that individuals were chosen based on their relevance, experience, and involvement in educational management activities. The researcher considered that participants holding managerial, administrative, and academic responsibilities would provide rich and comprehensive information regarding the implementation of data-based educational management within the institution.

The participants included the principal, vice principal, administrative staff, teachers, school operators, and several selected students. Each participant contributed different perspectives concerning institutional management practices, policy formulation, academic evaluation, and the practical use of educational data (Purwanto, 2024; Sinta Bella Agustina & M Bambang Purwanto, 2025). School leaders provided information regarding strategic decision-making and institutional governance, while teachers and administrative staff explained operational and academic management practices. Meanwhile, students were involved to provide contextual insights into how institutional systems indirectly affected learning experiences and educational services. The categories of research participants are presented in the following table 1.

Table 1. Research Participants

No	Participants	Role in Institution	Research Contribution
1	Principal	Institutional leader	Policy and decision-making
2	Vice Principal	Academic management	Academic data management

3	Administrative Staff	School administration	Student and institutional data
4	Teachers	Learning implementation	Academic evaluation data
5	IT/School Operator	Data management system	Technical implementation
6	Students (selected)	Educational recipients	Learning experience perspective

To obtain comprehensive and valid data, this study employed three primary data collection techniques, namely observation, in-depth interviews, and documentation analysis. These techniques were selected to ensure that the researcher could capture both behavioral practices and institutional realities from multiple perspectives. The combination of these techniques also enabled triangulation, which strengthened the credibility and trustworthiness of the research findings.

Observation was conducted directly within the school environment to understand naturally occurring educational management practices. During the observation process, the researcher examined how educational data were recorded, managed, and utilized in academic and administrative activities. Several aspects observed included student attendance systems, teacher performance monitoring, academic reporting procedures, coordination meetings, and the use of digital systems in school management. Through direct observation, the researcher was able to capture institutional dynamics that might not fully emerge during interviews alone. Interestingly, some managerial activities appeared highly structured administratively, yet informal communication and personal leadership styles still played a significant role in practical decision-making processes within the institution.

In-depth interviews were conducted using semi-structured interview guidelines to allow flexibility and deeper exploration of participants' experiences and perspectives. The interviews focused on understanding how stakeholders perceived the implementation of data-based educational management, the benefits of data utilization, institutional challenges, technological readiness, and organizational adaptation toward digital transformation. The semi-structured format enabled participants to explain their experiences openly while still maintaining alignment with the main research objectives. In several interview sessions, participants revealed that although digital systems had gradually improved institutional efficiency, challenges related to digital literacy and data integration remained significant concerns within daily educational management activities.

Documentation analysis was also conducted to support observational and interview findings. Various institutional documents were examined systematically to obtain factual evidence regarding data management practices within the school. These documents included student attendance records, academic reports, teacher evaluation documents, institutional policies, administrative records, and digital management system outputs. Documentation analysis provided important contextual and administrative evidence that strengthened the empirical findings of the study. In some cases, the documents demonstrated that data collection practices were already well established; however, analytical utilization of those data for long-term strategic planning still appeared relatively limited.

In qualitative research, the researcher functioned as the primary research instrument because the researcher directly interacted with participants, interpreted findings, and analyzed contextual realities within the field. Nevertheless, several supporting instruments were also utilized to facilitate systematic and organized data collection processes. Observation sheets were used to record institutional activities and interactions, interview guidelines directed the flow of interviews, audio recorders assisted in preserving participants' responses accurately, field notes captured contextual reflections during fieldwork, and documentation checklists helped organize institutional records systematically.

The data collected throughout the study were analyzed using the qualitative data analysis model developed by Matthew B. Miles and A. Michael Huberman. This analytical model consists of three interconnected stages, namely data reduction, data display, and conclusion drawing or verification. During the data reduction stage, the researcher selected, simplified, categorized, and organized relevant information obtained from observations, interviews, and documentation. This stage aimed to focus the analysis on themes directly related to data-based educational management practices.

Following the reduction process, the researcher displayed the data in narrative forms, thematic categorizations, and analytical matrices to facilitate interpretation and understanding. Through data display, patterns and relationships among findings became more visible and easier to interpret systematically. Finally, conclusion drawing and verification were conducted continuously throughout the research process. The researcher identified emerging themes, interpreted institutional patterns, and verified findings by comparing multiple data sources to ensure consistency and credibility.

To ensure the trustworthiness of the findings, this study applied several validation strategies, including triangulation, member checking, prolonged engagement, and audit trails. Triangulation was conducted by comparing findings from observations, interviews, and documentation to ensure data consistency across different sources. Member checking was carried out by asking participants to confirm interview summaries and interpretations, thereby reducing potential misinterpretation. The researcher also spent sufficient time within the research setting to understand institutional culture and establish trust with participants. Additionally, all research activities, analytical procedures, field notes, and interview transcripts were documented systematically as part of the audit trail process to maintain transparency and accountability.

Ethical considerations were maintained throughout all stages of the study. Participants were informed regarding the objectives and procedures of the research before their involvement. Participation was entirely voluntary, and confidentiality was strictly protected by ensuring that sensitive institutional information and personal identities were not publicly disclosed. Furthermore, the researcher maintained respect toward institutional values, school regulations, and the Islamic educational culture embedded within the institution during the entire research process.

The research procedure itself was conducted systematically through several stages, beginning with a preliminary study and ending with report preparation. Initially, the researcher identified institutional conditions and formulated the research framework. Subsequently, data collection activities were carried out through observation, interviews, and documentation analysis. After all data had been collected, the researcher analyzed and interpreted the findings before conducting validation procedures and

preparing the final research report. The stages of the research procedure are presented in the following table 2.

Table 2. Research Procedure

Stage	Activities
Preliminary Study	Identifying institutional conditions
Proposal Preparation	Designing research framework
Data Collection	Observation, interviews, documentation
Data Analysis	Coding and thematic interpretation
Validation	Triangulation and member checking
Reporting	Writing research findings

Through these methodological stages, this study sought to produce comprehensive, credible, and contextually grounded findings regarding the implementation of data-based educational management within modern Islamic educational institutions, particularly at SD IT Al Barokah Prabumulih.

C. Results and Discussion

Result

The findings of this study reveal that the implementation of data-based educational management at SD IT Al Barokah has gradually become an important component of institutional governance and academic management. Based on observations, interviews, and documentation analysis, the school has integrated various forms of educational data into administrative, academic, and managerial activities. Although the implementation is still developing in several areas, the institution demonstrates a strong commitment toward improving educational quality through the utilization of institutional data. The empirical findings indicate that data utilization within the school does not only function as administrative documentation, but also serves as a supporting instrument for institutional evaluation, policy formulation, and educational monitoring.

The results of the study are organized into several major themes consisting of: (1) implementation of data-based educational management, (2) utilization of data in institutional decision-making, (3) supporting factors, (4) inhibiting factors, and (5) the impact of data-based educational management on institutional effectiveness.

Implementation of Data-Based Educational Management

The findings show that SD IT Al Barokah has implemented several forms of educational data management in both academic and administrative sectors. Based on field observations, the school has utilized digital and semi-digital systems to manage student attendance, academic records, teacher administration, and institutional documentation. Student attendance data, for instance, are systematically recorded and monitored daily to identify patterns of absenteeism and student discipline. Teachers also routinely input students' academic scores into institutional record systems used for semester evaluations and parental reporting.

Interestingly, the school leadership has begun to use educational data not merely as archived information but as part of managerial considerations. During several coordination meetings observed by the researcher, school leaders referred to attendance

reports, student performance records, and teacher evaluations when discussing academic improvement strategies. This indicates that institutional awareness regarding the importance of educational data has gradually developed within the school environment. However, the implementation remains partially centralized and dependent on certain administrative personnel and school operators. Some teachers still rely on manual documentation before transferring information into digital formats. In several cases, the integration among academic, administrative, and managerial data systems has not yet been fully synchronized. As a result, data processing occasionally becomes repetitive and time-consuming.

Table 3. Forms of Data-Based Management Implementation

Area	Implementation Practice	Status
Student Attendance	Daily digital attendance monitoring	Implemented
Academic Assessment	Student score recording and reporting	Implemented
Teacher Administration	Teacher performance documentation	Partially Implemented
Institutional Reporting	Administrative documentation system	Implemented
Data Integration System	Cross-department synchronization	Developing

Despite these limitations, table 3 explains institutional stakeholders generally viewed the implementation positively. Teachers stated that administrative monitoring became more organized, while school leaders considered educational data useful for improving institutional accountability and transparency.

Utilization of Data in Institutional Decision-Making

The study found that educational data were increasingly utilized in institutional decision-making processes. School leaders used various forms of institutional data when evaluating student achievement, teacher performance, discipline issues, and program effectiveness. Academic reports and student performance data were commonly discussed during internal evaluation meetings to identify learning problems and determine improvement strategies.

One significant finding revealed that student achievement data were frequently used to identify students requiring additional academic assistance. Teachers explained that low-performing students could be monitored more effectively because academic records were systematically documented and reviewed periodically. Similarly, attendance data allowed the institution to identify students with behavioral or disciplinary concerns more quickly.

Teacher performance data were also utilized during institutional evaluations. The school leadership monitored teaching administration, classroom discipline, and teacher attendance as part of internal quality assurance efforts. Although formal analytical systems were still limited, school leaders had begun incorporating data into managerial considerations before making certain institutional decisions.

A vice principal explained during interviews that data helped reduce subjective assumptions in evaluating institutional performance. Previously, many decisions relied

heavily on intuition and informal observations. Currently, however, institutional discussions increasingly involve factual educational records and administrative reports. Even so, several participants admitted that data interpretation skills among educational staff still require further improvement.

Table 4. Utilization of Educational Data in Decision-Making

Data Type	Utilization
Student Attendance	Monitoring discipline and participation
Academic Achievement	Evaluating learning progress
Teacher Performance	Internal quality assurance
Administrative Reports	Institutional planning
Student Behavior Records	Counseling and intervention

The findings in table 4 suggest that data utilization within the institution has started to shift managerial practices toward more evidence-based educational governance, although implementation remains in a transitional stage.

Supporting Factors in Data-Based Educational Management

Several supporting factors contributed to the implementation of data-based educational management at the institution. One major supporting factor was leadership commitment. The school principal demonstrated strong support toward institutional digitalization and administrative improvement. School leaders consistently encouraged teachers and administrative staff to improve documentation practices and maintain organized educational records.

Another important factor was the availability of basic technological infrastructure. The school already possessed computers, internet access, and several digital administrative platforms that facilitated educational data management. Although technological facilities were not fully sophisticated, they provided sufficient support for basic institutional operations.

The presence of school operators and administrative staff who possessed relatively adequate digital competencies also contributed significantly to the implementation process. These individuals often assisted teachers in administrative reporting and technical data management activities. In several situations, younger teachers appeared more adaptive toward digital administrative systems compared to senior staff members. Institutional culture also played a role in supporting implementation. The school environment demonstrated openness toward gradual technological adaptation. Although not all staff members possessed advanced digital skills, there was a shared understanding that administrative modernization was necessary for institutional development.

Table 5. Supporting Factors

Supporting Factor	Description
Leadership Commitment	Strong support from school leaders
Technological Infrastructure	Availability of computers and internet
Digital Competence	Presence of capable operators and staff
Institutional Culture	Openness toward digital adaptation

Inhibiting Factors in Data-Based Educational Management

Despite positive developments, the implementation of data-based educational management also encountered several significant obstacles. One major challenge involved limited digital literacy among some educational staff. Several teachers, particularly senior educators, experienced difficulties in operating digital systems efficiently. Consequently, administrative tasks occasionally required additional assistance from school operators or younger staff members.

Another challenge concerned the limited integration among institutional data systems. Academic records, attendance systems, teacher administration, and institutional reporting mechanisms were not yet fully connected within a unified digital platform. As a result, some data still had to be entered repeatedly into different systems, increasing workload and reducing efficiency.

Time constraints also became an important issue. Teachers explained that administrative responsibilities often increased alongside teaching duties. Some participants expressed concerns that excessive documentation requirements might reduce instructional focus and classroom interaction time. Additionally, infrastructure limitations occasionally disrupted institutional operations. Internet connectivity problems and technical system interruptions sometimes delayed reporting processes and administrative coordination. While these issues did not completely hinder implementation, they affected operational consistency.

Impact of Data-Based Educational Management

The study found several positive impacts resulting from the implementation of data-based educational management at SD IT Al Barokah. One of the most visible impacts was improved administrative organization. Educational records became easier to monitor, retrieve, and evaluate. Administrative activities that were previously conducted manually gradually became more systematic and organized.

Another important impact involved increased transparency and accountability. School leaders could access institutional information more efficiently, enabling faster monitoring of academic and administrative activities. Teachers also became more aware of the importance of maintaining accurate educational records because these records directly influenced institutional evaluations and reporting processes.

The implementation additionally supported more responsive educational monitoring. Student attendance patterns, academic progress, and behavioral issues could be identified earlier, allowing teachers and school leaders to provide interventions more quickly. In several cases, educational data facilitated communication between teachers and parents regarding students' academic development and disciplinary concerns. Interestingly, the institutional culture itself appeared to gradually shift toward a more evidence-oriented managerial approach. Although personal leadership and informal communication remained influential, institutional discussions increasingly involved educational reports, documentation, and measurable indicators.

Overall, the empirical findings demonstrate that data-based educational management at SD IT Al Barokah Prabumulih has contributed positively toward institutional governance, administrative effectiveness, and educational monitoring. Nevertheless, the institution still requires continuous improvement in digital literacy

development, system integration, and organizational adaptation to maximize the effectiveness of data-driven educational management practices.

Discussion

The findings of this study demonstrate that the implementation of data-based educational management at SD IT Al Barokah has gradually transformed institutional management practices toward a more systematic and evidence-oriented approach. The school has integrated educational data into various academic and administrative activities, including student attendance monitoring, academic evaluation, teacher administration, and institutional reporting. These findings indicate that educational data are no longer perceived merely as administrative requirements but have increasingly become strategic instruments for supporting institutional governance and educational decision-making. The utilization of educational data also contributed to improving transparency, accountability, and administrative efficiency within the institution. In practice, school leaders and teachers demonstrated growing awareness regarding the importance of educational documentation as part of institutional quality assurance efforts.

Another important finding revealed that the implementation of data-based educational management was strongly influenced by leadership commitment, institutional culture, and digital literacy among educational stakeholders. The principal and school management played a significant role in encouraging administrative modernization and promoting the use of educational data in institutional evaluation processes. Nevertheless, the study also identified several challenges, including limited digital competence among some teachers, fragmented data systems, and increasing administrative workloads. Interestingly, despite the gradual integration of digital systems, interpersonal communication and informal leadership interactions still remained highly influential in institutional decision-making processes. This suggests that educational management within Islamic educational institutions continues to involve a balance between technological modernization and relational organizational culture.

The findings of this study are generally consistent with previous research discussing data-driven educational management and digital transformation in educational institutions. Previous studies conducted by Michael Fullan emphasized that effective educational transformation requires leadership capable of integrating technology, organizational culture, and collaborative management practices (Hatidah et al., 2025). Similarly, research by Viviane Robinson found that leadership decisions supported by evidence-based practices tend to improve institutional effectiveness and educational outcomes (Irawan et al., 2024). Furthermore, studies on data-driven decision-making in education highlighted that educational data can enhance instructional quality, accountability, and organizational responsiveness when utilized systematically. However, most previous studies primarily focused on public schools or higher education institutions in technologically advanced environments (Muhammad Iqbal et al., 2025; RA Rodia Fitri Indriani et al., 2024). In contrast, this study specifically explored data-based educational management within a modern Islamic educational institution, thereby contributing a more contextualized understanding of how educational data practices

interact with Islamic institutional values, organizational culture, and leadership dynamics.

The interpretation of this study indicates that data-based educational management within modern Islamic educational institutions should not be understood solely as a technological transformation process. Rather, it represents an organizational and cultural transformation involving leadership adaptation, institutional trust, communication practices, and educational values (Purwanto & Umar, 2024). Although digital systems improve administrative efficiency and monitoring processes, the effectiveness of educational data utilization still depends heavily on human interpretation, institutional collaboration, and managerial commitment (Hidayad et al., 2024; Purwanto, Yuliana, et al., 2024; Purwanto & Umar, 2024). In this context, educational data function not merely as technical information but as social instruments shaping institutional behavior, accountability, and collective decision-making practices. The findings also suggest that modernization within Islamic educational institutions tends to occur gradually, combining traditional relational leadership approaches with contemporary evidence-based management practices.

This study provides several important implications for educational management practices, particularly within Islamic educational institutions. Practically, the findings highlight the necessity of strengthening digital literacy among teachers and educational staff to support effective data utilization in academic and administrative activities (M. Bambang Purwanto, 2024). Educational institutions also need to develop integrated information systems capable of reducing administrative duplication and improving institutional coordination (Purwanto, Yuliasri, et al., 2024; Purwanto, Despita, et al., 2024). From a managerial perspective, school leaders should encourage organizational cultures that support transparency, collaboration, and evidence-based decision-making. Theoretically, this study contributes to the growing discourse on data-driven educational governance by emphasizing the importance of contextual and cultural dimensions in the implementation of educational management systems, particularly within faith-based educational environments (Agustina Sari et al., 2024; M. Bambang Purwanto et al., 2024).

One important challenge emerging from this study concerns educational leadership adaptation in the digital era. Although school leaders demonstrated positive attitudes toward data utilization, leadership practices within Islamic educational institutions still largely rely on interpersonal trust, informal communication, and collective organizational relationships (Marsinah et al., 2024; Purwanto, Umar, et al., 2024). In many situations, managerial decisions continue to involve subjective considerations shaped by institutional culture and social interactions. This condition creates an interesting tension between evidence-based governance and traditional leadership approaches (Harapan et al., 2024; Taufiqi & Purwanto, 2024). Future research could therefore explore how digital leadership models can be integrated with Islamic educational leadership values, including trustworthiness, collective responsibility, ethical accountability, and spiritual leadership principles. Such studies may contribute significantly to the development of culturally responsive educational leadership frameworks in Islamic educational contexts.

Another challenge relates to the role of language and communication in data-based educational management practices. During field observations and interviews, it

became apparent that institutional communication patterns strongly influenced how educational data were interpreted, discussed, and utilized within the school environment. Some teachers experienced difficulties understanding technical administrative terminology and digital reporting procedures, particularly when technological systems employed formal bureaucratic or unfamiliar language structures (Fitria Marisya et al., 2024). This issue suggests that language plays a crucial role not only in instructional activities but also in organizational adaptation toward digital transformation. Future research may therefore investigate the relationship between institutional communication, language literacy, leadership discourse, and technological adaptation in educational management. Exploring how educational stakeholders negotiate meaning, interpret institutional data, and communicate managerial decisions could provide deeper insights into the human dimensions of educational digitalization within Islamic educational institutions.

D. Conclusion

The implementation of data-based educational management at SD IT Al Barokah has contributed positively to the improvement of institutional governance, administrative effectiveness, and educational decision-making processes. The findings demonstrate that educational data have gradually become an important managerial instrument in supporting academic evaluation, student monitoring, teacher administration, and institutional reporting. The utilization of data within the institution has encouraged a more systematic, transparent, and evidence-oriented educational management culture, although several managerial processes still rely on interpersonal communication and conventional leadership practices. These conditions indicate that educational modernization within Islamic educational institutions tends to occur through gradual adaptation rather than immediate technological transformation.

The study also found that the effectiveness of data-based educational management is strongly influenced by leadership commitment, institutional culture, technological infrastructure, and the digital literacy of educational stakeholders. Supportive leadership and organizational openness toward digital adaptation became important driving factors in the implementation process. However, several challenges remain, including limited technological competence among some staff members, fragmented data systems, administrative workload pressures, and communication barriers related to digital management practices. These obstacles suggest that successful implementation of data-based educational management requires not only technological readiness but also continuous institutional capacity development and organizational support.

Furthermore, this study highlights that data-based educational management within Islamic educational institutions should be understood as both a technological and socio-cultural transformation process. The integration between evidence-based governance and Islamic educational values creates a distinctive institutional model that balances accountability, organizational collaboration, and ethical leadership practices. Therefore, future educational management development should not focus exclusively on digital systems but also prioritize leadership adaptation, communication effectiveness, and human-centered institutional transformation.

Finally, this study contributes theoretically and practically to the discourse of educational management in modern Islamic educational institutions. The findings are expected to serve as a useful reference for school leaders, policymakers, researchers, and educational practitioners in designing more adaptive, transparent, and sustainable educational management systems in the era of digital transformation.

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