



## Attahdzib Online Application: Digital Transformation of Salafiyah Islamic Boarding Schools

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### Abstract

*This study aims to analyze the implementation of Information and Communication Technology (ICT) in educational management at Pesantren Attahdzib through the At Tahdzib Online application. The rapid development of digital technology requires educational institutions, including Islamic boarding schools, to adapt their administrative, academic, and information service systems to become more effective, efficient, and transparent. This research employed a qualitative approach using a case study design. Data were collected through observation, interviews, and documentation, and analyzed using data reduction, data display, and conclusion drawing techniques. The findings reveal that the implementation of the At Tahdzib Online application improves administrative efficiency, enhances information accessibility for parents and students, and strengthens academic and financial management systems. Furthermore, the integration of ICT fosters modern governance within the pesantren while maintaining its traditional Islamic values. This study implies that the digitalization of educational management in Islamic boarding schools can serve as a strategic institutional transformation in response to the demands of the digital era.*

**Keywords:** Digital transformation; Educational management; Salafiah Islamic boarding schools.

### INTRODUCTION

Digitalization is a strategic effort to provide more affordable, efficient, and equitable education through the use of ICT advances.<sup>1</sup> Disparities in access between regions, limited human resources, and inadequate educational infrastructure are structural challenges that demand digital transformation of Indonesia's education system.<sup>2</sup>

As the oldest educational institutions in the archipelago, Islamic boarding schools (*pesantren*) face unique and complex challenges. They serve not only as educational institutions but also as centers for character development, the transmission of Islamic values, and the preservation of classical scholarly traditions.<sup>3</sup> *Pesantren* have a long history rooted in Islamic culture and spirituality. They have contributed significantly to producing generations who not only master religious knowledge but also possess noble character and personalities. There is a need for Islamic boarding schools to transform to keep pace with the changing times of the Industrial Revolution 4.0.

Islamic boarding schools face the challenge of adapting to developments in information technology. They have adopted technology through the use of online



platforms, learning applications, and digital resources to improve teaching effectiveness. However, the implementation of digital transformation still faces infrastructure limitations, shifts in traditional Islamic boarding school culture, and curriculum adjustments. The process of digitizing Islamic boarding schools is not merely a technical issue, but also a cultural and structural transformation that requires adaptive and contextual strategies.<sup>4</sup>

There are five strategic dimensions in transforming the Islamic boarding school curriculum in the digital era: integrating e-learning platforms and online resources into the core learning; developing the digital competencies of students and ustadz; implementing a blended learning model that combines traditional *bandongan* and *sorogan* methods with virtual modules; strengthening Islamic boarding school values (faith, morals, devotion, and simplicity) in the digital curriculum; and strengthening ICT infrastructure and governance and quality control mechanisms. A “digital tarbiyah” framework is proposed that integrates pedagogical design, stakeholder capacity building, and robust oversight to guide policymakers and Islamic boarding school leadership.<sup>5</sup> Islamic boarding schools require a digital tarbiyah framework as a holistic approach to maintain their distinctive ethos while enhancing educational excellence amidst rapid digital transformation.

Traditional Islamic boarding schools face a dual challenge: preserving time-tested Islamic values while adapting to rapid technological advances. Optimizing Islamic boarding school education requires a multi-pronged approach, including the integration of e-learning platforms and online resources; enhancing the digital competency of both students and educators; adopting a blended learning model that harmonizes traditional and modern methods; and reinforcing core Islamic values within the digital curriculum.<sup>6</sup> Digital transformation in Islamic boarding schools can improve educational accessibility and teaching effectiveness, ensuring that Islamic boarding schools remain relevant and resilient in the ever-evolving digital landscape.

Technology plays a role not only in learning but also in improving the overall quality of educational management. The implementation of an ICT-based school management information system has been proven to improve administrative efficiency, financial transparency, and accountability in educational delivery in Islamic boarding schools.<sup>7</sup> The digitalization of Islamic boarding schools has a broader dimension, including the transformation of institutional governance which is a weak point of traditional Islamic boarding schools.

Attahdzib Islamic Boarding School in Grenggeng Village, Ngoro District, Jombang Regency, is one of the largest Salafiyah Islamic boarding schools in the region. Founded in 1958 by Hadratus-Syaikh Romo KH. Ihsan Mahin, this Islamic boarding school has gone through a long journey with a strong scientific tradition and an extensive intellectual network. As an Islamic boarding school that carries the Salafiyah style, Attahdzib makes classical books (yellow books) as the main reference in the learning process, covering various Islamic disciplines such as tafsir, hadith, fiqh, tasawwu, and the sciences of tools such as nahwu and shorof. Attahdzib Islamic Boarding School has innovated an ICT-based educational management system through the Attahdzib Online application amidst the strong Salafiyah tradition.

The digitalization initiative at the Attahdzib Islamic Boarding School began in 2018. The application development project arose from an internal awareness of the importance of orderly and modern data management. The Attahdzib Online application has four main integrated features: finance, education (attendance, grades, memorization progress), health, and security. The application has not only transformed the Islamic

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boarding school's administrative system but also created new transparency in the relationship between the boarding school and students' guardians. Parents can monitor their children's progress in real time, including financial transactions, academic achievements, health conditions, and even disciplinary violations.

The journey of ICT implementation at the Attahdzib Islamic Boarding School has not been without challenges. Implementing digital transformation at the Islamic boarding school consistently faces three main challenges: limited infrastructure, shifts in traditional Islamic boarding school culture, and curriculum adjustments.<sup>8</sup> These challenges at the Attahdzib Islamic Boarding School are manifested in low digital literacy among senior teachers, limited technological devices in the girls' unit, cultural resistance to a monitoring system perceived as overly strict, and reliance on external vendors for system development and maintenance. These challenges underscore the importance of an adaptive and contextual approach to ICT implementation in the Islamic boarding school environment.

The urgency of this study lies in the need to deeply understand how a Salafiyah Islamic boarding school with a strong tradition can undertake digital transformation without losing its core values. This study is crucial because there is still a lack of academic research specifically addressing the implementation of ICT in educational management at Salafiyah Islamic boarding schools. Most of the existing literature tends to focus on aspects of learning or modern Islamic boarding schools, which are inherently more open to technology. However, Salafiyah Islamic boarding schools, with their unique characteristics – such as limited student access to digital devices, traditional teaching methods, and centralized leadership structures of *kiai* – face different challenges in the digitalization process. Research on the implementation of ICT at Attahdzib Islamic Boarding School is expected to enrich the body of research on digital transformation in Islamic education management, particularly in traditional Islamic boarding schools.

This study specifically aims to explain how ICT is applied through the Attahdzib Online application in educational management at the Attahdzib Islamic Boarding School; Analyze the impact of ICT implementation on the efficiency, effectiveness, and quality of educational management, and; Identify challenges and obstacles faced in the implementation process and formulate strategies to overcome them.

## **LITERATURE REVIEW**

The word “technology” comes from the words “*techne*,” meaning skill, and “*logia*,” meaning knowledge. Technology is defined as a scientific method for achieving practical goals. Technology is an instrumental design used to reduce the uncertainty of cause-and-effect relationships in achieving specific goals.<sup>9</sup> ICT in the context of education, not only refers to hardware such as computers and internet networks, but also includes software, information systems, and digital communication mechanisms that support managerial and learning processes.

Information is the result of data processing that has meaning and value for decision making.<sup>10</sup> ICT in education functions as a decision support system, a tool for administrative efficiency, and a means of communication between educational stakeholders. The digitalization of education is a strategic necessity in facing the era of the information-based industrial revolution.<sup>11</sup> ICT can significantly improve the quality of learning resources and expand access to education.<sup>12</sup> The use of technology in Islamic Religious Education learning increases motivation and the effectiveness of the learning process.<sup>13</sup>

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Educational management is basically a systematic process that includes planning, organizing, implementing, and evaluating educational resources to achieve goals effectively and efficiently.<sup>14</sup> Educational management involves the functions of strategic planning, organizing structures, directing human resources, and quality control.<sup>15</sup> In the digital age, this function relies heavily on integrated information systems. Accurate educational decision-making requires fast, valid, and systematically documented data.<sup>16</sup> Educational management information systems play an important role in increasing the transparency and accountability of institutions.<sup>17</sup>

The integration of ICT into educational management has given rise to the concept of a digital-based Management Information System. This system enables the integrated processing of academic, financial, personnel, and institutional administration data. Implementing an ICT-based information system in Islamic boarding schools can improve service quality and governance efficiency.<sup>18</sup> Digitalization is not just a technical innovation, but an institutional reform strategy. Transformational leadership supports the successful implementation of technology in educational institutions.<sup>19</sup> The head of the institution acts as an agent of change who integrates the digital vision with institutional values.

As traditional Islamic educational institutions, Islamic boarding schools (pesantren) possess unique characteristics that distinguish them from other formal educational institutions. The pesantren education system is based on religious values, the exemplary conduct of the kiai (Islamic cleric), and the culture of the *santri* (student) community. The transformation of pesantren addresses the challenges of modernity, particularly in management and governance. Pesantren also possess adaptive flexibility that allows for the integration of innovations without abandoning their identity.<sup>20</sup> Post-modern Islamic boarding schools are able to conduct cultural negotiations between tradition and modernity through selective and contextual strategies.<sup>21</sup>

The principle of "*al-muhafadzatu 'ala al-qadim al-shalih wa al-akhdu bi al-jadid al-aslah*" (the best way to achieve the best in the world) serves as the philosophical foundation for the transformation of Islamic boarding schools. This principle emphasizes the importance of maintaining good traditions while embracing innovations that are more beneficial. The integration of technology into the curriculum and management of Islamic boarding schools is a significant trend in contemporary Islamic education.<sup>22</sup> Digitalization is not a threat to the identity of Islamic boarding schools, but rather an instrument for strengthening governance.

Previous research has shown that the application of ICT in Islamic education has a positive impact on the effectiveness of management and learning. ICT-based management information systems improve the speed of administrative services and the quality of data documentation.<sup>23</sup> The use of digital media enriches learning variations and increases student participation.<sup>24</sup> Technology-based learning increases interaction and understanding of religious concepts in a more contextual way.<sup>25</sup> There is also cultural resistance in some Islamic boarding schools to digital innovation, mainly due to concerns about changing traditional values.<sup>26</sup> The success of Islamic boarding school transformation is greatly influenced by leadership, human resource readiness, and infrastructure support.<sup>27</sup> A successful digital transformation is an integrative, not disruptive, transformation.<sup>28</sup> Previous research findings provide a theoretical basis for the digitalization of Islamic boarding schools to be carried out in stages, participatory, and based on values.

The diffusion of innovation theory explains the integration of ICT in Islamic boarding school management by prioritizing the innovation adoption process within the

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social system. Innovations are accepted if they provide relative advantages, are compatible with existing values, and are easy to implement. Information systems theory, in the context of educational management, positions technology as an instrument for strengthening organizational effectiveness. Modern educational organizations require integrated data systems to support strategic decision-making. Institutional transformation theory explains that structural changes must be balanced by changes in organizational culture.<sup>29</sup>

Based on a literature synthesis, the application of ICT in Islamic boarding school education management encompasses technical, managerial, and cultural dimensions. The technical dimension relates to digital infrastructure and applications. The managerial dimension encompasses administrative efficiency, financial transparency, and reporting systems. The cultural dimension encompasses the acceptance of values and the adaptation of traditions to innovation. Previous research has addressed some of these aspects, but studies that comprehensively analyze the implementation of internal Islamic boarding school management applications are still limited. There is a need for a more in-depth and contextual study of ICT integration in Islamic boarding school management. The digital transformation of Islamic boarding schools is not simply a technical change, but a strategic process that connects traditional values with the demands of modernity. Integration has the potential to strengthen governance, improve service efficiency, and expand access to information for all stakeholders. The study of ICT implementation in Islamic boarding school education management is relevant for enriching academic discourse and providing a practical contribution to the development of Islamic educational institutions in the digital era.

## **METHOD**

This study uses qualitative methods to describe in detail and in depth the phenomenon of ICT implementation in educational management at the Attahdzib Islamic Boarding School in Grenggeng Village, Ngoro District, Jombang Regency. Qualitative methods are a research approach that produces descriptive data in the form of words, both written and spoken, from individuals, as well as directly observable behavior.<sup>30</sup> The study uses a constructivist paradigm that views reality as a social construction and emphasizes subjective understanding from the perspective of participants. Data collection used interview, observation, and document analysis methods. Participant selection was based on the principle of representativeness. Key informants were selected from several Islamic boarding school administrators, heads of education departments, Attahdzib Online application operators, and students. Researchers collected documentary data sources from formal documents, research reports, appendices, diaries, and others. Data were analyzed descriptively and qualitatively using an interactive analysis model with a data reduction process; data presentation; and verification or conclusion drawing.<sup>31</sup> Data reliability testing uses the criteria of credibility, transferability, dependability, and confirmability.<sup>32</sup>

## **RESULT**

### **Institutional Profile and Context**

Attahdzib Islamic Boarding School was founded in 1958 by KH. Ihsan Mahin in Payak Mundil Hamlet, Rejoagung Village, Ngoro District, Jombang Regency, before being relocated to Grenggeng Hamlet in 1960. Historically, this Islamic boarding school is rooted in the Salaf educational tradition which emphasizes character building and

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deepening Islamic knowledge. The current leadership is continued by KH. Ahmad Masruh, M.H., with the institutional vision: "To become a Solid Salaf Islamic Boarding School with Pillars of Noble Morals and Spiritual-Emotional-Intellectual Intelligence."

The name "*Attahdzib*" philosophically means filter, reflecting the orientation of moral development and character refinement of students. The education system consists of two main pathways: religious education based on the takror method, and formal education, which includes Islamic junior high school, Islamic junior high school, Islamic senior high school, vocational high school, and At-Taahdzib Islamic College. This institutional context is important because it demonstrates that digital transformation is taking place within an educational environment based on strong Salaf traditions.

### **Digitalization Process and Application Implementation**

The digitalization of educational management at the Attahdzib Islamic Boarding School began in 2018 through an internal alumni initiative. The Attahdzib Online application was first introduced at the 2018 Intiha Usanah event, but its development was temporarily halted due to limited technical resources after the original initiator completed his term of service.<sup>33</sup>

External support has also strengthened the digital transformation process. Government assistance in the form of technological equipment – laptops, computers, projectors, and touchscreen televisions – has been provided in stages since 2018.<sup>34</sup> This support is both a motivational and instrumental factor in building the readiness of Islamic boarding schools' digital infrastructure.

The most significant momentum occurred during the COVID-19 pandemic, which transformed digitalization from a mere innovation into a structural necessity. Internal limitations prompted Islamic boarding schools to form strategic partnerships with educational management system development companies. This collaboration encompassed the provision of ready-to-use applications, system maintenance, feature development, and data security.

Functionally, the Attahdzib Online application has four main integrated features: Financial Features, Education Features, Health Features, and Security and Discipline Features. Financial features are a top priority because they aim to address the deficit in the Student Savings division, which previously reached tens of millions of rupiah per year. The digital system allows transactions to be recorded in real time, transparently, and automatically documented. Parents can monitor their children's financial flows directly, thereby increasing accountability in fund management. The education feature facilitates the input of grades, attendance, and memorization progress through each teacher's dashboard. The health feature periodically records student health history, while the security feature documents disciplinary violations and the types of guidance implemented. This transformation shifts the administration system from a manual, notebook-based mechanism to a digital system based on transaction cards and database integration. Structurally, these changes strengthen control, documentation, and cross-unit coordination.

### **Implementation Constraints**

Research results show that the implementation of digitalization has not been without obstacles. The first obstacle is the disparity in digital literacy among teachers, particularly senior teachers. Some teachers show resistance or difficulty in operating online systems, often shifting administrative burdens to management units.<sup>35</sup>

The second obstacle is limited infrastructure, particularly the unequal distribution of digital transaction devices across all Islamic boarding school business units. The cost

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of investing in devices and accessing devices for female students is a limiting factor.

The third obstacle relates to the psychological resistance of some students to the monitoring system, which they perceive as increasing control over their activities. This perception suggests that digitalization also has cultural implications, not just technical ones.

To address these obstacles, Islamic boarding schools have implemented various adaptive strategies, including: regular workshops and training for teachers and administrators; mass outreach to students; distribution of application usage guides; provision of WhatsApp-based customer service; and weekly cross-unit evaluation meetings. These strategies demonstrate a participatory and responsive managerial approach to implementation dynamics.

### **User Perceptions and Usage Patterns**

From a user perspective, the app is primarily used for financial services rather than academic features. Students primarily use the app for purchasing transactions, checking bills, and confirming transfers. Parents benefit from access to remotely monitor their children's progress.<sup>36</sup> Teachers play a role in inputting grades and attendance, although the level of participation depends on each individual's digital literacy. Administrators perform a coordinating function through periodic evaluation mechanisms to ensure the system is running effectively and adaptively.

The findings of this study indicate that the acceptance of technology in Islamic boarding schools is gradual, with the financial dimension as the main entry point before optimizing academic features and character building. Overall, the results of the study indicate that the implementation of Attahdzib Online has three main implications, namely: Administrative Efficiency – The recording, reporting, and transaction processes are faster and documented; Transparency and Accountability – Parents gain direct access to financial information and student development, and; Gradual Cultural Transformation – Digitalization encourages changes in work patterns and organizational culture, although it still faces partial resistance. The digitalization of management at Attahdzib Islamic Boarding School not only represents the adoption of technology, but also reflects the process of institutional transformation that is adaptive to the development of the digital era without abandoning its traditional character.

## **DISCUSSION**

### **Implementation of ICT in Educational Management at Pesantren Attahdzib**

The implementation of ICT at the Attahdzib Islamic Boarding School through the Attahdzib Online application represents a contextual digital transformation model within the Salafiyah Islamic boarding school environment. The digitalization initiative has a long-term vision for modernizing institutional governance. This finding aligns with previous research, which revealed that Islamic boarding schools that successfully undertake digital transformation are those that initiate the process in a gradual and planned manner, rather than reacting to crises.<sup>37</sup>

Collaborating with third parties in application development reflects the Islamic boarding school's pragmatic approach to addressing internal limitations. This outsourcing model allows the Islamic boarding school to remain focused on its core competency, namely providing education, while the technical aspects of software development are handled by professionals. Dependence on external parties also poses long-term sustainability risks. Technological independence is a key prerequisite for successful digitalization in Islamic boarding schools. The experience of halting

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development of the first version of the application when its initiator left the Islamic boarding school provides a valuable lesson. System sustainability should not depend on individuals but rather be institutionalized within the organizational structure.<sup>38</sup>

Conceptually, the implementation of the application's four main features – finance, education, health, and security – reflects the application of the E-Governance in Education principle, which underscores the importance of using technology to improve the effectiveness, efficiency, and accountability of education management. The integration of these four features creates a comprehensive and centralized management information system, addressing the weaknesses of the fragmented and unintegrated manual system. This aligns with previous research findings that demonstrated that the implementation of an ICT-based management information system in Islamic boarding schools can improve administrative efficiency and transparency of financial management.<sup>39</sup>

The financial features, which are a top priority for the app, demonstrate the Islamic boarding school's awareness of the importance of transparency in managing public funds. The annual deficit in the student savings division, which reached tens of millions of rupiah before digitization, indicated weaknesses in the internal control system. With a digital system that allows real-time monitoring by student guardians, the Islamic boarding school not only improves accountability but also builds public trust. This finding reinforces research demonstrating the effectiveness of cashless payment systems in Islamic boarding schools in facilitating financial services and control.<sup>40</sup>

### **Impact of ICT Implementation**

The implementation of the Attahdzib Online application has had a multidimensional impact on educational management at the Attahdzib Islamic Boarding School. The first impact is increased administrative efficiency. Previously manual and time-consuming processes for financial recording, attendance, assessment, and reporting can now be completed digitally and integrated. This aligns with the concept of management efficiency; information technology can simplify bureaucracy and minimize the potential for manual errors. Digitization frees up human resources from routine administrative tasks, allowing them to be allocated to more substantive tasks that improve the quality of education.<sup>41</sup>

The second impact is increased transparency and accountability. Open access for parents to information on their children's financial transactions, academic achievements, health conditions, and even disciplinary infractions creates a constructive social control mechanism. Parents no longer rely on periodic reports that may be inaccurate, but can instead monitor their children's progress in real time. This finding confirms previous research showing that the implementation of a student information system improves the efficiency of teachers' administrative tasks while enhancing students' digital literacy. Furthermore, this transparency builds public trust in Islamic boarding schools, a previously sensitive issue, particularly regarding financial management.<sup>42</sup>

The third impact is the creation of a new synergy between Islamic boarding schools and parents. Parents' access to information on their children's development creates more intensive two-way communication. Parents are no longer passive recipients of reports, but can actively participate in monitoring and supporting their children's educational process. This aligns with the principle of public participation in good governance as outlined in the E-Governance in Education framework. This synergy also bridges the information gap between home and Islamic boarding schools, which has been a complaint of many guardians of students.

The fourth impact is the transformation of organizational culture. The

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implementation of the Attahdzib Online application has encouraged the growth of a digital culture among teachers, students, and administrators. Although the adaptation process has been uneven, the presence of the digital system has gradually changed work habits and mindsets about the importance of data and technology. The publication space for articles and papers for teachers within the application is a smart strategy for improving digital literacy and the intellectual capacity of educators. This reflects the application of Total Quality Management (TQM) principles, which emphasize the importance of continuous quality improvement through the participation of all elements of the institution.<sup>43</sup>

This digital transformation has not erased the traditional values of Islamic boarding schools. Instead, values such as sincerity, trustworthiness, discipline, and devotion, the foundations of Islamic boarding schools, are maintained and even strengthened through digital systems. These findings reinforce the “*digital tarbiyah*” framework, which integrates pedagogical design with the core values of Islamic boarding schools.<sup>44</sup> Digitalization is not seen as a threat to tradition, but as an instrument for preserving and transmitting those values in the language of the times. This is the synthesis of tradition and innovation that characterizes Islamic boarding schools in facing the era of disruption.

### **Implementation Challenges**

Despite its positive impact, the implementation of the Attahdzib Online application faces several significant challenges. The first and most fundamental challenge is the digital literacy gap among human resources. Senior teachers who have been accustomed to manual systems for decades have difficulty adapting to new technology. Some exhibit passive resistance by refusing to learn and delegating data input tasks to others. This phenomenon is precisely as described in the Technology Acceptance Model (TAM), where technology adoption is strongly influenced by perceived ease of use and perceived usefulness. When these two factors are not met, resistance will emerge. Previous research findings indicate that the shift in traditional Islamic boarding school culture is one of the main challenges in digital transformation.<sup>45</sup>

The second challenge is limited infrastructure and access to technology. Application implementation has not been evenly distributed across all Islamic boarding school units due to budget constraints for digital transaction devices in business units. In the female student unit, restrictions on access to mobile devices, in accordance with internal Islamic boarding school regulations, actually hamper the training and adaptation process. This situation creates an irony: while Islamic boarding schools encourage digitalization, on the other hand, internal policies restrict access to digital devices. This suggests that digital transformation in Islamic boarding schools requires more adaptive internal policy adjustments. Optimizing Islamic boarding school education in the digital era requires a multi-pronged approach that includes strengthening ICT infrastructure.<sup>46</sup>

The third challenge is cultural resistance to the monitoring system. Some students feel that the system, which can record violations and activities in real time, creates a feeling of excessive surveillance. This resistance stems from a lack of understanding that the monitoring system is designed to protect and facilitate the growth and development of students, not for repressive control. This challenge highlights the importance of a humanistic approach to introducing digital systems, where Islamic boarding school values such as compassion and guidance remain the primary foundation.

The fourth challenge is dependence on external vendors for system development and maintenance. While the partnership with PT Siesta provides a quick solution to

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internal limitations, this dependency poses long-term sustainability risks. When the partnership contract expires or the vendor experiences business problems, the Islamic boarding school could lose access to data and systems. The experience of halting development of the first version of the application when its initiator left the Islamic boarding school should be a lesson. Technological independence is inevitable. Human resources and institutional support are key prerequisites for successful digitalization in Islamic boarding schools.<sup>47</sup>

### **Adaptation Strategies and Institutional Implications**

Facing these challenges, the Attahdzib Islamic Boarding School has developed several adaptation strategies. Regular workshops for teachers and administrators, mass outreach to students, and the provision of WhatsApp-based customer service are systematic efforts to increase technology adoption. Weekly cross-unit evaluation meetings are a crucial mechanism for early detection of problems and system adjustments to better align with the Islamic boarding school's culture. Responsiveness to user feedback, such as changes to the attendance system from administrators to the Dirosah team due to internal regulations, demonstrates the Islamic boarding school's flexibility in implementing technology.

These strategies reflect the application of TQM principles which emphasize continuous improvement and the participation of all elements of the organization.<sup>48</sup> Weekly evaluations provide a forum for identifying quality gaps and formulating corrective actions. Responsive customer service ensures user complaints are addressed promptly, preventing the accumulation of issues that could hinder adoption. A phased approach to training and onboarding allows users to adapt at their own pace.

From an institutional perspective, the implementation of the Attahdzib Online application has driven changes in organizational structure and a clearer division of roles. The presence of a dedicated system administrator, the establishment of cross-unit coordination during evaluation meetings, and a structured reporting mechanism demonstrate the institutionalization of technology within Islamic boarding schools. This aligns with previous research findings, suggesting that Islamic boarding school cultural management, capable of negotiating with science and technology, is key to the sustainability of Islamic boarding schools in the modern era.<sup>49</sup>

The long-term implication of this digital transformation is the development of a more adaptive Islamic boarding school ecosystem. The experience of implementing the Attahdzib Online application has equipped Islamic boarding schools with the capacity to learn and adapt, which will be invaluable in facing future changes. As stated in the principle of *al-muhafadzatu 'ala al-qadim al-shalih wa al-akhdzu bi al-jadid al-aslah* (preserving good old values and adopting better new ones), Attahdzib Islamic Boarding School demonstrates that tradition and modernity can coexist. The values of spirituality, sincerity, and devotion that are the foundation of Islamic boarding schools are actually driving forces for transformation, not obstacles.

### **CONCLUSION**

The implementation of ICT at the Attahdzib Islamic Boarding School through the Attahdzib Online application has successfully integrated technology into the education management system in a systematic and sustainable manner. The digitalization initiative is part of a long-term vision for institutional governance modernization. The Attahdzib Online application has four main integrated features: finance, education, health, and security. The financial feature is a top priority to address the problem of the student

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savings division deficit, which previously reached tens of millions of rupiah per year, while also building transparency in the management of student funds that can be monitored in real time by parents. The education feature provides an input system for student grades, attendance, and memorization progress, with each teacher having their own dashboard, allowing parents to directly monitor academic progress. The health feature records students' health conditions periodically, while the security feature documents disciplinary violations and punishments received by students. This digitalization transforms the Islamic boarding school's administrative system from manual to digital, with payment of liabilities using transaction cards such as ATMs and all financial information can be accessed transparently.

The implementation of the Attahdzib Online application has had a multidimensional impact on educational management at the Attahdzib Islamic Boarding School. The first impact is increased administrative efficiency, where the previously manual and time-consuming processes of financial recording, attendance, assessment, and reporting can now be completed digitally and in an integrated manner, simplifying bureaucracy and minimizing the potential for manual errors. The second impact is increased transparency and accountability, especially in financial management, which builds public trust in the Islamic boarding school. The third impact is the creation of new synergies between the Islamic boarding school and parents through access to real-time information on children's development, bridging the information gap that has been a complaint of many guardians. The fourth impact is the transformation of organizational culture, where a digital culture is starting to grow among teachers, students, and administrators, albeit with varying degrees of adaptation. This digital transformation does not eliminate traditional Islamic boarding school values such as sincerity, trustworthiness, and discipline, but rather strengthens them through new media.

Despite its positive impact, the implementation of the Attahdzib Online application faces several significant challenges. The primary challenge is the digital literacy gap among human resources, particularly senior teachers who have difficulty adapting to new technologies and demonstrate passive resistance by outsourcing data input tasks. The second challenge is limited infrastructure and technology access, where application implementation is not evenly distributed across all Islamic boarding school units due to budget constraints for digital transaction devices in business units, as well as restrictions on mobile phone access in female students' units, which actually hinders the training and adaptation process. The third challenge is cultural resistance among some students to the monitoring system, which creates feelings of over-surveillance. The fourth challenge is reliance on external vendors for system development and maintenance, which poses a risk to long-term sustainability if not balanced with internal capacity building.

In response to these challenges, the Attahdzib Islamic Boarding School developed several adaptation strategies. Regular workshops for teachers and administrators, mass socialization to students after Friday prayers, and the distribution of cards and user guides were conducted in stages. The application provides a customer service service connected to the administrator's WhatsApp for quick problem resolution. Weekly cross-unit evaluation meetings served as a means of addressing challenges and adjusting the system to better align with the pesantren's culture, such as changing the attendance system from the administrators to the Dirosah team, as it conflicted with internal regulations. Efforts to improve digital literacy were also made through a publication space for articles and papers for teachers within the application.

The experience of the Attahdzib Islamic Boarding School demonstrates that Salafiyah Islamic boarding schools with strong traditions have the capacity to digitally

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transform without losing their core values. The principle of al-muhafadzatu ‘ala al-qadim al-shalih wa al-akhdu bi al-jadid al-aslah (preserving good old values and adopting better new ones) is embodied in the synthesis of tradition and innovation. The values of spirituality, sincerity, and devotion that underpin Islamic boarding schools are actually driving forces for transformation, not obstacles. Digitalization is not seen as a threat to tradition, but as an instrument for preserving and transmitting these values in the language of the times. Thus, Attahdzib Islamic Boarding School has demonstrated that the dichotomy between tradition and modernity in Islamic education is a false construct, and that technology can be a means to achieve the transcendental goals of Islamic boarding school education.

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