Assyfa Journal of Multidisciplinary Education

AJME. Vol. 4 No. 2 (2026) 119-134

e-ISSN: 3047-3942 p-ISSN: 3047-3942

DOI: 10.61650/ajme.v4i2.1348

ORIGINAL RESEARCH ARTICLE

Digital Technology Integration Management in Islamic Religious Education Learning at MA Al-Khairiyah

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Article History: Received: 10 Aug 2026 • Revised: 19 Aug 2026 • Accepted: 20 Aug 2026 • Published: 30 Aug 2026

ABSTRACT

This study aims to analyze the management of digital technology integration in Islamic Religious Education (PAI) learning at MA Al-Khairiyah Talangpadang in the era of Society 5.0. The research employed a qualitative approach using a case study method to explore the planning, organizing, actuating, and controlling (POAC) functions in the implementation of digital-based learning management. Data were collected through in-depth interviews, non-participant observation, and documentation involving the principal, vice principal of curriculum, Islamic education teachers, IT staff, and students. Data validity was ensured through triangulation and member checking, while data analysis utilized the interactive model of Miles, Huberman, and Saldana. The findings reveal that the integration of digital technology in PAI learning was conducted adaptively and contextually according to the conditions of the madrasah. The planning process emphasized digital literacy strengthening through the use of free digital platforms and the Bring Your Own Device (BYOD) strategy. Organizing was implemented through collaborative and informal work patterns among teachers and school stakeholders. The implementation of digital learning utilized platforms such as YouTube, WhatsApp Group, Canva, and Google to create more interactive and student-centered learning experiences. Meanwhile, supervision and evaluation were carried out through interpersonal and value-based monitoring to ensure that technology utilization remained aligned with Islamic values and character education. This study concludes that digital transformation in Islamic education requires adaptive leadership, collaborative organizational culture, and the integration of technology with Islamic moral and spiritual values to support sustainable and contextual learning innovation.

Keywords: Digital Transformation, Islamic Education Management, Islamic Religious Education, POAC Management, Digital Learning Integration.

ABSTRAK

Penelitian ini bertujuan menganalisis manajemen integrasi teknologi digital dalam pembelajaran Pendidikan Agama Islam (PAI) di MA Al-Khairiyah Talangpadang pada era Society 5.0. Penelitian menggunakan pendekatan kualitatif dengan jenis studi kasus. Data dikumpulkan melalui observasi partisipatif, wawancara mendalam, dan dokumentasi, kemudian dianalisis secara interaktif melalui reduksi data, penyajian data, serta penarikan kesimpulan. Hasil penelitian menunjukkan bahwa integrasi teknologi digital dikelola melalui fungsi perencanaan, pengorganisasian, pelaksanaan, dan pengawasan (POAC) yang adaptif dan kontekstual. Madrasah menerapkan kebijakan BYOD, memanfaatkan YouTube, WhatsApp, Canva, serta membangun budaya belajar sejawat untuk mengatasi keterbatasan fasilitas dan kompetensi digital. Tingkat integrasi teknologi masih dominan pada level substitusi dan augmentasi dalam model SAMR, namun penggunaannya tetap diarahkan untuk memperkuat nilai akhlak, etika digital, dan karakter Islami. Pengawasan dilakukan secara informal melalui observasi kelas dan koordinasi guru, sedangkan evaluasi masih menggunakan indikator sederhana seperti keterlibatan siswa dan intensitas penggunaan media digital. Kendala utama meliputi jaringan internet, keterbatasan perangkat, variasi literasi digital, dan belum tersedianya instrumen evaluasi yang sistematis. Penelitian ini menegaskan pentingnya kerangka transformasi digital pendidikan Islam yang mengintegrasikan manajemen POAC, TPACK, SAMR, dan orientasi nilai.

Kata Kunci: Transformasi Digital, Manajemen Pendidikan Islam, Pendidikan Agama Islam, Manajemen POAC, Integrasi Pembelajaran Digital

How to cite: Bahren, M., Setiawan, A., & Sunarto. (2026). Digital Technology Integration Management in Islamic Religious Education Learning at MA Al-Khairiyah. *Assyfa Journal of Multidisciplinary Education, 4*(2). 119-134. Retrieved from https://journal.assyfa.com/index.php/ajme/article/view/1348

1. INTRODUCTION

The era of the Industrial Revolution 4.0 and the development of Society 5.0 have brought major changes to the education system, including Islamic education (Xing & Marwala, 2017). Digital transformation not only affects communication patterns and access to information but also changes learning paradigms and the governance of educational institutions (Bygstad et al., 2022). In this context, madrasahs are required to be able to integrate digital technology with Islamic values to remain relevant to the times (Hasmiza, 2025). The government, through the Ministry of Religious Affairs, also encourages digital transformation of madrasahs through policies such as EMIS 4.0 GTK, the Madrasah Digital Supervision (Magis) platform, and the planned implementation of e-ijazah. This condition indicates that madrasah digitalization has become a strategic necessity in improving the quality of Islamic education (Kemenag.go.id).

Digital transformation in education also drives a paradigm shift in learning from teacher-centered learning to more flexible, interactive, and collaborative student-centered learning. Technology integration is seen as capable of creating contextual and adaptive learning that keeps pace with developments (Kesuma et al., 2025). However, the implementation of Islamic education management in the digital era still faces various challenges, particularly related to human resource readiness, infrastructure limitations, and the institution's ability to manage transformation sustainably (Ahmad et al., 2026). Therefore, madrasah digitalization requires a planned and directed management system.

In Islamic Religious Education (PAI) learning, digital technology presents both opportunities and challenges. On one hand, technology opens broad access to Islamic scholarly resources, interactive learning media, and creative digital da'wah content. Android-based Islamic Mobile Learning (IML) applications can increase the interactivity of PAI learning (Uy & Gusmaneli, 2025). However, on the other hand, the flow of digital information also presents threats such as religious hoaxes, non-authoritative content, and instant narratives on social media that can affect tarbiyah values and student character. Therefore, the use of technology in PAI learning must continue to be directed toward strengthening spiritual values and akhlakul karimah (Rif'an & Said, 2025).

Madrasah Aliyah, as a secondary-level Islamic educational institution, has distinctive characteristics because it combines the national curriculum with the religious curriculum. This condition makes the process of integrating digital technology in madrasahs more complex. Until now, research on madrasah digitalization has mostly discussed the effectiveness of learning media and student digital literacy, while the aspect of technology integration management has not been extensively studied (Asmuri et al., 2025). Research by Umam et al. shows that technology integration in Islamic education curriculum management can improve learning effectiveness and students' digital skills (Umam et al., n.d.). However, much of this research was conducted in madrasahs with adequate facilities.

Hudzaifa's research on the implementation of digital madrasah at MAN 4 Cirebon shows that the success of digital transformation is influenced by management functions including planning, organizing, implementation, and supervision. The research also found obstacles such as budget limitations, low participation of parents, and dependence on specific technology operators (Hudzaifa, 2025). Many Islamic educational institutions still experience institutional "bewilderment" due to low digital literacy and suboptimal institutional adaptation strategies. This shows that digital technology integration requires systematic and sustainable management (Eryc & Deu, 2024).

Madrasah Aliyah Al-Khairiyah, as a private madrasah, shows interesting dynamics in the integration of digital technology in PAI learning. Based on initial observations, this madrasah has begun implementing a Bring Your Own Device (BYOD) policy, utilizing social media as a learning communication tool, and using digital platforms in the PAI learning process. However, issues arise regarding how madrasah management aligns the demands of learning modernization with the Islamic education tradition based on teacher role modeling, ngaji culture, and kitab learning. This phenomenon represents the dilemma faced by many madrasahs between preserving tradition and facing digital modernization (Abdullah, 2025).

Based on the literature review and previous research, there is a research gap in the study of digital technology integration management in PAI learning at private madrasahs. Most previous research focused more on the effectiveness of learning media and educational technology innovation, while research on the implementation of POAC management functions in technology integration is still limited. Therefore, this study aims to analyze the management of digital technology integration in Islamic Religious Education learning at MA Al-Khairiyah through a qualitative approach with a case study method. This research is expected to provide theoretical and practical contributions to the development of Islamic education management in the digital era.

2. RESEARCH METHODS

This study uses a qualitative approach with a case study type to deeply understand the management of digital technology integration in Islamic Religious Education (PAI) learning at MA Al-Khairiyah. This approach was chosen because the research focuses on contemporary phenomena occurring in the real context of madrasahs, particularly related to the processes of planning, organizing, implementing, and supervising the integration of digital technology in PAI learning (Ilhami et al., 2024). Informants were determined using purposive sampling techniques by selecting informants directly involved in digital technology integration at the madrasah, namely the principal, vice principal of curriculum, PAI teachers, educational staff or ICT team, and students (Asrulla et al., 2023). Data collection techniques were carried out through in-depth interviews, non-participant observation, and documentation studies of various documents such as the madrasah's vision and mission, work programs, lesson plans, digital teaching materials, and other supporting documents. The main instrument in this research was the researcher himself (human instrument) supported by interview guidelines, observation sheets, and documentation lists prepared based on the POAC framework (Planning, Organizing, Actuating, Controlling) (Kurniasari, 2025).

Data validity testing was conducted through credibility, transferability, dependability, and confirmability using source triangulation, technique triangulation, time triangulation, and member checking with research informants. The data analysis technique used the interactive analysis model of Miles, Huberman, and Saldana which includes data collection, data condensation, data presentation, and conclusion drawing and verification. In the data condensation stage, researchers conducted selection, coding, simplification, and grouping of data according to the research focus, then presented the data in the form of descriptive narratives and thematic matrices to facilitate data interpretation. In the analysis process, this study used the POAC theoretical framework as the main foundation for analyzing the management functions of digital technology integration in madrasahs, supported by the TPACK and SAMR frameworks to analyze the level of technology integration in PAI learning, with Al-Ghazali's Islamic education perspective as the basis for analyzing the values and orientation of technology use in Islamic education (Husnullail & Jailani, 2024).

3. RESULTS AND FINDINGS

Planning of Digital Technology Integration in PAI Learning

The research findings reveal that the integration of digital technology in PAI learning at MA Al-Khairiyah Talangpadang is implemented through planning that is adaptive, gradual, and based on field needs. Based on interviews with the principal, it was revealed that the madrasah has incorporated strengthening digital literacy as part of the institution's development vision, although it has not yet been formulated in a systematic digital roadmap. The principal stated:

> *"Kami menyadari bahwa digitalisasi adalah keniscayaan, tetapi kami tidak bisa terburu-buru. Kami memulai dari hal-hal kecil yang sesuai dengan kondisi madrasah dan kemampuan guru-guru kami."*
> (We realize that digitalization is a necessity, but we cannot rush. We start with small things that match the madrasah's conditions and our teachers' abilities.)

This finding is corroborated by observational data showing that the madrasah does not have a formal digital transformation document, yet teachers have begun using digital tools in their teaching practices. Documentation analysis of the madrasah's vision and mission statements reveals that while "digital literacy" is mentioned as a developmental goal, there is no specific strategic plan outlining the stages of technology implementation.

In practice, the madrasah implements the BYOD (Bring Your Own Device) approach as an alternative strategy to overcome the limitations of digital facilities. Interviews with the vice principal of curriculum revealed:

> *"Kami tidak punya laboratorium komputer yang memadai, jadi kami menerapkan kebijakan BYOD. Siswa dan guru membawa perangkat pribadi mereka sendiri. Ini bukan pilihan ideal, tapi ini yang bisa kami lakukan dengan sumber daya yang ada."*
> (We don't have an adequate computer laboratory, so we implement the BYOD policy. Students and teachers bring their own personal devices. This is not an ideal choice, but it's what we can do with existing resources.)

Observations during learning activities confirmed that students use their personal smartphones to access learning materials, while teachers utilize their laptops to present digital content. Documentation of school meeting minutes shows that the BYOD policy was formally discussed and approved in a teachers' meeting in early 2023.

The technology integration planning at MA Al-Khairiyah Talangpadang also shows a strong value orientation. Through interviews, the principal positions technology as a wasilah (means) to strengthen the tarbiyah process, not as the main goal of education:

> *"Teknologi hanyalah alat. Yang terpenting adalah bagaimana kita menggunakan alat itu untuk mendidik akhlak dan memperkuat iman siswa. Kami tidak mau teknologi justru menghilangkan nilai-nilai spiritual dalam pembelajaran PAI."*
> (Technology is just a tool. What matters most is how we use that tool to educate morals and strengthen students' faith. We don't want technology to actually eliminate spiritual values in PAI learning.)

This perspective was consistently observed during classroom activities, where teachers repeatedly emphasized Islamic values alongside the use of digital media.

Organizing Resources in Digital Technology Integration

The organization of digital technology integration at MA Al-Khairiyah Talangpadang is implemented through informal coordination patterns based on a family culture and collective work among teachers. The madrasah does not yet have a specific information technology team, so the

entire digitalization process is carried out through flexible division of roles. Based on interviews, the principal functions as policy director, the curriculum vice principal as implementation coordinator, the school operator as technical support, while PAI teachers are the main implementers of technology integration in learning. The vice principal of curriculum explained:

> *"Kami tidak punya tim IT khusus. Semua berjalan secara gotong royong. Kalau ada guru yang lebih paham teknologi, dia akan membantu guru lain. Kepala madrasah memberi arahan, saya koordinasikan, operator membantu teknis, dan guru PAI yang menjalankan di kelas."*
> (We don't have a specific IT team. Everything runs on a mutual cooperation basis. If there's a teacher who understands technology better, they help other teachers. The principal provides direction, I coordinate, the operator helps with technical issues, and PAI teachers implement it in the classroom.)

Observations during school meetings confirmed this informal coordination pattern, where technology-related discussions occurred organically rather than through formal structured agendas.

From the aspect of teacher competency development, the research results show that PAI teachers are still at the early stage of TPACK mastery. Interviews with PAI teachers revealed:

> *"Saya bisa menggunakan YouTube dan WhatsApp untuk mengajar, tapi untuk membuat konten digital sendiri atau menggunakan aplikasi yang lebih kompleks, saya masih belajar. Saya banyak belajar dari YouTube dan dari teman-teman guru yang lebih muda."*
> (I can use YouTube and WhatsApp for teaching, but for creating my own digital content or using more complex applications, I'm still learning. I learn a lot from YouTube and from younger fellow teachers.)

Observation of PAI classes confirmed that teachers use technology primarily for material delivery and communication, not yet for creating transformative learning experiences. Documentation of teacher lesson plans (RPP) shows that technology integration is still mentioned as a supplementary tool rather than an integral component of learning design.

The improvement of teachers' digital competence at the madrasah is mostly done through self-directed learning. One PAI teacher stated:

> *"Saya belajar Canva dari tutorial di YouTube. Setelah bisa, saya ajarkan ke guru-guru lain. Kami saling belajar dan berbagi pengalaman."*
> (I learned Canva from YouTube tutorials. After I mastered it, I taught other teachers. We learn from each other and share experiences.)

This peer-learning culture was observed during teacher breaks, where informal discussions about technology use frequently occurred.

Implementation of Digital Technology Integration in PAI Learning

The implementation of digital technology integration in PAI learning at MA Al-Khairiyah Talangpadang is carried out through the use of digital platforms that are easily accessible and

familiar to both teachers and students. Based on classroom observations, YouTube is used to display lecture videos, stories of the Prophet's exemplary character, and Islamic audiovisual materials. One PAI teacher explained:

> *"Saya sering menggunakan YouTube untuk menampilkan video ceramah ustadz terkenal atau film pendek tentang kisah Nabi. Siswa lebih tertarik dan lebih mudah memahami materi ketika mereka melihat dan mendengar langsung."*
> (I often use YouTube to display videos of famous ustadz lectures or short films about the Prophet's stories. Students are more interested and understand the material more easily when they see and hear it directly.)

WhatsApp Group is utilized as a communication medium, material distribution, discussion, and assignment collection outside the classroom. Documentation of WhatsApp group chats shows active sharing of learning materials, discussion questions, and assignment submissions. One student stated during an interview:

> *"Kami punya grup WhatsApp PAI. Guru mengirim materi, kami bertanya kalau ada yang tidak paham, dan kami kumpulkan tugas di sana. Sangat membantu karena bisa belajar di rumah."*
> (We have a PAI WhatsApp group. The teacher sends materials, we ask if we don't understand something, and we submit assignments there. It's very helpful because we can study at home.)

Canva is used by teachers to create visually more attractive presentation media. Observation of a PAI class showed the teacher using Canva-created slides containing infographics about Islamic teachings, which increased student engagement and attention.

Based on the analysis using the SAMR model, the level of technology integration at MA Al-Khairiyah Talangpadang is still at the substitution and augmentation levels. The curriculum vice principal acknowledged:

> *"Kami masih pada tahap menggunakan teknologi untuk mengganti metode lama, seperti mengganti papan tulis dengan PowerPoint. Belum sampai pada tahap di mana teknologi menciptakan pengalaman belajar yang sama sekali baru."*
> (We are still at the stage of using technology to replace old methods, like replacing the blackboard with PowerPoint. We haven't reached the stage where technology creates entirely new learning experiences.)

This observation is consistent with documentation of lesson plans, where technology is described as a "learning medium" rather than a "learning transformation tool".

In the perspective of Islamic education, the integration of digital technology at MA Al-Khairiyah Talangpadang remains directed toward strengthening the values of morals and digital ethics of students. One PAI teacher explained:

> *"Sebelum menggunakan video dari YouTube, saya selalu mengecek terlebih dahulu apakah kontennya sesuai dengan ajaran Ahlussunnah wal Jamaah. Saya juga selalu mengingatkan siswa tentang adab bermedia sosial dan etika berkomunikasi di dunia digital."*

(Before using videos from YouTube, I always check first whether the content aligns with Ahlussunnah wal Jamaah teachings. I also always remind students about social media etiquette and communication ethics in the digital world.)

Observations confirmed that teachers consistently integrated discussions about digital ethics into PAI lessons, positioning technology as an instrument of character formation.

Supervision and Evaluation of Digital Technology Integration

Supervision of digital technology integration at MA Al-Khairiyah Talangpadang is conducted through informal supervision by the principal and curriculum vice principal. The principal explained:

> *"Saya melakukan observasi kelas secara rutin untuk melihat bagaimana guru menggunakan teknologi. Saya juga berkoordinasi dengan wakil kurikulum dan berbincang dengan guru-guru untuk mengetahui kendala yang mereka hadapi."*
> (I conduct regular classroom observations to see how teachers use technology. I also coordinate with the curriculum vice principal and talk with teachers to find out the obstacles they face.)

Monitoring is carried out through classroom observations, coordination among teachers, and monitoring of learning activities in WhatsApp groups. Documentation shows that the principal's supervision notes include observations of technology use, though not in a structured evaluation format.

From the evaluation aspect, the success of technology integration at the madrasah is still measured through simple indicators. The curriculum vice principal stated:

> *"Kami melihat keberhasilan dari antusiasme siswa, meningkatnya penggunaan media digital oleh guru, dan respons positif siswa. Kami belum punya instrumen khusus untuk mengukur dampak teknologi terhadap hasil belajar secara terukur."*
> (We measure success from student enthusiasm, increased use of digital media by teachers, and positive student responses. We don't yet have a specific instrument to measure the impact of technology on learning outcomes in a measurable way.)

Interviews with students confirmed positive responses to technology-based learning, but no systematic evaluation data was available to measure learning outcomes comprehensively. The research results also show various obstacles in the implementation of madrasah digitalization. One PAI teacher highlighted:

> *"Kendala utama adalah jaringan internet yang kadang tidak stabil dan keterbatasan perangkat. Beberapa siswa tidak punya smartphone, jadi mereka kesulitan mengikuti pembelajaran digital. Guru senior juga masih kesulitan beradaptasi dengan teknologi."*
> (The main obstacles are unstable internet networks and limited devices. Some students don't have smartphones, so they have difficulty following digital learning. Senior teachers also still struggle to adapt to technology.)

Observations confirmed intermittent internet connectivity issues during classes. However, MA Al-Khairiyah Talangpadang shows institutional commitment to continue making improvements. The principal stated:

> *"Kami terus berusaha memperbaiki. Kami mengadakan pelatihan untuk guru, menyusun kebijakan penggunaan teknologi, dan mengoptimalkan platform digital gratis. Transformasi digital memang bertahap, tapi kami tidak berhenti."* (We keep trying to improve. We hold training for teachers, develop technology use policies, and optimize free digital platforms. Digital transformation is gradual, but we don't stop.)

Documentation shows that the madrasah has allocated a small budget for internet packages and has conducted two teacher training sessions on basic digital literacy in the past year.

4. DISCUSSION

Planning for digital technology integration at MA Al-Khairiyah follows an adaptive, context-driven approach, reflecting the operational reality of private madrasahs with severe resource constraints. This aligns with Anugrah et al. (2025), who assert that successful digital transformation in Islamic education hinges on institutional readiness and adaptive leadership rather than sheer technological availability. The adoption of the BYOD strategy exemplifies "survival adaptation," wherein the madrasah transforms infrastructural deficits into catalysts for pedagogical innovation, a finding corroborated by Nasrun et al. (2025). The absence of a formal digital roadmap, rather than indicating managerial failure, reflects a pragmatic institutional response typical of resource-limited Islamic schools, consistent with Ani et al. (2025), who document the systematic yet undocumented implementation of POAC functions in similar contexts. This pragmatic planning approach directly necessitates a strategic, low-cost operational model to bridge the gap between digital aspirations and infrastructural realities.

Building directly upon the adaptive planning model, the BYOD policy serves as a deliberate strategic intervention to circumvent the absence of dedicated computer laboratories and limited institutional funding. By leveraging the personal devices of teachers and students, the madrasah reduces capital expenditure while simultaneously integrating familiar technologies into daily instruction, a practice that Fioravanti et al. (2024) validate as effective when reinforced by clear usage guidelines and digital competency programs. The complementary utilization of free, accessible platforms such as YouTube, WhatsApp, and Canva further minimizes operational costs, resonating with Mudiono and Mudzakkir's (2025) findings on cost-effective digital solutions in modern pesantren. However, this approach inherently introduces equity concerns, particularly for students lacking personal devices, and complicates the standardization of instructional delivery across disparate hardware. Nevertheless, the institution's capacity to moderate these challenges through informal peer support underscores the critical role of cohesive institutional culture in sustaining digital initiatives, yet the technical strategy's success ultimately hinges on a clearly articulated value system.

The preceding technical strategy is inherently guided by a pronounced value orientation, wherein the principal explicitly frames technology as a *wasilah* (instrument) for fortifying the *tarbiyah* process, rather than an educational endpoint. This philosophical stance resonates profoundly with Al-Ghazali's classical concept of *tahdzib al-akhlaq*, which prioritizes the moral-spiritual formation of individuals over mere cognitive or technical proficiency, a relevance that recent scholarship has robustly reaffirmed in contemporary digital learning contexts. The institutional commitment to leveraging technology for expanding access and interactivity, while vigilantly safeguarding spiritual and moral dimensions, exemplifies a balanced and theologically grounded approach to digitalization. This perspective is directly supported by Saidah et al. (2026), who contend that effective PAI digital integration necessitates a value-conscious Islamic pedagogical framework reinforced by coherent institutional policies. This value-laden vision subsequently determines how human resources are organized and deployed to execute the digital transformation agenda.

In line with the value-oriented vision, the organizing function at MA Al-Khairiyah materializes through informal coordination patterns rooted in familial culture and collective teacher collaboration, eschewing rigid bureaucratic hierarchies. This operational model reflects the deeply embedded *gotong royong* (mutual cooperation) tradition prevalent in Indonesian Islamic institutions, where adaptive leadership and shared responsibility compensate for structural deficits, as confirmed by Dini Riani (2026). The flexible allocation of roles among the principal, curriculum deputy, administrative operator, and PAI teachers ensures operational functionality without a specialized IT department, demonstrating remarkable short-term efficiency. However, this reliance on informal structures introduces potential vulnerabilities regarding scalability and institutional memory, as the absence of formalized roles may lead to over-dependence on specific individuals and discontinuity during personnel transitions. Nonetheless, the resilience of this collective work culture effectively supports current implementation efforts, although its ultimate efficacy is constrained by the prevailing digital competencies of the teaching staff.

The effectiveness of the collective organizing structure is significantly moderated by the finding that PAI teachers remain at an early stage of Technological Pedagogical Content Knowledge (TPACK) mastery. While educators demonstrate functional proficiency with basic digital tools for content delivery, they exhibit a notable deficiency in the synergistic integration of technology, pedagogy, and subject matter required for transformative instruction. This condition mirrors the broader challenges documented by Emawati et al. (2025), who observed that many Islamic education instructors struggle to progress beyond fundamental technology utilization toward deep pedagogical integration. Putra et al. (2026) further reinforce this diagnosis, identifying the core challenge of digital transformation not as technology access, but as the capacity to design creative, contextual, and digitally-grounded learning experiences. The prevalent reliance on self-directed learning—through platforms like YouTube and informal peer mentoring—underscores the immediate necessity for structured, TPACK-aligned professional development programs, as advocated by Darmawan and Musonawawi (2026), to elevate instructional quality. This early-stage competency directly dictates the qualitative level of technology integration realized in classroom practice.

Correspondingly, analysis employing the SAMR model confirms that technology integration at MA Al-Khairiyah is predominantly confined to the substitution and augmentation tiers, where digital tools merely replace or enhance traditional pedagogical methods without fundamentally redefining the learning experience. This finding is consistent with Kariyanto et al. (2025), who reported that while some Islamic schools have achieved higher-order modification and redefinition through specialized innovations, the majority remain constrained at lower SAMR levels due to persistent infrastructure and capacity deficits. Similarly, Saidah et al. (2026) observed that PAI digital integration largely resides at these basic levels, although they note that even at this stage, reflective and collaborative digital practices can meaningfully enhance student engagement. The limited progression toward modification and redefinition reflects the compounded effect of infrastructural fragility, insufficient training intensity, and nascent digital pedagogy among the faculty, as emphasized by Fitria (2025). Despite these technological limitations, the instructional design intentionally directs available digital tools toward fostering character and ethics, shifting the focus from mere modernization to moral development.

Notwithstanding the basic technological application levels, a distinctive aspect of integration is the deliberate positioning of digital tools as instruments for character and ethical formation, transcending their function as mere instructional aids. PAI teachers rigorously verify the doctrinal authenticity of digital content to ensure strict adherence to *Ahlussunnah wal Jama'ah* values, while concurrently integrating critical discussions on social media etiquette and digital communication ethics into their lessons. This practice embodies a holistic approach to Islamic education that equally prioritizes cognitive and affective-spiritual development, aligning with Jannah et al. (2025), who argue that technology integration must intrinsically fortify moral and spiritual literacy to cultivate ethically aware digital citizens. Furthermore, Uyun et al. (2025) emphasize the crucial necessity of guaranteeing the validity and authenticity of religious content disseminated digitally to prevent doctrinal dilution. This proactive pedagogical strategy demonstrates that digital transformation can effectively reinforce, rather than erode, religious identity when implemented through intentional, value-guided pedagogical frameworks. To verify the efficacy of this character-centric integration, the institution employs specific supervisory mechanisms.

To ensure the integrity of this character-oriented integration, supervision is executed through informal mechanisms, including ad-hoc classroom observations, inter-teacher coordination, and monitoring of educational WhatsApp groups. While Ramly (2023) validates that interpersonal supervision is particularly effective in institutions with collective, resource-constrained cultures, this approach fundamentally lacks systematic written instruments, thereby restricting the madrasah’s capacity for comprehensive impact assessment. The current evaluation framework relies on rudimentary indicators—such as observable student enthusiasm and general positive feedback—which provide only superficial insights into actual learning outcomes and character development. Suhendri and Retnowati (2024) critically assert that sustainable digital transformation necessitates robust, data-driven evaluation systems capable of measuring pedagogical effectiveness, teacher readiness, and multidimensional student development. This absence of formalized evaluation instruments represents a significant impediment to evidence-

based improvement and must be addressed to ensure long-term sustainability. These evaluative gaps are further exacerbated by a range of persistent institutional and infrastructural challenges.

Compounding the evaluative deficiencies, the research identifies tangible obstacles including limited technological devices, unstable internet connectivity, low digital literacy among senior educators, and severely constrained development budgets. These barriers are not idiosyncratic but reflect broader systemic patterns documented by Restalia and Khasanah (2025), who highlight infrastructural and resource deficiencies, alongside inadequate digital skills among educators, as primary hindrances. Syawaludin (2025) similarly underscores that Islamic schools encounter unique regulatory and disparity-related challenges in adopting technology-driven educational models. Despite these multifaceted constraints, MA Al-Khairiyah demonstrates a robust institutional commitment to continuous improvement, actively procuring supplementary devices, organizing informal teacher training, formulating basic technology use policies, and maximizing free digital platforms. This adaptive problem-solving approach, as articulated by Mudiono and Mudzakkir (2025), highlights that successful digitalization requires a strategic equilibrium between technological adoption and persistent institutional capacity building. Ultimately, these diverse findings converge to inform a comprehensive, integrated framework for sustainable digital transformation.

Synthesizing the preceding analyses, this study contributes to the formulation of an integrated framework for Islamic educational digital transformation that holistically merges POAC management functions with Islamic value orientations, targeted teacher development, and responsive contextual adaptation. The experience of MA Al-Khairiyah demonstrates that sustainable digital transformation requires a symbiotic interplay between adaptive planning, informal yet resilient organizing structures, value-guided technology implementation, and flexible supervisory practices. Ani et al. (2025) substantiate that the systematic, albeit informal, application of POAC functions can effectively reconcile digitalization imperatives with the preservation of Islamic institutional identity. Furthermore, Saugi et al. (2025) emphasize that visionary leadership—embodied in the concept of "Digital-Islamic Leadership"—must integrate technological competence, a commitment to continuous quality enhancement, and unwavering adherence to spiritual values. This integrated model, combining collaborative organizational culture, value-oriented integration, and sustained capacity building, offers a viable pathway for private madrasahs to navigate the complexities of Society 5.0 while safeguarding their foundational Islamic mission.

5. CONCLUSION AND SUGGESTIONS

The management of digital technology integration in PAI learning at MA Al-Khairiyah demonstrates adaptive and contextual implementation of POAC functions (Planning, Organizing, Actuating, Controlling) oriented toward strengthening Islamic values. Planning focuses on digital literacy based on tarbiyah vision, organizing operates through collective work culture, implementation utilizes platforms like YouTube, WhatsApp, Canva, and Google for interactive learning, while controlling is conducted through interpersonal supervision emphasizing ethics and

morals. Technology integration positively impacts student engagement, Islamic digital literacy, and creates more contextual PAI learning relevant to the digital generation. Technology is positioned as a wasilah (means) for strengthening tarbiyah, character formation, and internalization of akhlakul karimah values, not as an educational end goal. Theoretically, this research contributes to Islamic education management studies through a POAC approach integrated with Islamic values. Practically, the findings serve as an implementation model for private madrasahs in developing adaptive, sustainable, and contextually appropriate digital integration aligned with Islamic identity amidst Society 5.0 challenges.

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