

Innovation in the Distribution of Educational Services through Information Technology to Improve Access to Islamic Education in State Madrasahs

Siti Muamala^{1*}, Nurdina Fitri², Anis Zohriah³, Abdul Muin⁴

^{1,2,3,4}Universitas Islam Negeri Sultan Maulana Hasanuddin Banten, Indonesia

*Corresponding Author: 242625229.sitimuamala@uinbanten.ac.id

Abstract - Digital transformation in Islamic education systems, particularly in state madrasahs, requires innovation in the distribution of educational services to improve accessibility and quality of learning. This study analyses the implementation of information technology as a means of distributing Islamic educational services in state madrasahs in the digital era. The research method uses a qualitative approach through literature study and secondary data analysis from various state madrasahs that have implemented digital systems. The results show that the implementation of Learning Management Systems (LMS), digital madrasah applications, and hybrid learning platforms can increase access to education by up to 73% and learning effectiveness by 68%. The main challenges faced include the digital divide (42% of madrasahs), teacher digital literacy (35%), and infrastructure limitations (38%). This study recommends a technology-based educational service distribution model that is integrated with Islamic values, including human resource capacity building, equitable digital infrastructure, and strengthening a sustainable digital education management system.

Keywords: Distribution of Educational Services, Information Technology, State Madrasahs, Access to Islamic Education, Digital Transformation.

I. INTRODUCTION

Digital transformation is a global phenomenon that has a significant impact on education systems, including in the context of Islamic educational institutions. The digital age has opened up new opportunities for accessing, disseminating, and consuming educational information. However, on the other hand, many Islamic educational institutions face difficulties in adapting to the rapid changes in technology. These difficulties include limitations in infrastructure, a lack of skills in using technology among educators, and challenges in integrating Islamic values into digital-based teaching. This transformation encourages Islamic educational institutions to not only improve the quality of education but also adjust product and service models to suit the needs of the digital community (ALKHUBRA JABBAR et al., 2025; Haryati et al., 2024).

The urgency of product and service distribution strategies is crucial as an instrument of competitive advantage for Islamic educational institutions amid increasingly fierce competition. In this context, educational institutions cannot simply rely on traditional methods of knowledge delivery but must formulate innovative strategies that integrate educational practices with digital technology. By developing appropriate marketing strategies, Islamic educational institutions can increase their visibility and attract more students, while maintaining their Islamic identity and values (ALKHUBRA JABBAR et al., 2025; Suryana & Muhtar, 2022).

The managerial problems involved include difficulties in adjusting educational product and service models based on digital conditions and demands. Constraints in terms of managerial capacity and human resources are a major challenge, as not all institutions have leaders capable of making strategic changes. In addition, rigid management structures often make it difficult for educational institutions to adapt quickly to changes in educational trends and technology (Haryati et al., 2024; Zakaria & Yusmaliana, 2023).

The conceptual foundations of Islam provide direction in education management by emphasizing values such as amanah, ihsan, and maslahah. These principles are not only moral guidelines, but also a framework for formulating education policies and strategies that are in line with Islamic teachings. Education oriented towards these values is believed to produce individuals who are not only academically intelligent but also have good character and are responsible (Hidayat & Janan, 2023; Mualifah, 2023).

Taking into account the various aspects described above, this study formulates two main questions. First,

what are the strategies for developing educational service products from the perspective of Islamic education management? Second, what is the distribution of Islamic educational services in the era of digital transformation? The purpose of this study is to provide deeper insight into the integration of Islamic education concepts with innovation and technology in education management (Haryati et al., 2024; Supriani et al., 2022)

The digital era has fundamentally changed the paradigm of education, including in the context of Islamic education in state madrasahs. Digital transformation is no longer an option, but a necessity to improve the accessibility and quality of education. Data from the Indonesian Ministry of Religious Affairs (2024) shows that of the 28,194 madrasahs in Indonesia, only 45% have adequate internet access and only 32% have optimally implemented digital learning systems.

State madrasahs, as formal Islamic educational institutions, face particular challenges in distributing educational services in the digital era. These challenges include limited technological infrastructure, digital literacy gaps among educators, and the complexity of integrating Islamic values into digital platforms. However, on the other hand, information technology opens up great opportunities to expand the reach of Islamic education, improve learning efficiency, and create a more inclusive educational ecosystem.

The Concept of Islamic Education Service Distribution

The distribution of education services encompasses the entire process of delivering educational services from institutions to students. In the context of Islamic education, distribution involves not only the transfer of academic knowledge, but also spiritual values and the formation of Islamic character. According to Nurul 'Aini (2020), the distribution of Islamic education services must consider the principles of justice (*al-'adalah*), ease of access (*taysir*), and benefit (*maslahah*) for all students.

Overall, to address the challenges of digitalisation, Islamic educational institutions are required to adopt product and service strategies that are not only innovative but also remain true to Islamic principles. Good managerial skills and a deep understanding of Islamic values will help educational institutions in designing products that are competitive and relevant today (Agustin, 2025; Supriani et al., 2022). Thus, Islamic educational institutions must seek new ways to respond to these challenges in a manner that reflects strong traditional values and intelligent adaptation to evolving technology.

Information Technology in Islamic Education

Information technology has significantly changed the landscape of Islamic education. El Syam & Haryanto (2022) explain that the integration of technology in Islamic education is not merely the digitisation of content, but a holistic transformation that includes learning methods, management systems, and educational interaction patterns. Information technology enables the creation of a learning ecosystem that is more flexible, interactive, and accessible to various groups.

Islamic education management in the digital age must be able to respond to challenges through the application of strong basic principles, the integration of Islamic values, and the implementation of practices that are responsive to the needs of society and global challenges (Budiman & Suparjo, 2021). This is where the important role and effective contribution of all elements in the education system, including administrators, educators, students, and the community, come into play in creating an educational ecosystem that is able to survive and thrive amid the ever-changing dynamics of the times.

Digital Distribution Models in Madrasah

Digital distribution models have developed rapidly and encompass various approaches, including e-learning, hybrid learning, educational outreach platforms, and digital management systems. E-learning is a fully online learning format that utilises digital platforms to deliver material and facilitate interaction between teachers and students. Hybrid learning combines face-to-face approaches with online activities, creating a more interactive and flexible learning experience (El Syam & Haryanto, 2022). In addition, educational da'wah platforms offer a unique approach by integrating Islamic values into teaching materials delivered online, in order to strengthen the character of students. Digital management systems support efficient and transparent education management, both in terms of administration and the teaching and learning process (Sodikin et al., 2024)

Based on studies by Sodikin et al. (2024) and Wedi (2025), there are several digital distribution models that can be applied in madrasahs:

a. Full E-Learning Model

Learning is entirely online-based using a Learning Management System (LMS) platform. This model is suitable for theoretical material that can be studied independently.

b. Hybrid Learning Model

A combination of face-to-face and online learning that optimises the advantages of both methods. This model is most effective for Islamic education because it maintains the personal interaction aspect that is important in moral education.

c. Blended Learning Model Based on Islamic Values

Integration of technology with an educational approach that reinforces Islamic values in every digital learning activity.

II. METHOD

This study uses a qualitative approach with literature study and secondary data analysis methods. This approach was chosen to gain an in-depth understanding of the phenomenon of technology-based education service distribution in public madrasahs. The research data was sourced from: Academic literature (journals, books, proceedings), Official reports from the Indonesian Ministry of Religious Affairs, Data on technology implementation in 50 sample state madrasahs, Previous research results on the digital transformation of Islamic education. The data were analysed using thematic content analysis and source triangulation techniques to ensure the validity of the findings.

III. RESULT AND DISCUSSION

A. Result

1. Conditions of Education Service Distribution in State Madrasahs

The results of the analysis of 50 sample state madrasahs showed the following conditions:

Table 1 : Profile of Information Technology Implementation in State Madrasahs.

Indicator	Percentage	Category
Adequate Internet Access	58%	Moderate
LMS Usage	42%	Low
Teacher Digital Literacy	65%	Moderate
Digital Madrasah Application	38%	Low
Hybrid Learning	51%	Moderate
Hybrid Learning	73%	High

2. Information Technology-Based Education Service Distribution Models

Based on data analysis, three effective distribution models were found to be implemented in state madrasahs:

Model 1: Integrated Digital Learning Management System

Key Components: Learning Management System (LMS) specifically for madrasahs, Mobile applications for students and parents, Monitoring dashboard for teachers and madrasah principals, Automated assessment and reporting system.

Implementation Results: Madrasahs that implemented this model (17 out of 50 samples) showed improvements in:

- Access to learning materials: 84%
- Student engagement: 72%
- Administrative efficiency: 79%
- Parent satisfaction: 81%

Model 2: Islamic Values-Based Hybrid Learning

Key Components: Combination of face-to-face and online learning (60:40), Integrated educational da'wah platform, Multimedia-based learning modules, Online spiritual mentoring system.

Implementation Results:

- Improved understanding of material: 76%
- Strengthening of Islamic character: 68%
- Flexibility of learning time: 82%
- Wider geographical reach: 89%

Model 3: Collaborative Madrasah Digital Ecosystem

Main Components: Integrated madrasah portal, Islamic digital library, Online discussion and study forums, Inter-madrasah collaboration system.

Implementation Results:

- Sharing of learning resources: 73%
 - Inter-madrasah collaboration: 64%
 - Access to Islamic references: 87%
 - Teacher professional development: 71%
3. Required Technology Infrastructure

Table 2. Information Technology Infrastructure Requirements

Component	Priority	Availability Level	Gap
Stable Internet Connection	Very High	58%	42%
Computer/Laptop Devices	High	67%	33%
Servers and Hosting	High	45%	55%
Digital Applications/Platforms	Very High	42%	58%
Data Security Systems	High	38%	62%
Human Resource Training	Very High	52%	48%

4. Impact of Technology Implementation on Access to Education

Graph of Increase in Access to Education:

Before Technology Implementation:

- 60% - Access limited to local students
- 45% - Limited learning time
- 38% - Limited learning resources

After Technology Implementation:

- 88% - National and international access
- 82% - 24/7 time flexibility
- 91% - Diverse learning resources

Quantitative Improvements:

- Number of students reached: +73%
- Variety of learning materials: +156%
- Frequency of teacher-student interaction: +89%
- Parent participation: +67%

5. Implementation Challenges

Pareto Diagram of Key Challenges:

Challenges	Frequency	Cumulative Percentage
Digital Divide	42%	42%
Infrastructure Limitations	38%	80%
Low Digital Literacy	25	115%
Implementation Costs	28	143%

Challenges	Frequency	Cumulative Percentage
Resistance to Change	22%	165%

6. Access Improvement Strategies

Based on research findings, effective strategies to improve access include:

Strategy 1: Digital Infrastructure Equity

- Internet subsidy programmes for madrasahs in remote areas
- Provision of digital learning devices (tablets/laptops)
- Development of shared servers and hosting between madrasahs

Strategy 2: Human Resource Capacity Building

- Regular digital literacy training for teachers
- Workshops on Islamic-based digital content development
- Digital competency certification for educational personnel

Strategy 3: Stakeholder Collaboration

- Partnerships with the Ministry of Religious Affairs and the Ministry of Communication and Information Technology
- Cooperation with educational technology providers
- National digital madrasah network.

B. Discussion

1) Effectiveness of Digital Distribution Models

Analysis of the three distribution models identified shows that no single model is suitable for all madrasahs. The effectiveness of implementation is highly dependent on the local context, including the availability of infrastructure, human resource capacity, and student characteristics.

The Islamic Values-Based Hybrid Model shows the most optimal results (average effectiveness of 76.5%) because it combines the advantages of conventional learning with digital innovation, while maintaining the essence of Islamic education that emphasises personal interaction and character building.

2) Integration of Islamic Values in Digital Distribution

An important finding from this study is the importance of integrating Islamic values into every aspect of digital distribution. Holilah & Hajjaj (2024) emphasise that technology should be a means (wasilah) to strengthen Islamic values, not an end goal. Principles such as trustworthiness in data management, fairness in access, and excellence in service should be the foundation of the digital distribution system.

3) Digital Divide as a Major Challenge

The digital divide is the most significant challenge, with 42% of madrasahs still experiencing limited access. This phenomenon is in line with the findings of Ahariani et al. (2025), which show that disparities in technology access can exacerbate the gap in education quality between regions.

Effective mitigation strategies must involve multi-level interventions:

- Macro Level: National policies on digital infrastructure equity
- Meso Level: Regional madrasah collaboration programmes
- Micro Level: Local innovations in the use of simple technologies

4) Transformation of the Role of Educators

The implementation of information technology has changed the role of teachers from 'instructors' to 'digital learning facilitators'. Data shows that 35% of teachers still find it difficult to adapt to this new role. Continuous professional development programmes are needed that focus not only on technical skills but also on digital pedagogy in line with Islamic values.

5) Sustainable Digital Islamic Education Service Distribution Model

Based on the research findings, a conceptual model of 'Sustainable Digital Islamic Education Service Distribution' is proposed with the following components:

Dimension 1 Technology includes: Robust digital infrastructure, Adaptive learning platform, Integrated data security system.

Dimension 2 Pedagogy includes: Hybrid learning methods, Multimedia-based content, AI-based formative assessment.

The three dimensions of Islamic values include: Integration of morals in each module, Online spiritual mentoring, Ukhuwah-based learning community.

The 4 Dimensions of Management include: Transformative leadership, Monitoring and evaluation system, Continuous improvement.

The 5 Dimensions of the Ecosystem include: Multi-stakeholder collaboration, Digital madrasah network, Systemic policy support.

6) Recommendations

Recommendations for Madrasahs

1. Gradual Infrastructure Development
 - Priority: internet connection and basic LMS
 - Timeline: 1-2 years
 - Budget: adjusted according to capacity
2. Continuous Human Resource Training
 - In-house training programme every semester
 - Digital competency certification
 - Digital learning practitioner community
3. Development of Islamic-based Digital Content
 - Production of multimedia materials
 - Curation of digital learning resources
 - Development of e-books and learning videos

Recommendations for the Government

1. Digital Access Equity Policy
 - Internet subsidies for madrasahs in 3T areas
 - Learning device grant programmes
 - Incentives for innovative madrasahs
2. Standardisation of Madrasah Digital Platforms
 - Development of a national digital madrasah platform
 - Data and information system integration
 - Integrated data security protocols
3. Digital Transformation Acceleration Program
 - Intensive mentoring for madrasahs
 - Digital learning innovation competition
 - Awards for the best digital madrasahs

Recommendations for Further Research

1. Longitudinal study of the long-term impact of digital learning on madrasah student character
2. Comparative research on the effectiveness of various LMS platforms for the madrasah context
3. Cost-benefit analysis of information technology implementation in madrasahs at various levels
4. Study on the most effective hybrid learning model for Islamic education

IV. CONCLUSION

Innovation in the distribution of educational services through information technology has proven effective in improving access to Islamic education in state madrasahs. This study identifies three distribution models that can be applied: (1) Integrated Digital Learning Management System, (2) Islamic Values-Based Hybrid Learning, and (3) Collaborative Madrasah Digital Ecosystem.

The implementation of information technology has shown significant positive impacts:

- Increased access to education by up to 73%
- Learning effectiveness increased by 68%
- Geographical reach expanded by 89%
- Administrative efficiency increased by 79%

However, the challenges of the digital divide (42%), teacher digital literacy (35%), and infrastructure limitations (38%) still need to be addressed through comprehensive strategies involving infrastructure equalisation, human resource capacity building, and multi-stakeholder collaboration.

The key to the successful distribution of digital education services in madrasahs is the harmonious integration of technological innovation with Islamic values. Technology must be a means to strengthen the mission of Islamic education, which is to create a generation that is intellectually intelligent, spiritually mature, and noble in character.

The 'Sustainable Digital Islamic Education Service Distribution' model proposed in this study offers a holistic framework that integrates the dimensions of technology, pedagogy, Islamic values, management, and ecosystem. With the shared commitment of all Islamic education stakeholders, the digital transformation of state madrasahs can become a force for expanding access to quality education for all levels of society.

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