Effectiveness of Artificial Intelligence Implementation in Educational Services at Islamic Schools in East Java

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Article Info	Abstract
	Title: Effectiveness of Artificial Intelligence Implementation in Educational Services at Islamic Schools in East Java Abstract The implementation of the Student Passport (Paspor Siswa) application in one of the Islamic Schools in East Java represents an educational service innovation based on Artificial Intelligence (AI), positioned as a primary strategic instrument in the school's digital transformation. This service operates in an integrated manner involving management, teachers, students, and parents to respond to the dynamics of modern educational needs while upholding accountability values. This research aims to analyze the effectiveness of AI implementation as a decision support system in discipline management, academic efficiency improvement, and health monitoring, as well as to map its sustainability determinants. The study employs a descriptive qualitative method with triangulation data collection techniques based on the effectiveness theories of Sutrisno, Siagian, and Hasibuan. The results reveal that AI functions effectively as the main operational driver within this Islamic school environment. In the discipline aspect, the system provides objective data to support real-time decision-making, minimizing subjectivity in student character assessment. In the academic realm, AI serves as a smart assistant that facilitates the automation of teaching material preparation and mass exam grading, as well as serving as a transparent information access gateway for students. System effectiveness also extends to health services through predictive analysis features that provide medical information and preventive action recommendations for student well-being. Managerially, efficiency is proven through paperless budget savings and the speed of information distribution. Success factors include management commitment (top-down policy) and server infrastructure stability, while inhibiting factors are network capacity limitations (bottlenecks) during peak loads and low digital literacy among some parents. The study concludes that the Islamic School has successfully built a robust digital ecosystem but requires network infrastructure reinforcement and external user education to ensure the sustainability of the Smart School.

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1. INTRODUCTION

Digital transformation in the modern educational landscape has shifted from mere administrative digitization to leveraging Artificial Intelligence (AI) as the backbone of the school ecosystem. In the era of the Industrial Revolution 4.0 and *Society 5.0*, educational institutions, including Islamic Educational Institutions, are required to provide services that are not only fast and precise but also capable of maintaining accountability (*amanah*) to

stakeholders. This demand drives schools to adopt smart technologies to ensure operational efficiency while maintaining the quality of character education.

Observing the current literature development (state of the art), the majority of previous research regarding AI in education tends to focus narrowly on classroom learning aspects (*e-learning*) or curriculum personalization. As stated by Wang & Cheng (2021), the primary focus of current AI studies is still dominated by student learning assistance platforms, yet it rarely touches upon the effectiveness of AI in holistic school management governance. Furthermore, many management information systems implemented in schools today are still partial and fragmented—academic data, disciplinary records, and student medical records often run on separate systems, complicating comprehensive decision-making.

This gap serves as the basis for the scientific novelty statement of this article. This article offers a fresh perspective by highlighting the implementation of the "Student Passport" *Super-App* at an Islamic School in East Java that integrates three vital service pillars simultaneously: academics, discipline (character building), and medical-based health monitoring. The novelty of this study lies in analyzing the effectiveness of a system that not only pursues administrative efficiency but also functions as an instrument for character supervision and early student health detection within a value-based Islamic education ecosystem.

The research problem raised focuses on the urgency of shifting teacher workloads from clerical to substantive tasks, as well as the need for an early risk detection system in the school environment. Without smart data integration, schools are vulnerable to budget inefficiencies and slowness in responding to disciplinary and student health issues.

Therefore, the final section of this introduction asserts that the research objective of this article is to analyze the effectiveness of Artificial Intelligence implementation through the Student Passport application using the organizational effectiveness frameworks of Sutrisno (2016), Siagian (2008), and Hasibuan (2016). This study aims to empirically prove how AI integration is capable of transforming the governance of an Islamic School to be more modern, transparent, and accountable.

2. RESEARCH METHODS

This research employs a qualitative approach with a descriptive case study method. The research location is an Islamic Senior High School in East Java that has implemented an integrated digital management system. Research subjects were determined through purposive sampling, involving the School Principal, Vice Principals (Curriculum and Student Affairs), teachers, administrative staff, the School Health Unit (*UKS*) medical team, as well as representatives of parents and students. Data collection techniques were conducted through three main methods:

- In-depth interviews: Exploring user perceptions (school leaders, teachers, parents) regarding the effectiveness of the Student Passport (*Paspor Siswa*) system in supporting Islamic school governance.
- Participatory observation: Directly observing the usage of teacher dashboard features, *UKS* services, and picket room activities in daily routines to witness user interaction with the AI system.
- Document study: Verifying budget data (e.g., paper invoices) and server activity logs to measure operational efficiency quantitatively as supporting data.

Data validity was tested using source and technique triangulation. Data analysis was conducted interactively through the stages of data reduction (information simplification), data display (data organization by category), and conclusion drawing to address the effectiveness research problem.

3. RESULTS AND DISCUSSION

The results indicate that the implementation of AI in this Islamic School in East Java has created a fundamental transformation in school governance. Based on the analysis of organizational effectiveness theory, the findings can be categorized into three main dimensions:

1. Operational and Academic Efficiency (Sutrisno's Perspective). Sutrisno (2016) emphasizes achieving maximum results with minimum resources. Field findings prove significant efficiency in two main aspects:

   o Budget and service time efficiency: The implementation of the *paperless* system through the Student Passport successfully reduced paper expenditure significantly over one fiscal year. Legalization and licensing processes that previously took hours now require only minutes. Student attendance notifications are sent to parents via WhatsApp with a latency of under 5 seconds (*real-time*), guaranteeing service transparency and accountability.

   o Automation of teacher workload: The *AI Teaching Assistant* feature enables the generative compilation of teaching materials (lesson plans/modules) and question banks in a short time. Additionally, the *Auto-Correction* feature allows for mass exam grading with zero latency, replacing manual processes that used to take days. This proves that AI has shifted the teacher's role from clerical-administrative tasks to substantive-pedagogical tasks.

2. Supervision and Risk Control System (Siagian's Perspective). According to Siagian (2008), organizational effectiveness is measured by the system's ability to exercise control. The Student Passport extends the scope of supervision beyond discipline to health monitoring:

   o Discipline objectivity: Student violation points recorded digitally eliminate subjectivity. Decisions to summon parents are based on valid analytic data rather than mere assumptions, reflecting the principle of fairness (justice) in education.

   o Health prediction (Digital UKS): The *Smart Health* feature, integrated with a partner Islamic Hospital, is capable of performing *predictive analysis*. The system records student health complaints and provides early warning signals if there is an increasing trend of certain diseases (e.g., mass flu). The school can then take preventive actions (sanitation inspection) before an outbreak spreads. This demonstrates AI's function as a risk control tool for human resource assets.

3. Adaptation and Organizational Culture (Hasibuan's Perspective). Work effectiveness, according to Hasibuan (2016), relies heavily on human factors. Findings show a very high teacher adaptation rate (around 95%), thanks to an effective peer-tutoring strategy that overcame resistance to technology, especially among senior teachers. However, external user adaptation (parents) remains a challenge; some parents still view the application solely as a discipline monitoring tool.

   Supporting Factors: Strong school management commitment (*top-down* policy) mandating application usage, hardware infrastructure stability (servers), and a culture of innovation among teachers are the primary factors supporting success.

   Inhibiting Factors: Technical constraints in the form of internet network capacity bottlenecks when accessed by thousands of concurrent users during break times serve as significant obstacles. Furthermore, the lack of digital literacy among some parents hinders the optimal utilization of application features.

   Overall, the findings confirm that AI in the Student Passport enhances supervision transparency, academic administrative efficiency, and health preparedness in the Islamic

School. However, long-term effectiveness still depends on infrastructure improvement and educational efforts for external stakeholders.

4. CONCLUSION

The implementation of *Artificial Intelligence* through the Student Passport (*Paspor Siswa*) program at the Islamic School in East Java has proven to be highly effective in enhancing the quality of educational services. AI serves as an accelerator for cost and time efficiency, reducing teachers' administrative burdens through the automation of academic tasks, and acting as a student health protector through predictive analysis. Nevertheless, program sustainability faces challenges, particularly regarding network infrastructure and the adaptation of users outside the school environment.

It is recommended that the school prioritize increasing *bandwidth* capacity to prevent service disruptions during peak loads. Furthermore, humanistic education and socialization programs for parents need to be intensified so that the utilization of academic and health features can proceed optimally. This study concludes that AI technology is not merely an auxiliary tool, but a strategic asset in realizing a holistic *Smart School* ecosystem.

5. ACKNOWLEDGMENTS

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