Modernization of Islamic Boarding Schools Through Digitalization:
An Analysis of Fingerprint Systems, ID Cards, and *Amal Shalih* Assessment

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Abstract
This study examines the digitalization process implemented at Maryam Collage, a modern Islamic boarding school that strives to integrate technology with Islamic values in its daily educational activities. The research is grounded in the central question of how digital-based systems such as the amal shalih performance assessment, fingerprint and ID card attendance systems, and digital data management contribute to improving students' discipline, administrative efficiency, and institutional effectiveness. This study positions itself to fill the existing gap in literature regarding digital transformation within Islamic boarding schools that maintain strong moral and spiritual frameworks. Using a qualitative descriptive approach through in-depth interviews, direct observation, and documentation, the study provides a contextual understanding of how digitalization is implemented within the institution. The results indicate that the digital system has significantly enhanced the accuracy of activity recording, transparency in evaluation, and the speed of decision-making processes. The amal shalih assessment system is shown to strengthen students' motivation and positive behavior, while the use of social media contributes to improving the institution's public image and outreach. Despite technical challenges such as limited devices, unstable internet connectivity, and gradual user adaptation, the overall digitalization process proves to be a strategic step in building an Islamic educational institution that is modern, efficient, and competitive without losing its spiritual identity. Consequently, this research provides an important contribution to the study of digital transformation in Islamic boarding schools and highlights the potential of technology-based educational systems that remain rooted in spiritual values.
Keywords: digitalization, Islamic education, amal shalih assessment, administrative efficiency, pesantren management

INTRODUCTION

The rapid advancement of digital technologies has transformed various sectors, including Islamic education, leading institutions to adapt technological innovations to improve organizational effectiveness and learning outcomes. In the context of Islamic boarding schools (*pesantren*), digital transformation is particularly relevant as these institutions traditionally rely on manual administrative systems and character-based learning models. Maryam College, as a modern Islamic boarding school, has begun implementing digital systems to enhance daily educational activities and strengthen institutional governance.

Despite the growing number of studies examining digitalization in general educational settings, research focusing on the integration of technology within pesantren—especially those that emphasize moral and spiritual formation—remains limited. Existing literature often discusses digital learning platforms, administrative automation, or general ICT adoption, but few studies address how digital tools can be harmonized with Islamic value-based evaluation systems such as *amal shalih* assessment. This gap highlights the need for empirical research that explores how digital tools can support not only administrative efficiency but also spiritual and behavioral development within pesantren environments.

To address this gap, Maryam College has adopted several digital systems, including fingerprint and ID card–based attendance tracking, digital data storage, and a digital *amal shalih* performance assessment. These systems aim to improve discipline, transparency, and efficiency while maintaining the institution's religious and moral foundations. However, challenges such as limited infrastructure, unstable internet access, and gradual user adaptation indicate that the digital transformation process requires further analysis.

Therefore, this study investigates the implementation of digitalization at Maryam College by examining its processes, benefits, and challenges. The research aims to provide a contextual understanding of how modern Islamic boarding schools can integrate technology without compromising their spiritual identity. The findings contribute to the growing discourse on digital transformation in Islamic education and offer practical insights for pesantren seeking to enhance their administrative and educational systems through technology.

METHOD

This study employed a qualitative descriptive approach aimed at obtaining an in-depth understanding of the digitalization processes implemented at Maryam College. This approach was selected because it allows researchers to explore phenomena in a natural and contextual manner, particularly regarding the integration of digital technologies into the educational and administrative activities of an Islamic boarding school. The research was conducted within the Maryam College environment and involved administrative staff, teachers, and students, who were directly engaged in using digital systems such as fingerprint attendance, ID card scanning, and the *amal shalih*–based assessment system.

Data were collected through three primary techniques: in-depth interviews, direct observation, and documentation analysis. The interviews were conducted to gather perspectives from various stakeholders regarding the objectives, implementation procedures, and challenges of digitalization at the institution. Direct observation was carried out to examine how digital tools were utilized in daily routines, including attendance monitoring and activity recording. Documentation analysis involved reviewing institutional records, digital archives, and relevant administrative documents to complement and validate findings from interviews and observations.

The collected data were analyzed using the Miles and Huberman interactive model, which consists of three stages: data reduction, data display, and conclusion drawing. Data reduction was performed by selecting and focusing on information relevant to the research objectives. Data display involved organizing the findings into structured narrative descriptions to facilitate the identification of patterns and relationships. Finally, conclusions were drawn to provide a comprehensive portrayal of digitalization practices and their impact on student discipline, institutional management, and competence development.

To ensure the trustworthiness of the findings, the study applied source triangulation and methodological triangulation. These procedures strengthened the validity and reliability of the data by cross-checking information from different respondents and verifying it through multiple data collection techniques.

RESULT

Implementation of Digital Attendance Systems

Interviews with administrative staff indicate that Maryam College currently applies a hybrid attendance system combining fingerprint scanners and ID card scanning. This system is used to monitor daily routines and punctuality among students. Staff members reported that digital attendance reduces manual errors and accelerates administrative tasks. One administrator stated:

"Some students use fingerprint attendance, while others use ID card scanning. Even though the system is still being improved, it helps us record attendance more accurately."

Observations confirmed that attendance data are automatically uploaded to a digital storage platform, making it easier for supervisors to check compliance with the daily schedule.

Digital *Amal Shalih* Assessment System

The digital *amal shalih* system serves as a behavioral evaluation tool that records approximately 40 daily activities performed by students. According to staff interviews, this system enhances accountability and encourages positive behavior. A staff member emphasized:

"The amal shalih assessment increases student motivation because every activity is recorded digitally and transparently."

Students also expressed that the system provides clear feedback on their progress, promoting personal discipline and spiritual awareness.

Digital Media Use and Institutional Data Management

Maryam College utilizes digital platforms such as Instagram ("Ashqof Millenial" for male students and "Maryam Collage" for female students) to document and publicize daily activities.

This serves both as a transparency mechanism and a promotional tool.

> *"Every day we upload activities, at least through Instagram Story. Many parents and the community follow our updates."*

All administrative data including attendance, activity scores, and student records are stored in cloud-based digital storage (e.g., Google Drive), minimizing risks of physical damage and improving data accessibility.

Challenges in the Digitalization Process

Although digitalization has enhanced efficiency, several constraints were identified: Limited devices in some areas, unstable internet connectivity, gradual user adaptation, especially among new staff and younger students, funding challenges, requiring continuous donor engagement. As one informant explained:

> *"Digital tools are helpful, but network stability and device limitations remain challenges. We also need ongoing fundraising to support the system."*

Despite these challenges, the institution remains committed to expanding its digital ecosystem, including plans for an integrated platform for attendance, assessments, and Qur'an memorization monitoring.

Table 1. Summary of Research Findings at Maryam College

Theme	Key Findings	Supporting Evidence
Digital Attendance Systems	Hybrid use of fingerprint and ID card scanning; increased accuracy and efficiency	Administrative interviews; direct observation of attendance processes
Digital *Amal Shalih* Assessment	Records ±40 daily activities; increases discipline and motivation	Staff statements on behavioral improvements; system documentation
Media & Data	Use of Instagram for publication; digital	Interviews on social media strategy;

Theme	Key Findings	Supporting Evidence
Management	data storage reduces paper use and risk	archival documents
Challenges	Limited devices, unstable internet, adaptation issues, funding constraints	Interview excerpts on infrastructure and financial limitations

The results demonstrate that digitalization at Maryam College has improved precision in monitoring student activities, enhanced transparency in evaluations, and strengthened institutional communication. The implementation of digital systems has also contributed to faster decision-making and better data security. Despite structural and technical constraints, the institution's shift toward digital governance represents a strategic step toward building a modern, competitive, and value-based Islamic educational environment.

DISCUSS

The findings of this study indicate that the digitalization efforts carried out at Maryam College are still in an early developmental stage but demonstrate substantial potential for transforming the institution's administrative and educational systems. The introduction of a digital *amal shalih* assessment system marks a significant shift from traditional manual recording toward a more structured and technology-supported monitoring approach. This aligns with Rogers' Diffusion of Innovation Theory, which highlights that early implementation stages often involve adaptive and incremental adjustments before a system becomes fully institutionalized (Rogers 2003) .

A key characteristic of the current digitalization process is its hybrid nature, where digital and manual methods operate simultaneously. While fingerprint and ID card scanning systems have been adopted for attendance, various routine activities—approximately forty per day—are still partially recorded manually. According to Lewin's Change Management Model, such a transitional hybrid phase is expected when organizations shift from established practices to new digital routines (Kurt Lewin 2021) . The decision to train administrative staff before extending the system to students reflects an incremental change strategy aimed at ensuring smoother adaptation.

Maryam College also integrates digital platforms for talent development and institutional

communication. The use of social media accounts "Ashqof Millenial" for male students and "Maryam Collage" for female students serves not only as a publication tool but also enhances transparency and community engagement. These practices resonate with Bass and Avolio's transformational leadership concepts, demonstrating how digital communication channels can be used to inspire, motivate, and strengthen institutional identity (Bass & Avolio 2025) . Frequent updates via social media have contributed to greater public awareness and increased interest from prospective students.

Interview data also highlight that digital literacy is considered essential not only for staff but also for students, as they will eventually enter technologically driven work environments. This perspective supports the idea that digitalization in Islamic boarding schools can function as both an administrative tool and a means of equipping students with future-oriented competencies. However, the institution still faces challenges related to fundraising and financial sustainability. Despite having regular donors, Maryam College must continuously engage in follow-up activities to cover operational costs, reflecting the financial complexities of maintaining digital infrastructure.

From a leadership perspective, the initiative to introduce digital Qur'an memorization applications demonstrates strong institutional commitment to technological modernization while upholding Islamic values. The fact that the institution fully covers educational costs through *baitul mal* management and *thidaroh* business efforts further indicates a unique financial model that blends spiritual principles with organizational sustainability.

Consistent with DeLone and McLean's Information System Success Model (2022) , digitalization at Maryam College improves administrative efficiency, reduces reliance on paper-based documentation, and minimizes the risk of data loss. Digital storage systems such as Google Drive enhance accessibility, accuracy, and security. Additionally, the *amal shalih* assessment strengthens spiritual and behavioral development by embedding Islamic values into technology-based evaluation.

Nevertheless, technological constraints remain. Limited devices, inconsistent internet connectivity, and varying levels of digital literacy pose barriers to system optimization. The institution addresses these issues through internal training programs and continuous technical

support to ensure that both staff and students can adapt effectively. These efforts reflect a proactive and ongoing approach to digital competence building.

Digitalization has also streamlined activity reporting, attendance tracking, and student evaluation, enabling faster decision-making and promoting transparency among administrators, teachers, and students. The use of digital media additionally strengthens the institution's public image, serving as a modern form of *dakwah* and community outreach. As a result, many stakeholders perceive Maryam College as a modern yet spiritually grounded educational environment.

Looking ahead, the institution plans to develop a fully integrated digital system that consolidates attendance, assessment, and Qur'an memorization data into a single platform. Establishing partnerships with educational technology providers is expected to enhance system stability and professionalism. Overall, the digital transformation at Maryam College demonstrates how Islamic educational institutions can embrace technological advancements while maintaining their spiritual identity, confirming that pesantren can be both modern and value-oriented.

CONCLUSION

The findings of this study demonstrate that the digitalization initiatives implemented at Maryam College have contributed significantly to improvements in student discipline, educational supervision, and administrative efficiency. The adoption of digital attendance systems through fingerprint and ID card technologies and the integration of a digital *amal shalih* assessment have enhanced the speed, accuracy, and transparency of institutional processes. Digital data storage has further improved information accessibility and security, supporting more informed and timely decision-making. Although several challenges remain, such as limited technological infrastructure, unstable internet connectivity, and gradual user adaptation, digitalization has proven to be a strategic step toward modernizing Islamic boarding school management while preserving the institution's spiritual values.

These findings offer both theoretical and practical implications. Theoretically, the study reinforces the relevance of digital transformation frameworks within value-based educational

environments, showing that technology can coexist with and even strengthen moral and spiritual development. Practically, the digital systems adopted at Maryam College demonstrate how Islamic educational institutions can enhance administrative efficiency, improve behavioral monitoring, and expand public engagement through digital media. The study also highlights the importance of continuous capacity building for staff and students, as well as the need for sustainable partnerships with educational technology providers to ensure long-term system stability and integration.

Despite its contributions, this study acknowledges several limitations, including the early-stage nature of the digitalization process and the limited generalizability of findings due to the single-institution focus. Future research may explore the long-term impact of digital systems on students' character formation, or compare digital transformation models across different types of Islamic boarding schools. With continuous development and system integration, Maryam College has the potential to serve as a model for pesantren seeking to harmonize technological innovation with spiritual and educational excellence.

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