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Digital Transformation and Emerging AI Adoption in Pesantren Management: A Case Study of Anwarul Hasaniyyah

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ABSTRACT

Digital transformation and advances in Artificial Intelligence (AI) are reshaping educational governance, including Islamic boarding schools (pesantren), which uphold distinctive Islamic educational values. However, previous studies have tended to examine administrative digitalization, communication with students' parents, and institutional promotion separately, leaving limited integrative research connecting these dimensions. This study aims to analyze educational management transformation at Anwarul Hasaniyyah Islamic Boarding School (Anwaha), Tabalong Regency, through three dimensions: pesantren management digitalization, parent relationship management, and institutional promotion. A qualitative case study design was employed. Data were collected from June to October 2026 through interviews, observations, and documentation involving 15 participants, including pesantren leaders, madrasah principals, operators, application developers, educators, students, and parents. Data analysis involved data condensation, data display, and conclusion drawing and verification, supported by source and methodological triangulation. The findings indicate that digitalization has transformed administration, coordination, and educational services, although system integration remains suboptimal. Digital communication has expanded parents' access to information and supported participation and trust. The A-Smart application represents an innovation in AI-based information services, although its technological capabilities require further verification. Institutional promotion combines value-based digital communication, authenticity, and institutional reputation with community recommendations. This study proposes an integrative framework connecting internal, relational, and external transformation in pesantren educational management. Sustainable digital transformation requires technological integration, organizational readiness, data protection, and preservation of Islamic educational values.

Keywords: *Educational Management Transformation; Pesantren; Artificial Intelligence; Educational Digitalization; Parent School Relationships; Digital Promotion*

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INTRODUCTION

Digital transformation has brought fundamental changes to the management of educational institutions, encompassing administration, teaching and learning, communication, service delivery, and decision-making. The advancement of Artificial Intelligence (AI), particularly Generative Artificial Intelligence (Gen AI), has further accelerated these changes by introducing technologies capable of supporting information processing, document preparation, administrative automation, and institutional communication. These developments require educational institutions not only to adopt technology but also to adapt their leadership systems, governance structures, and human resource capacities. Wollscheid et al. (2025) explain that digital educational leadership is an evolving field of research that remains fragmented, highlighting the need for a holistic approach that integrates technological, organizational, leadership, and institutional cultural dimensions. Similarly, Kafa (2025) demonstrates that integrating digitalization and AI into educational organizations presents opportunities to enhance management effectiveness while simultaneously posing challenges related to leadership readiness and organizational capacity for change. Therefore, digital transformation should be understood as a comprehensive transformation of educational management systems rather than merely the use of technological tools in institutional activities.

The advancement of AI further underscores the importance of educational management transformation, as these technologies are increasingly being employed to support organizational functions that previously depended entirely on human capabilities. Ghamrawi et al. (2024) found that AI has the potential to enhance educational leadership capacity through curriculum development, service personalization, administrative automation, and professional development. However, its implementation may also diminish the role of human actors if technological applications fail to consider the competencies, responsibilities, and authority of educational administrators. Psyrras and Kafa (2026) further conceptualize AI-driven leadership as a multidimensional capacity encompassing individual, organizational, and systemic levels. These findings indicate that the utilization of AI in education requires institutional readiness that extends beyond technical considerations to include changes in work processes, coordination mechanisms, and decision-making practices. Accordingly, AI integration should be situated within a broader framework of management transformation that preserves human responsibility and judgment.

Within the context of Islamic education, such transformation presents distinctive complexities, particularly in pesantren institutions. Pesantren are educational institutions that not only provide academic instruction but also perform functions related to student care, character development, the internalization of religious values, and the formation of students' social lives. These characteristics distinguish pesantren management from that of conventional formal educational institutions. Consequently, digital transformation in pesantren cannot be accomplished merely by providing technological infrastructure; it requires governance adjustments that preserve scholarly traditions, leadership authority, Islamic etiquette (adab), and the identity of Islamic education. From the perspective of digital leadership, technological changes that are not accompanied by improvements in organizational capacity may create misalignment between the demands of innovation and established institutional practices (Wollscheid et al., 2025). This situation highlights the importance of examining how pesantren manage technological changes as part of their educational management transformation.

One important dimension of this transformation is the digitalization of pesantren management, which encompasses changes in administrative systems, documentation, student data management, organizational coordination, and institutional information dissemination. The adoption of digital technologies enables

information management processes to become more systematic, better documented, and more accessible to relevant stakeholders. Nevertheless, digitalization does not automatically improve governance quality unless it is supported by adequate managerial competencies and operational mechanisms. Kafa (2025) demonstrates that the successful integration of digital technologies and AI into school leadership depends on leaders' ability to align technological applications with organizational needs. Meanwhile, research on the use of AI for managerial tasks highlights its potential to support decision-making, data processing, operational efficiency, and institutional communication (Kafa, 2026). These findings provide a foundation for understanding that the digital transformation of pesantren management should be examined through changes in managerial practices rather than solely through the availability of digital tools and applications.

The second dimension concerns the transformation of relationship management between pesantren and students' parents or guardians. These relationships are strategically important because parents entrust pesantren with both the education and daily care of their children. Under conventional management practices, communication between pesantren and parents generally takes place through face-to-face meetings, written notices, telephone calls, or periodic information updates. Advances in communication technology have enabled a shift toward faster, more frequent, and better documented digital interactions. However, the transformation of institutional relationships cannot be assessed solely by increases in communication frequency; it must also consider information transparency, responsiveness, parental participation, and trust in information management. Rivera Vargas et al. (2024) found that the use of digital platforms in education is associated with families' perceptions of trust, data protection, and technological security. Therefore, the digitalization of pesantren communication should be directed toward strengthening transparent, responsive, and participatory relationship management, allowing parents not only to receive information but also to become partners in educational provision.

The third dimension involves the transformation of pesantren promotion as part of a broader strategy to strengthen institutional identity, reputation, and relationships with the community. Changes in how people seek educational information have encouraged educational institutions to utilize social media and digital platforms as channels of public communication. Through a literature review on social media marketing in student recruitment, Cingillioglu et al. (2024) demonstrate that social media plays an important role in brand development, competitiveness, and educational communication strategies. Isaacs and Mulder (2025) further emphasize that the effectiveness of social media promotion depends on institutions' ability to engage prospective students through relevant communication and content. Within the context of Islamic education in Indonesia, Juhaidi (2024) shows that social media has been utilized as a strategic marketing channel by Islamic higher education institutions. Furthermore, Kethuda and Bilgin (2025) found that social media marketing activities are associated with institutional image, student satisfaction, loyalty, and advocacy. Collectively, these findings suggest that digital promotion serves not only as a means of disseminating information but also as a mechanism for shaping relationships and public perceptions of educational institutions.

Nevertheless, the development of digital promotion in pesantren requires an approach that differs from the marketing strategies of conventional educational institutions. Pesantren offer not only academic programs but also religious education, moral character development, a nurturing residential environment, and the cultivation of Islamic values. Therefore, promotional information should authentically represent institutional conditions and characteristics. The emergence of Gen AI provides opportunities for pesantren to develop promotional materials, organize information, and improve the efficiency of digital content

production. However, these opportunities must be managed critically to prevent the dissemination of inaccurate information or the dilution of pesantren identity. In this context, digital promotion constitutes an essential component of external management transformation that is closely connected to the quality of internal governance and public trust.

Previous studies have made important contributions to understanding digital transformation and AI in education; however, several research gaps remain. Wollscheid et al. (2025), Kafa (2025), and Psyrras and Kafa (2026) primarily emphasize digitalization and AI from the perspectives of educational leadership and organizational capacity. Rivera Vargas et al. (2024) focus on families' trust in digital educational platforms, whereas Cingillioglu et al. (2024), Juhaidi (2024), Isaacs and Mulder (2025), and Kethuda and Bilgin (2025) examine digital marketing, audience engagement, and institutional reputation, particularly within higher education contexts. These differences in research focus indicate that the interrelationships among internal management transformation, parent–pesantren relationship management, and digital promotion have not received sufficient integrated attention in the studies reviewed. Furthermore, the distinctive characteristics of pesantren as institutions that provide both education and residential care suggest that findings from conventional schools and higher education institutions may not fully explain the processes involved in pesantren management transformation. A detailed comparison of previous studies and the positioning of the present study is presented in the following table.

Table 1. Previous Studies and the Positioning of the Present Study

No	Researcher (s) (Year)	Focus and Contributions of Previous Studies	Research Gap	Positioning of the Present Study
1	Wollscheid et al. (2025)	Examines digital school leadership and the interrelationships among technology, organizational structures, competencies, and educational governance.	Does not specifically address pesantren management transformation by integrating internal management, parent–pesantren relationships, and institutional promotion.	Examines pesantren digitalization as a governance transformation interconnected with parent–pesantren relationships and external communication.
2	Kafa (2025)	Investigates the integration of digitalization and AI into school leadership and organizational activities.	Primarily focuses on school leadership without specifically examining pesantren management, which encompasses both educational and residential care functions.	Analyzes digital transformation and the relevance of AI in pesantren management based on actual institutional practices.
3	Ghamrawi et al. (2024)	Explores the potential of AI to enhance teacher leadership, administrative processes, and educational capacity.	Does not specifically explain the interconnections between technological adoption, parental relationship management, and institutional promotion within pesantren.	Positions technology as an integral component of internal, relational, and external management transformation in pesantren.
4	Psyrras & Kafa (2026)	Develops a multidimensional perspective on AI-driven leadership encompassing individual, organizational, and systemic capacities.	Does not specifically examine management transformation within pesantren-based Islamic educational institutions.	Investigates pesantren management transformation by considering organizational structures, institutional values, and AI advancements.

No	Researcher (s) (Year)	Focus and Contributions of Previous Studies	Research Gap	Positioning of the Present Study
5	Rivera Vargas et al. (2024)	Examines family trust, data security, and the use of digital platforms in education.	Does not specifically address parent–pesantren relationships within institutions that combine education and residential care.	Analyzes the transformation of parent–pesantren communication in strengthening transparency, responsiveness, participation, and trust.
6	Cingillioglu et al. (2024)	Investigates social media marketing for student recruitment, brand development, and educational competitiveness.	Does not establish an integrated connection between digital promotion, internal governance, and parental trust in the pesantren context.	Conceptualizes digital promotion as an external dimension of pesantren management transformation.
7	Juhaidi (2024)	Examines social media marketing practices in Islamic higher education institutions in Indonesia.	Focuses on Islamic higher education rather than pesantren, which have distinctive educational, residential care, and parental relationship characteristics.	Examines pesantren digital promotion strategies by considering Islamic educational identity and public trust.
8	Isaacs & Mulder (2025)	Highlights the importance of prospective student engagement and the quality of social media communication in higher education recruitment.	Does not integrate digital promotion with internal service delivery and parental relationships within pesantren institutions.	Analyzes digital promotion as an integral component of institutional reputation management and pesantren–community relationships.
9	Kethüda & Bilgin (2025)	Investigates the role of social media marketing in shaping institutional image, loyalty, and advocacy in educational institutions.	Does not specifically examine the relationships among promotional strategies, service quality, and parental trust within pesantren.	Examines the interconnections between digital promotion, institutional management, and parent–pesantren relationships.
10	Present Study – Pesantren Anwaha	Examines pesantren educational management transformation through management digitalization, parent–pesantren relationship management, and digital promotion in the context of AI advancements.	Addresses the lack of an integrated examination of three dimensions of management transformation within a single pesantren institutional context.	Proposes an integrative analytical framework encompassing internal digital transformation, parent relational transformation, and external promotional transformation.

Source: Researcher Processed Data (2026)

Based on these research gaps, this study proposes an integrative approach to understanding the transformation of pesantren educational management in the age of AI through three interconnected dimensions: internal digital transformation, parent relational transformation, and external promotional transformation. The first dimension conceptualizes digitalization as a transformation of organizational management processes and educational service delivery. The second dimension emphasizes the transformation of relationships between pesantren and students' parents or guardians through communication, information transparency, responsiveness, and trust building. The third dimension examines changes in promotional strategies aimed at strengthening institutional identity, reputation, and

community engagement through digital media. These three dimensions are conceptualized as interconnected components of a unified institutional management transformation process. Within this framework, AI is understood as an emerging technological development with the potential to support the integration of information management, communication, and promotional activities, while its actual implementation is examined in accordance with the empirical conditions of the pesantren.

The novelty of this study lies in its application of an integrated three-dimensional perspective to analyze the transformation of pesantren educational management by connecting changes in internal governance, the quality of relationships with students' parents or guardians, and external communication strategies within a single institutional context. This approach provides a more comprehensive analytical framework than previous studies that have examined administrative digitalization, digital communication, or educational marketing separately. Conducted at Anwaha Pesantren, this study aims to analyze the digital transformation of pesantren management, the transformation of relationship management between the pesantren and students' parents or guardians, and the transformation of pesantren promotional strategies in response to advances in digital technologies and AI. Theoretically, this study seeks to extend the literature on Islamic educational management by providing an integrative understanding of organizational transformation within pesantren institutions. Practically, the findings are expected to offer insights for pesantren administrators in developing digital governance, strengthening partnerships with students' parents or guardians, and designing adaptive promotional strategies while preserving the values and identity of Islamic education.

METHODS OF RESEARCH

This study was funded by STAI Rasyidiyah Khalidiyah (Rakha) Amuntai and employed a qualitative approach with a case study design to gain an in depth understanding of the transformation of pesantren educational management in the context of developments in Artificial Intelligence (AI). The qualitative approach was selected because the study seeks to understand processes of change, the experiences of institutional actors, and the dynamics of educational management within the social and cultural environment of pesantren. The case study design enables researchers to explore contemporary phenomena in depth while considering their relationships with real life contexts (Yin, 2018). The study was conducted at Anwarul Hasaniyyah Pesantren (Anwaha), with educational management transformation as the central case examined through three dimensions: the digital transformation of pesantren management (internal digital transformation), the transformation of relationship management between the pesantren and students' parents or guardians (parent relational transformation), and the transformation of pesantren promotion (external promotional transformation). These three dimensions serve as an initial analytical framework for identifying the forms, processes, and dynamics of changes in pesantren educational management.

The research data sources included individuals directly involved in the planning, implementation, operation, and utilization of pesantren management services. The study involved 15 participants, comprising the kiai as the pesantren leader; three madrasah principals (Principal of Madrasah Ibtidaiyah Tahfidz Anwarul Hasaniyyah, the principal of Madrasah Tsanawiyah (MTs) Anwarul Hasaniyyah, and the principal of Madrasah Aliyah Anwarul Hasaniyyah); three system operators; the A-Smart application developer; ustadz and ustadzah (Islamic teachers); students' parents; and students (santri). Participants were selected using criterion-based purposive sampling, considering their direct involvement, knowledge of

management transformation, experiences in using or receiving digital services, and willingness to participate. To capture diverse perspectives, participant selection also incorporated the principle of maximum variation sampling, ensuring that information was obtained not only from policymakers but also from technical personnel and service users. When additional individuals possessing relevant information were identified during the research process, snowball sampling was employed as a complementary technique while maintaining consistency with the established selection criteria. The adequacy of participant selection was assessed based on the depth and relevance of the information obtained, the diversity of experiences, and the capacity of the data to explain the research focus, in accordance with the concept of information power proposed by Malterud et al. (2016).

Data were collected through in-depth interviews, observations, and document analysis. Semi-structured interview guidelines were used to explore participants' experiences and perspectives regarding changes in administrative systems, information management, communication between the pesantren and students' parents or guardians, and institutional promotional strategies. The interviews also sought to identify technological practices, including the use of AI where evidence of its application in managerial activities was found, as well as factors facilitating or hindering the transformation process. Observations focused on pesantren management activities, the use of information systems, service delivery mechanisms, and digital communication practices related to the three research dimensions. Meanwhile, document analysis involved examining institutional profiles, data on educators and educational personnel, student records, and documents and archives relevant to digital management practices. The combination of these three techniques was intended to obtain data from multiple forms of evidence and strengthen the contextual understanding of the case under investigation (Yin, 2018).

Data were analyzed using a descriptive-interpretive approach involving data collection, data condensation, data display, and conclusion drawing and verification, as developed by Miles et al. (2014). In the initial stage, interview data, observation notes, and institutional documents were organized according to their sources and the research focus. Subsequently, coding was conducted to identify relevant information and classify it into categories and themes. Initial coding was guided by the three research dimensions while remaining open to new categories emerging from the field data. The categorized data were then presented narratively and compared across participants and data sources to identify similarities, differences, patterns of change, and contextual factors influencing the management transformation process.

Interpretation was undertaken by connecting empirical findings with concepts of educational management, organizational change, digital leadership, and technology utilization in educational governance. The analysis sought to explain how the digitalization of internal management relates to changes in parent–pesantren relationships and institutional promotional strategies. The researcher also examined the interrelationships among changes in management procedures, human resource readiness, leadership roles, and the cultural characteristics of pesantren. Throughout this process, the use of digital technology was distinguished from the implementation of AI based on the empirical evidence obtained. Accordingly, the presence of applications or information systems was not automatically classified as AI implementation. Research conclusions were formulated based on patterns and relationships among themes supported by field data, while considering alternative explanations and the distinctive institutional characteristics of Anwaha Pesantren.

The trustworthiness of the findings was strengthened through source triangulation and methodological triangulation. Source triangulation involved comparing information obtained from

pesantren leaders, madrasah principals, system operators, application developers, educators, students' parents or guardians, and students. Methodological triangulation was conducted by comparing interview findings, observations, and documentary evidence to assess the consistency of information and identify discrepancies requiring further investigation. The researcher also reexamined the data and interpretations, including seeking clarification or confirmation from participants when necessary. These procedures were intended to enhance the credibility and auditability of the findings in accordance with the principles of trustworthiness in qualitative research (Lincoln & Guba, 1985). Thus, this study seeks to provide an in-depth empirical understanding of pesantren educational management transformation and establish a conceptual foundation for developing Islamic educational governance that is adaptive to advances in digital technology and AI.

RESULTS AND DISCUSSION

Results

Digital Transformation of Pesantren Management

The findings indicate that digital transformation at Anwarul Hasaniyyah Islamic Boarding School (Anwaha) has taken place as an institutional management change encompassing administrative management, information systems, organizational coordination, educational services, and communication with stakeholders. Based on interviews, observations, and document analysis, this change is marked by a shift from predominantly manual work procedures to the use of digital technology in various operational activities of the pesantren. However, the transformation has not yet been comprehensive, as some administrative procedures remain manual and not all services have been integrated into a single information system.

At the operational level, digitalization is particularly evident in changes to student data management and educational administration. An operator at MTs Anwaha explained that the use of computers and applications has facilitated the retrieval, updating, and preparation of administrative reports. As stated in the interview:

“Previously, student data and administration were largely managed manually. Now, some of these activities are handled using computers and applications. Student data are easier to find, update, and use when reports are needed. Although everything has not yet been integrated into one system, administrative work is faster than it used to be.”

Similar changes were identified in institutional coordination. The Head of MTs Anwaha stated that technology helps accelerate the delivery of information among the head of the madrasah, teachers, educational staff, and students’ parents. Information about educational activities, administration, and required follow-up actions can be communicated through digital media. The Head of MTs Anwaha explained:

“The use of technology has greatly helped us coordinate and communicate information. Information for teachers, educational staff, or students’ parents can now be delivered more quickly through digital media. Management has also become easier because data and reports can be received more quickly, allowing us to take immediate follow-up action whenever something needs to be improved.”

At the primary education level, the use of technology requires adjustments to the characteristics of the students. The Head of MI Tahfidz Anwaha explained that technology has been used to support

administration, documentation, and communication with parents, while its implementation continues to take children's support needs into account. The informant stated:

"We have begun using digitalization to support administration, communication with teachers, and the delivery of information to parents. At the MI level, its use must certainly be adjusted to the children's age. We use technology to support management and learning, but teacher guidance and direct communication with parents remain very important."

The observations corroborated the interview findings regarding the use of communication applications, digital data storage, activity documentation, and the delivery of information to students' parents. From the service users' perspective, one parent stated that information about activities and announcements from the pesantren is now easier to obtain through WhatsApp without having to visit the institution every time. Nevertheless, direct communication is still considered important when discussing specific issues concerning a child. These findings indicate two main benefits of digitalization: more convenient information management within the institution and broader access to information for users of educational services.

Despite the changes in work processes, the digital transformation of Pesantren Anwaha still faces several limitations. Interviews and observations indicate that some activities continue to combine manual and digital systems, technology skills among administrators are uneven, and integration across systems has not been fully achieved. This condition can be understood as a hybrid management system, namely an institutional management practice that combines conventional procedures with digital technology. In this context, digitalization should not yet be equated with mature digital transformation, since technology use still requires stronger operating standards, user competencies, data quality, and coordination across educational units.

Another notable aspect is the continuity of pesantren values and traditions throughout the digitalization process. The Head of MA Anwaha emphasized:

"Technology is used to support work and services, but the values of pesantren education remain the main foundation. Technology is only a tool; it does not replace the relationships among the caregivers, ustaz, and students."

The following is a screenshot of the A-Smart application, displaying up-to-date information on students' financial records, which parents can access at any time.

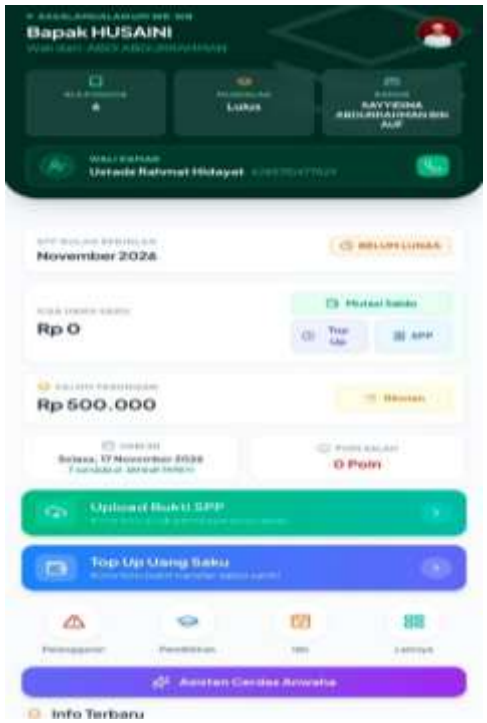


Figure 1. Real-time student financial information through the A-Smart application
Source: *Researcher Processed Data (2026)*

In the context of developments in Artificial Intelligence (AI), the findings also indicate that internal digitalization at Pesantren Anwaha has not yet reached the stage of integrating intelligent systems into all management processes. The observed use of technology is predominantly related to digital administration, documentation, and institutional communication. Although the A-Smart application is being developed with purported AI capabilities, the available data on technical testing, implementation coverage, and its comprehensive use in managerial decision making are insufficient to conclude that the pesantren's overall governance is AI-based. This distinction is important because the use of computers, administrative applications, and digital information systems does not necessarily indicate the use of AI.

Transformation of Parent-Pesantren Relationship Management

The findings indicate that the management of relationships between students' parents and Pesantren Anwaha has been transformed through a shift from conventional communication patterns to the use of digital media that are faster, more accessible, and allow ongoing interaction. This change concerns not only the use of communication technology but also the orientation of relationship management between the pesantren and students' families. Relationships that previously relied largely on face-to-face meetings, periodic announcements, and administrative communication are beginning to develop into interactions that provide greater opportunities for parents to monitor their children's education and care.

At the Madrasah Aliyah level, digital communication has accelerated coordination between the madrasah and students' parents, particularly in communicating information about learning activities, discipline, and students' development. The Head of MA Anwaha explained:

"Relationships between the madrasah and students' parents have become easier because of digital

technology. Previously, when we wanted to communicate a child's progress, we usually had to wait for a parents' meeting or contact the parents directly. With digital communication media, information about learning activities, discipline, and students' development can be delivered more quickly. We also hope that parents will not merely receive information but will also pay attention and provide input regarding their children's educational development. Although communication now uses technology, we continue to maintain direct relationships, especially when a student's issue requires discussion together."

At the MI Tahfidz level, digital communication serves functions closely related to education and caregiving. The Head of MI Tahfidz Anwaha explained that parents need information about learning activities, Qur'an memorization, religious practices, and children's behavioral development. Through digital communication media, the madrasah can convey such information, while parents have opportunities to share information about their children's conditions or habits that teachers should take into account. This communication pattern indicates that relationships between the pesantren and parents are based not only on administrative needs but also on continuity in children's development between the family and pesantren environments.

Further developments in parent relationship management can be seen in the development of the A-Smart application. Based on an interview with M. Arief Rahman, S.Kom., the application is designed to provide information services about students' activities by integrating various institutional data sources. The informant explained that A-Smart, which is being developed with AI capabilities, allows parents to ask questions about their children's conditions and obtain information drawn from academic activities, consumption, transactions, and daily activity monitoring. The developer stated that the system can combine data from CCTV, Anwaha Mart, and records of students' activities to generate more detailed information.

From an operational perspective, the development of integrated services requires data quality, operator competencies, and information-access arrangements. An operator at MA Anwaha explained that digital systems facilitate student data management, but information must be updated regularly to remain accurate. The informant also emphasized that parents have different levels of ability in using applications, making assistance necessary. These findings indicate that the quality of digital relationship management is determined not only by the availability of technology but also by the organization's readiness to manage information responsibly and provide services accessible to different user groups.

From the parents' perspective, ease of access to information is the most tangible benefit of digital communication. One parent of an MA Anwaha student stated:

"As parents, we find it helpful when information about our children can be accessed through a mobile phone. Since our children live at the pesantren, we naturally want to know about their learning activities, discipline, and daily conditions. With communication through digital media, we do not always have to visit the pesantren just to ask for information. We also feel more at ease when the pesantren provides information openly. However, direct communication with the homeroom teacher or caregiver remains important to us, especially when an issue needs to be discussed in greater depth. Thus, technology is very helpful, but good relationships with the pesantren must still be maintained."

Parents can ask any questions through Anwaha AI, which is integrated into the A-Smart application. The following image illustrates an example of Husaini, the father of a student named Abdi Abdurrahman, asking about the latest programs offered by Pesantren Anwaha.

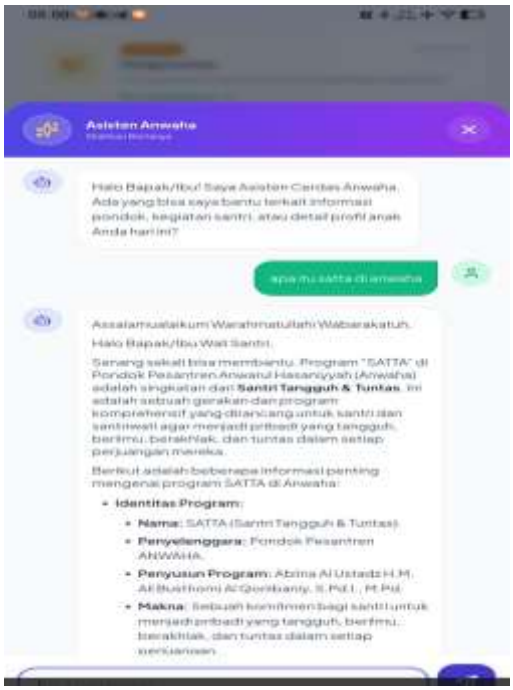


Figure 2. Real-time AI responses in the A-Smart application to parents' questions regarding the latest programs at Pesantren Anwaha
Source: *Researcher Processed Data (2026)*

Transformation of Pesantren Promotion

The findings indicate that the promotion of Pesantren Anwaha has been transformed through a shift in institutional communication strategies from conventional approaches to the use of various digital platforms. This change concerns not only the use of promotional media but also the institution's orientation toward introducing educational programs, presenting students' activities, building institutional identity, and strengthening public trust. Promotion, which previously relied on recommendations from parents, alumni, direct visits, and community networks, is now complemented by the use of social media and digital content publication.

This strategic change was explained by Fadliansyah, S.Kom., who stated that personal recommendations remain an important element in building public trust, even though the institution has developed communication through various digital channels. The informant stated:

"In the past, people learned about the pesantren mostly through word of mouth. We continue to maintain this because one promoter who is a student's parent is far more powerful than 1,000 views. Now, we are beginning to use digital media to show students' activities, educational programs, achievements, and pesantren activities so that the public can obtain information more easily. We do not rely solely on the A-Smart application developed by Anwaha, but also use Google AdSense, Facebook AdSense, Instagram, and TikTok."

Observations conducted on 1 October 2026 showed that Pesantren Anwaha had used digital channels to publish learning activities, religious activities, student achievements, and everyday life within the pesantren. The content does not focus solely on new student admissions but also presents various educational and caregiving activities. This practice indicates the development of digital storytelling, namely

the communication of institutional identity and experience through narratives and visual documentation. This approach enables the public to gain an initial picture of the educational environment and activities before making a direct visit.

At the Madrasah Tsanawiyah level, digital promotion is used to introduce educational processes and the development of students' character. Muhammad Noorhadi, S.Pd., Head of MTs Anwaha, stated:

"Previously, the public learned about the existence and activities of MTs Anwaha mostly through stories from students' parents, alumni, or people who had visited the pesantren. Now, through social media, we can more easily introduce learning activities, character development, religious activities, and students' achievements to a wider audience. We do not simply want the public to know that a madrasah exists here; we also want them to understand how education and student development take place. In our view, the best promotion is to show activities and educational outcomes that are genuinely implemented, so that the public can assess the quality of education at Pesantren Anwaha for themselves."

This tendency is even more evident at the Madrasah Aliyah level. Wahid Susanto, S.Pd., Head of MA Anwaha, emphasized that promotional content must reflect educational activities that are genuinely carried out. The informant explained:

"In promoting MA Anwaha, we do not merely provide information about new student admissions or available educational facilities. We also try to show learning activities, religious development, achievements, and the development of students' abilities. People can now view these activities through social media and gain an understanding of the education we provide. For us, promotion is not simply about creating attractive content; the information presented must correspond to actual conditions. Public trust will develop when what people see through digital media genuinely reflects the educational process implemented at the pesantren."

From the perspective of information recipients, digital promotion helps prospective parents become familiar with the pesantren's profile and activities before engaging with it directly. Fakhri, a parent of an MTs Anwaha student, explained:

"Before enrolling a child in a pesantren, we as parents certainly want to know about the education, activities, and environment in which our child will study. Information from family members or people who already know the pesantren is very helpful, but now we can also view the pesantren's activities through social media. From these platforms, we can learn about learning activities, worship, student development, and other activities. In my opinion, digital promotion is very helpful for parents who want to learn about the pesantren before visiting in person. However, what ultimately makes us trust the institution is still the actual experience of other parents and how the children are cared for while living at the pesantren. Thus, information from social media and stories from parents complement each other."

The findings also indicate that the development of digital promotion is not yet fully supported by a structured management system. Based on observations, the management of digital media still depends on the abilities of particular individuals, while content planning, audience analysis, and data based evaluation have not all been carried out systematically. This finding indicates that promotional transformation still faces organizational challenges related to human resource competencies, the division of responsibilities, and the development of evaluation mechanisms.

The development of AI creates new opportunities for managing pesantren promotion, particularly in content preparation, audience information processing, and communication personalization. However, the research data indicate that the use of AI in the promotion of Pesantren Anwaha remains at an early stage.

There is insufficient evidence of predictive analytics, automated personalization, or systematic AI-based evaluation of promotional effectiveness. Therefore, AI in the promotional dimension is more appropriately understood as a technology being considered and potentially developed, rather than as an intelligent marketing system that has been proven to operate comprehensively.

To strengthen the article's scholarly contribution, the following table presents a synthesis of the research findings:

Table 2. Synthesis of Research Findings

Dimension	Key Empirical Findings	Managerial Interpretation	Research Contribution
Digital Transformation of Pesantren Management	Administrative processes have become increasingly digitalized, and coordination has improved; however, the systems have not yet been fully integrated.	A shift in organizational workflows from predominantly manual procedures toward technology-supported hybrid management.	Explains digitalization as a transformation of organizational processes rather than merely the adoption of technological tools.
Transformation of Parent–Pesantren Relationships	Communication has become faster and more transparent. The A-Smart application is being developed to integrate information services, although its AI capabilities have not yet been independently validated.	A shift from administratively oriented relationships toward more participatory digital communication.	Proposes the conceptual framework of Digital-Based Pesantren Parent Relationship Management.
Transformation of Pesantren Promotion	Social media complements recommendations from students' parents or guardians, while promotional content emphasizes authentic institutional activities and pesantren values.	Promotion has evolved into a strategic instrument for communicating institutional identity, strengthening reputation, and building public trust.	Explains the value-based digital promotion approach within the context of pesantren education.
Integration of the Three Dimensions	Internal information management, family communication, and institutional promotion draw upon interconnected organizational resources and information.	The three dimensions demonstrate potential interrelationships, although technical integration and cross-dimensional effects have not yet been specifically examined.	Offers an initial integrated understanding of pesantren management transformation encompassing internal, relational, and external dimensions.

Source: Researcher Processed Data (2026)

Discussion

Digital Transformation of Pesantren Management

This statement demonstrates that digitalization has changed some of the pesantren's administrative workflows. The change has not been limited to the medium used to store information; it has also affected how data are managed and used to meet organizational needs. Digital documents enable operators to retrieve and update data more practically, while heads of educational units can obtain administrative information without relying entirely on searches for physical documents. Nevertheless, the informant's acknowledgment that the systems have not yet been fully integrated indicates that digital transformation is still taking place gradually.

These findings show that digital technology is beginning to function as an instrument of managerial coordination. Easier access to reports and information creates opportunities for madrasah leaders to improve organizational responsiveness. From an educational management perspective, this condition reflects changes in the functions of organizing, implementation, and supervision, which are increasingly supported by the availability of digital information. This is consistent with Wollscheid et al. (2025), who position digital transformation in education as a change involving technology, leadership, human resource competencies, and organizational processes simultaneously.

This information indicates that the implementation of digital technology is not uniform across educational levels. At the MI level, the need for teacher guidance and parental involvement is an important consideration in determining technology use. At the MTs and MA levels, meanwhile, digitalization is more prominent in supporting information management, coordination, and administrative services. These differences indicate that the digital transformation of the pesantren is influenced by the service needs and characteristics of the educational units operating within the same institutional environment.

These findings are related to Kafa (2025), who emphasizes the importance of leadership in integrating technology with the needs of educational organizations. Digitalization cannot be achieved merely by providing devices or applications; it requires leaders to direct change, build human resource readiness, and ensure consistent system use. At Pesantren Anwaha, the heads of the madrasahs and the operators have complementary roles. Leaders use information to support coordination and decision making, while operators are responsible for data management and availability. The relationship between these roles indicates that the effectiveness of digital transformation is influenced by the alignment of managerial functions and technical implementation.

This statement indicates that digital transformation at Pesantren Anwaha is not intended to replace the educational relationships that characterize the pesantren. Technology is positioned as an instrument for supporting organizational effectiveness, while interactions among caregivers, educators, students, and parents remain essential elements of educational provision. This condition demonstrates an adjustment between technological innovation and the continuity of institutional identity.

Based on the synthesis of the findings, the digital transformation of Pesantren Anwaha encompasses four main changes: the digitalization of administration; faster coordination and communication; improved access to information services; and the adaptation of organizational work culture to technology. These four changes indicate that digitalization is beginning to influence how the pesantren performs its management functions, although its maturity still needs to be strengthened. Thus, digital transformation at Pesantren Anwaha is more appropriately understood as a gradual, context specific management change oriented toward service efficiency without abandoning Islamic educational values.

The pattern identified at Pesantren Anwaha is also consistent with pesantren-specific studies of digital management systems. Nur, Jasiah, and Najah (2026), in their study of the Siasa Dara system, reported improvements in administrative efficiency, institutional communication, and learning support, while also identifying infrastructure constraints and differences in educators' ability to use technology. Similarly, Nafi and Musolin (2025) found that digital management in a pesantren-based school supported efficiency, transparency, and service improvement through a hybrid adaptation of digital and conventional practices; they also highlighted the need to strengthen human resource capacity and address differences in parents' digital literacy. These studies support the present finding that digital transformation at Anwaha is a gradual organizational process rather than the simple replacement of manual procedures with applications. The

present study extends this discussion by showing how digitalization is adapted across several educational levels while retaining the interpersonal relationships and educational values that characterize pesantren.

Transformation of Parent-Pesantren Relationship Management

This information indicates that digital communication creates opportunities to shift relationships from information delivery toward educational coordination. Parents are not positioned merely as recipients of announcements; they are also expected to contribute attention and input regarding their children's development. However, actual participation must be distinguished from participation anticipated by institutional managers. The interview data indicate an orientation toward more collaborative relationships, but do not provide sufficient grounds to conclude that all parents have been actively involved in educational decision-making or service evaluation.

These findings have important implications for Islamic educational management. In pesantren institutions, relationships between administrators and students' parents do not end with the provision of academic services; they also encompass responsibilities for character education, caregiving, and the development of religious life. Therefore, effective digital communication needs to consider information quality, response speed, support needs, and the continuity of interpersonal relationships. Rivera Vargas et al. (2024) show that the use of digital platforms in education is also related to issues of family trust, information control, and data security. In the context of Pesantren Anwaha, these findings underscore that improved access to information must be accompanied by communication governance capable of protecting confidentiality and maintaining parents' trust.

This information indicates that the development of parent relationship management is moving toward more integrated information services oriented to individual needs. If the capabilities described by the developer have been implemented and function as stated, A-Smart has the potential to reduce the fragmentation of information across pesantren services. However, the available data do not include independent test results concerning information accuracy, AI processing capabilities, actual use by parents, or the consistency of real time data integration. Therefore, in this study, A-Smart's capabilities are treated as a development practice and functional claims reported by the informant, rather than as evidence that all pesantren information services have been automated using AI.

Information governance becomes increasingly important when an application has the potential to integrate personal data, transactions, consumption, and students' daily activities. Managing such information requires restricted access rights, user identity verification, personal data protection, and clarity regarding authority over information use. Without these mechanisms, greater transparency may create risks to privacy and data security. Therefore, the development of AI-based technology in pesantren should be situated within an information management framework that considers students' interests as data subjects and parents' interests as service users.

This statement indicates that access to digital information is associated with parents' sense of reassurance and trust in the pesantren. More openly communicated information can help parents understand their children's activities while they participate in education and caregiving. However, the convenience of digital communication does not fully replace the need for personal dialogue. Sensitive issues, such as discipline, behavioral development, or students' particular circumstances, still require direct communication to build mutual understanding.

These findings reveal a hybrid communication pattern in relationships between the pesantren and

students' parents. Digital communication accelerates information delivery and expands access to services, while face-to-face communication remains necessary for discussing issues that require in-depth explanation, empathy, and joint consideration. In this context, the transformation of parent relationships does not simply move toward the digitalization of all interactions; rather, it combines digital communication channels with the interpersonal relationships that have long been part of pesantren traditions.

Based on the data synthesis, the transformation of parent relationship management at Pesantren Anwaha encompasses four dimensions. First, the institutional dimension, involving changes in procedures for delivering information and coordinating with students' families. Second, the pedagogical dimension, involving broader communication about learning, discipline, and character development. Third, the technological dimension, involving the use of digital media and the development of A-Smart as an information service platform. Fourth, the social dimension, involving greater information openness and opportunities to build trust and parental involvement.

These four dimensions provide a basis for formulating the concept of Digital Based Pesantren Parent Relationship Management, an approach to managing relationships between the pesantren and students' parents that combines digital communication, information services, family involvement, and the maintenance of institutional trust. This concept is an interpretive synthesis of the case study findings and cannot yet be treated as a model that has been widely validated. The study's contribution lies in explaining that the transformation of parent relationships requires the integration of technology, information management, and the social relationships characteristic of pesantren education.

Thus, the transformation of parent relationship management at Pesantren Anwaha indicates a shift from administrative communication toward a more open and participatory digital relationship orientation. However, the success of this transformation depends not only on technology's ability to accelerate information delivery but also on communication quality, users' digital skills, data protection, and the continuity of interpersonal relationships between the pesantren and students' families.

The findings on parent pesantren relationships are also supported by research focusing specifically on digital services for parents in pesantren. Sulthoniyah, Sudarmanto, Rasul, and Bakar (2026), in their study of the Wali Santri application at Pondok Pesantren Fatihul Ulum Al Mahfudz, reported that the application improved the effectiveness, efficiency, transparency, and accessibility of administrative services and strengthened communication between the pesantren and students' parents. Nafi and Musolin (2025) likewise identified parents' digital literacy as an important consideration in the implementation of digital management in a pesantren based educational setting. These findings are consistent with the present study's evidence that digital channels make information more accessible while requiring user assistance and reliable information management. The present study adds a relational and pedagogical perspective: communication with parents concerns not only administrative services but also students' learning, discipline, religious practices, and everyday care. It also emphasizes that digital access complements, rather than replaces, direct communication when sensitive or complex issues require discussion.

Transformation of Pesantren Promotion

This statement shows that promotional transformation is not intended to replace word of mouth communication but to extend the reach of information through digital media. The statement that one promoter is more influential than a thousand views represents the informant's assessment of the importance of social trust, rather than a quantitative measurement of promotional effectiveness. Thus, the main strength

of Pesantren Anwaha's promotional strategy lies in its effort to combine community experience and recommendations with technology's capacity to disseminate institutional information.

This information indicates that digital promotion functions as a means of substantive communication about educational practices, rather than merely disseminating information about student admissions. Presenting learning activities, character development, and student achievements gives the public an opportunity to understand the nature of the education provided. This strategy reflects a promotional orientation that emphasizes consistency between public information and actual institutional conditions.

These findings are related to the study by Cingillioglu et al. (2024), which shows that social media marketing has become an important part of recruitment and communication strategies in educational institutions. Isaacs and Mulder (2025) also emphasize the importance of audience engagement and content quality in communicating with prospective students. In the context of Pesantren Anwaha, however, the use of social media has an additional dimension: communicating Islamic educational values, religious life, character development, and caregiving. Accordingly, the purpose of promotion is not limited to increasing institutional visibility but also concerns the representation of the pesantren's educational identity.

This statement indicates that information credibility is a primary consideration in promotional strategies. Digital content is understood as a representation of educational practices; therefore, discrepancies between the information presented and students' actual experiences may affect public trust. In this context, the promotional transformation of Pesantren Anwaha demonstrates the characteristics of value-based digital promotion, namely institutional communication that places values, identity, and the authenticity of educational services at the core of promotion.

This perspective broadens the understanding of digital educational marketing. Juhaidi (2024) demonstrates the role of social media in the marketing strategies of Islamic higher education institutions in Indonesia, while Kethüda and Bilgin (2025) examine the relationship between social media marketing activities, institutional image, and advocacy. This study offers a different context because pesantren have educational and caregiving responsibilities that make trust in the institution an important consideration in parents' decisions. Therefore, digital promotional strategies in pesantren should be understood as part of reputation management built through alignment between public communication and students' educational experiences.

This information indicates that digital promotion and social recommendations serve different but complementary functions. Social media provides initial access to information and an overview of educational activities, while direct experience and recommendations from other parents offer considerations regarding institutional credibility. Therefore, promotional effectiveness cannot be assessed solely by the number of posts or views; it must also take into account information quality and its consistency with the actual experiences of educational service users.

Based on the overall findings, the promotional transformation of Pesantren Anwaha encompasses three main changes. First, promotional channels have shifted from conventional communication toward a combination of social communication and digital media. Second, the orientation of promotion has shifted from providing information about new student admissions toward strengthening institutional identity, reputation, and public trust. Third, the need has emerged for more planned promotional management through content development, role allocation, and information-based evaluation. These three changes indicate that digital promotion cannot be separated from the quality of management and the educational experience offered by the pesantren.

Thus, the promotional transformation of Pesantren Anwaha demonstrates the development of a value based digital promotion approach that integrates digital communication, information authenticity, Islamic educational values, and social trust. Within this framework, digital media expand the reach of institutional communication, while educational quality and parents' experiences provide an important foundation for building credibility. These findings show that the transformation of pesantren promotion is part of external management change that needs to be developed consistently with internal governance and institutional relationships with students' families.

A similar pattern is evident in pesantren specific research on digital promotion. Chotimah and Akrom (2024), examining Al-Munawwir Komplek Q Islamic Boarding School, found that the use of multiple digital platforms and regularly published content contributed to the institution's brand image, with implementation supported by leadership and collaboration across the pesantren. Lutfiatun and Fauzi (2024) also reported that social-media content, including visual materials and testimonials from alumni and parents, helped increase pesantren visibility, attractiveness, and public trust. These studies are consistent with the Anwaha findings that social media can broaden public access to information and that personal recommendations remain valuable in building credibility. The present study further highlights the importance of the authenticity of promotional content: digital representations should correspond to actual educational, religious, and caregiving practices. This value-oriented emphasis is particularly relevant to pesantren, where promotion communicates not only institutional programs but also educational identity and religious values.

Taken together, the pesantren specific studies discussed above provide support for the three interrelated domains identified in this study. Research on digital management systems emphasizes administrative processes, information availability, and institutional communication (Nafi & Musolin, 2025; Nur et al., 2026); research on parent-facing applications highlights service accessibility and communication with families (Sulthoniyah et al., 2026); and research on digital marketing explains how social-media content and institutional branding contribute to visibility and trust (Chotimah & Akrom, 2024; Lutfiatun & Fauzi, 2024). The contribution of the Anwaha case is to bring these strands together within one management perspective, showing how internal digitalization, parent relationship management, and institutional promotion are connected through shared information and communication practices. This integrated interpretation is a synthesis of the present case and the selected prior studies; it should not be read as evidence that a fully integrated technical platform or causal relationship among the three domains has already been empirically established.

The findings indicate that digital transformation at Pesantren Anwaha involves three interconnected management domains: internal institutional management, relationships with students' parents, and institutional promotion. These domains are linked through the use and management of institutional information, digital communication, and the representation of educational services. Internal digitalization supports the availability and coordination of information; parent relationship management extends the use of information to family communication and service access; and digital promotion communicates the institution's educational activities, identity, and values to the wider community. Nevertheless, the integration remains developing rather than fully consolidated, as systems are not yet completely integrated, digital competencies vary, and the use of AI has not been independently validated. Table 3 summarizes these interrelationships and the corresponding management priorities.

Table 3. Integration of Digital Transformation in Pesantren Management

Management dimension	Main digital practices and empirical basis	Connection with other dimensions	Management priorities and limitations
Internal institutional management	Digital administration, student-data management, digital documentation, and faster coordination among educational units. Some procedures remain manual and systems are not yet fully integrated.	Provides the institutional information and operational coordination needed for parent services and consistent public communication.	Strengthen system integration, data quality, standard operating procedures, operator competencies, and coordination across educational units.
Parent–pesantren relationship management	Digital communication and information access concerning learning, discipline, students' activities, and development; A-Smart is being developed to support more integrated information services.	Uses institutional data and operational information to support family communication; parents' experiences and feedback can also inform service improvement and institutional credibility.	Improve information accuracy and updating, user assistance, access controls, privacy protection, and the balance between digital communication and direct interpersonal interaction. A-Smart's AI capabilities have not been independently validated.
Institutional promotion	Use of social media and digital content to present educational activities, student achievements, religious life, and pesantren values, alongside word-of-mouth recommendations.	Communicates the educational practices and service identity supported by internal management, while public and parent perceptions contribute to institutional reputation and trust.	Develop planned content management, clear role allocation, audience analysis, and data-informed evaluation; ensure that promotional content remains consistent with actual educational practices. Systematic AI-based promotion has not been evidenced.
Overall integration	The three domains make use of interconnected institutional resources and information, although technical integration and cross-dimensional effects have not been specifically tested.	Internal management supports service information; parent relationship management connects the institution with families; and promotion communicates institutional identity and educational experience to the public.	Develop an integrated, values-based management approach that improves service efficiency and information access while safeguarding data, maintaining interpersonal relationships, and preserving the educational values and traditions of the pesantren.

Source: Researcher Processed Data (2026)

CONCLUSION

This study concludes that the transformation of educational management at Anwarul Hasaniyyah Pesantren (Anwaha) in the age of Artificial Intelligence (AI) has occurred gradually through three interconnected dimensions: the digital transformation of pesantren management, the transformation of parent–pesantren relationship management, and the transformation of institutional promotion. These three dimensions demonstrate that digital transformation involves not only the adoption of technology but also changes in organizational workflows, communication patterns, educational service delivery, and strategies for building public trust. The ongoing transformation remains at the stage of system development and

integration, indicating that the adoption of digital technologies has not yet evolved into a fully integrated AI driven educational governance system.

Within the internal dimension, digitalization has facilitated administrative management, documentation, coordination, and information dissemination, although some activities continue to combine manual and digital procedures. Within the relational dimension, the use of digital media has accelerated communication, improved access to information, and created opportunities for greater parental involvement in supporting children's education and care. The development of the A-Smart application indicates an emerging direction toward more integrated information services; however, the AI capabilities described by its developer still require technical verification and implementation testing. Meanwhile, promotional transformation reflects a shift from conventional communication toward digital strategies emphasizing authentic institutional activities, Islamic educational identity, and public trust. Digital promotion does not replace parental recommendations and community networks but complements them by expanding the reach of institutional communication.

The main contribution of this study lies in the formulation of an integrative perspective that connects internal digital transformation, parent relational transformation, and external promotional transformation as three dimensions of pesantren educational management transformation. The findings indicate that internal information management is interconnected with the quality of services provided to students' parents or guardians and the communication of institutional identity to the wider community. From a practical perspective, the findings emphasize the importance of strengthening information system integration, developing human resources' digital competencies, protecting students' personal data, maintaining the quality of interpersonal communication, and establishing authentic digital promotional governance. Thus, the success of pesantren management transformation is determined not merely by technological sophistication but by the institution's ability to integrate digital innovation with organizational needs, stakeholder trust, and Islamic educational values.

This study has several limitations. As a single-case study conducted at one pesantren, its findings are not intended to be statistically generalized to all pesantren institutions. Furthermore, the study did not quantitatively measure the effectiveness of digitalization or technically evaluate the AI capabilities of the A-Smart application. Therefore, future research is encouraged to involve multiple pesantren with varying levels of digital maturity, directly evaluate the performance of information systems and AI-based applications, and examine the relationships among digital transformation, service quality, parental trust, and institutional reputation. Such research is expected to strengthen the empirical foundation for developing models of pesantren educational management transformation that are responsive to technological advancements while preserving the distinctive characteristics of Islamic education.

AUTHOR CONTRIBUTIONS

Syahrani (first author) made the primary contribution to this study by establishing communication with the research site, developing the research ideas, conducting and documenting field observations and interviews, analyzing the collected data, and preparing the initial draft of the manuscript. Miftahur Rohmah (second author) contributed to the manuscript preparation process, translated the article from Indonesian into English while ensuring the accuracy and integrity of the field findings, and reviewed and revised the manuscript to ensure its alignment with the scope, academic standards, and publication requirements of the

target journal.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest in this study. The research was conducted as part of a routine collaborative research activity between lecturers and students, with financial support provided by STAI Rasyidiyah Khalidiyah (Rakha) Amuntai.

ARTIFICIAL INTELLIGENCE (AI) USE STATEMENT

In preparing this manuscript, artificial intelligence (AI) was used solely for language editing to ensure grammatical accuracy and clarity, as neither the first nor the second author has an academic background in language studies; both hold degrees in teacher education. AI was not used to generate research data, as all data presented in this study are based on actual events, field observations, and interviews conducted at Pesantren Anwarul Hasaniyyah (Anwaha). The authors take full responsibility for the accuracy, authenticity, and integrity of the research findings and the final manuscript.

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