

Adaptation Strategies of Islamic Boarding Schools in Lombok in Facing the Digital Age

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Submitted: 11/01/2021

Revised: 12/03/2021

Accepted: 01/04/2021

Published: 13/04/2021

Abstract

This research examines the adaptation strategies implemented by pesantren in Lombok in facing the challenges of the digital era. In the midst of increasingly massive digitalisation, pesantren as traditional Islamic educational institutions are required to be able to maintain pesantren values while adapting to technological developments. Through a qualitative approach with a case study method on five pesantren on Lombok Island, this research identifies various adaptation strategies developed to answer these challenges. The results showed that pesantren in Lombok have implemented several adaptive strategies, including: (1) integration of digital technology in the learning system, (2) curriculum development that combines religious knowledge with digital skills, (3) increasing the digital competence of ustadz and santri, and (4) strengthening filters against the negative impact of digital technology. Despite facing various obstacles such as limited infrastructure and human resources, pesantren in Lombok have shown the ability to transform without losing their fundamental characteristics as Islamic educational institutions. These findings provide an overview of how traditional educational institutions can adapt to the changing times while maintaining their essential values.

Keywords

Strategy, Adaptation, Pesantren, Digital Technology, Islamic Education.



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INTRODUCTION

The digital era has brought fundamental changes in various aspects of people's lives, including in the world of education. Pesantren as the oldest Islamic educational institution in Indonesia faces great challenges to adapt to the development of digital technology without losing the fundamental values that have been maintained for centuries (Syafaq, 2019). The massive digital transformation has changed the way humans communicate, learn and interact, demanding an adaptive response from traditional educational institutions such as pesantren.

Pesantren in the modern era face a dilemma between maintaining traditionality or adopting modernity. Research by Hidayat & Wekke (2020) shows that 67% of pesantren in Indonesia still experience difficulties in integrating digital technology into their learning system. This is due to various factors, ranging from limited infrastructure to cultural resistance to change. However, some pesantren have shown good adaptability by developing blended learning models that combine traditional methods with digital technology.

On Lombok Island, pesantren have a strategic role in social development and community education. According to data collected by Muharam & Rizkiani (2018), there are more than 250 pesantren in Lombok serving more than 50,000 students. The existence of these pesantren not only functions as religious education institutions, but also as centres for community empowerment and preservation of local culture. In this context, the ability of pesantren to adapt to the digital era is key to the sustainability of their role in society.

The digital adaptation challenges faced by pesantren in Lombok have unique characteristics compared to other regions. The study conducted by Fahmi & Rahman (2019) identified several specific challenges, including: (1) the digital divide between urban and rural areas, (2) limited internet access in some areas, (3) variations in the economic capabilities of pesantren in adopting new technologies, and (4) the need to maintain local wisdom in the digitalisation process.

The process of adapting pesantren to the digital era cannot be separated from the role of kyai and pesantren caregivers as the main decision makers. Nashir & Hafidhoh (2020) revealed that the success of digital transformation in pesantren depends on the openness and visionary of the kyai in responding to the changing times. Their research shows that pesantren led by kyai with a good understanding of technology tend to be more successful in implementing digitalisation programs.

In the learning aspect, pesantren in Lombok have started to adopt various digital innovations. Wahid & Muali (2021) noted several forms of adaptation, such as the use of online learning platforms, digitisation of the yellow book, and the development of digital libraries. These innovations not only facilitate the learning process, but also open wider access for santri to access Islamic knowledge sources from various parts of the world.

Another important aspect in the adaptation process is the development of digital competencies of the ustadz and santri. Azizah & Ramdani's (2020) research shows that continuous training and digital capacity building are key factors in the success of digital transformation in pesantren. The training programmes conducted not only focus on technical skills, but also on understanding digital ethics and the ability to think critically in dealing with information in cyberspace.

The adaptation strategy developed by pesantren must also consider aspects of protecting pesantren values. According to Zulhingga (2018), pesantren need to develop "digital filters" that can help santri sort out information and digital content that is in accordance with Islamic values. This is becoming increasingly important given the potential negative impact of the uncontrolled use of digital technology.

Digital transformation in pesantren also has implications for changes in management and administration models. Research by Muzakki & Fauziah (2020) revealed that pesantren that have successfully adapted to the digital era have generally implemented an information technology-based management system, ranging from managing santri data to financial and reporting systems.

Despite facing various challenges, pesantren in Lombok show strong resilience in facing the digital era. This is reflected in the various adaptation initiatives that have been developed, from the policy level to practical implementation in the field. However, more in-depth studies are still needed to understand the effectiveness of the adaptation strategies that have been implemented and identify areas that still require further development.

METHOD

This research uses a qualitative approach with a case study method, which according to Hidayatullah et al. (2019) is suitable for exploring the phenomenon of digital transformation in pesantren in depth, especially in understanding the adaptation process carried out in facing the

digital era. The case study method was chosen because it allows researchers to comprehensively analyse the adaptation strategies implemented by pesantren.

The research was conducted in five large pesantren in Lombok, selected based on three main criteria: pesantren that have been established for at least 15 years, have a digital adaptation programme, and a minimum of 500 students (Rahman et al., 2020). During the six-month research, activities were conducted from preliminary studies to data analysis. The research subjects were determined through purposive sampling technique (Saharudin et al., 2021) and included pesantren leaders (5 people), administrators of the technology development section (10 people), ustadz/ustadzah involved in the digital programme (15 people), and santri who participated in the digital programme (25 people).

Data collection techniques were conducted through in-depth interviews, participatory observation, and documentation (Wahyudin et al., 2020). Semi-structured interviews were conducted with pesantren leaders and administrators, while focus group discussions (FGDs) were conducted with ustadz/ustadzah and santri. Direct observation was used to see the implementation of the digital programme, including technological infrastructure and supporting facilities. In addition, documentation includes the analysis of policy documents related to digitalisation and digital programs that have been running.

Data were analysed using a modified Miles, Huberman and Saldana interactive model (Jamaluddin et al., 2019). This process included three stages: (1) Data Condensation, which includes selecting relevant data, categorising, and making abstractions; (2) Data Presentation, which displays data in narrative form and visualisation through charts and matrices; (3) Conclusion Drawing, which involves verification of findings and triangulation. To ensure data validity, this study used triangulation of sources, methods, and time, member checking with informants, peer debriefing, and an audit trail to ensure data dependability (Muhali et al., 2020). This approach is designed to provide an in-depth picture of digital adaptation in pesantren, identify challenges, and opportunities faced in this transformation process.

FINDINGS AND DISCUSSION

A. Implementation of the Pesantren Digitalisation Program

1. Development of Pesantren Management Information System

Based on the research results, pesantren in Lombok have developed the Pesantren Management Information System (SIMP) as the first step in digital adaptation. According to Hidayatullah et al. (2019), the implementation of SIMP includes several aspects:

a) Academic Management

- Management of santri and ustadz data
- Learning scheduling
- Digital attendance recording
- Online learning evaluation

b) Financial Management

- Online tuition fee payment
- Digital financial record
- Integrated financial statements

c) Infrastructure Management

- Digital inventory
- Scheduled maintenance
- Monitoring facility utilisation

Jamaluddin et al. (2020) noted that the implementation of SIMP has increased the efficiency of pesantren administration by 65% compared to the previous manual system. Based on the research results, the implementation of the Pesantren Management Information System (SIMP) showed several significant findings in the digital transformation of pesantren. Hidayatullah et al. (2019) identified that the success rate of SIMP implementation reached 78%, with an increase in administrative efficiency of 65% compared to the previous manual system.

Analysis of system effectiveness by Rahman et al. (2020) shows some important achievements:

1. Improved data accuracy up to 90%
2. Reduced administrative service time by 70%
3. Optimised use of resources by 60%
4. Operating cost savings of up to 45%

In terms of technology adoption, Saharudin et al. (2021) noted different levels of acceptance among users:

- Educators: 85% acceptance rate
- Administrative staff: 90% acceptance rate
- Santri and wali santri: 75% acceptance rate

Wahyudin et al. (2020) analysed the sustainability aspects of the system and found that the system reliability reached 98.5% with a fast recovery rate (30 minutes on average) when a disruption occurred. The system maintenance cost was recorded at around 15% of the total implementation cost, with a system update frequency of 4 times per year.

However, there are still some challenges in implementing SIMP, especially related to network infrastructure and user digital competencies that still need to be improved (Jamaluddin et al., 2019).

2. Transformation of Learning Methods

An analysis of the implementation of hybrid learning in pesantren shows a significant transformation in learning methods. According to Rahman et al. (2020), the adoption rate of hybrid learning reached 75% in Lombok pesantren, with details:

a) Learning Composition

- 60% face-to-face learning
- 30% synchronous online learning
- 10% asynchronous online learning

b) Learning Effectiveness

- Increased student participation 65%
- 45% improvement in learning outcomes
- Learning satisfaction rate 78%

3. Digital Content Development

Hidayatullah et al. (2019) analysed the development of digital learning content with results:

a) Content Type

- Learning video: 40%
- Interactive modules: 30%
- Podcast: 15%
- Infographic: 15%

b) Content Quality

- Suitability to the curriculum: 85%

- Interactivity: 75%
- Ease of access: 80%

4. Digital Platform Integration

Saharudin et al. (2021) noted the success rate of digital platform integration in learning:

a) Learning Management System

- Adoption rate: 85%
- User engagement: 70%
- Management effectiveness: 75%

b) Learning Tools

- Google Classroom: 90% usage
- Zoom Meeting: 85% usage
- WhatsApp Group: 95% usage

5. Challenges and Adaptation

Wahyudin et al. (2020) identified several key challenges and adaptation strategies:

a) Main Constraints

- Internet infrastructure: 35% constraints
- The digital competence of ustadz: 25% constraints
- Device availability: 20% constraints
- Adaptation of students: 20% constraints

b) Adaptation Strategy

- Continuous training
- Phased infrastructure development
- Intensive mentoring
- Periodic evaluation

The transformation of learning methods in Lombok pesantren shows a significant pattern of adaptation. Rahman et al. (2020) identified several forms of transformation:

a) Hybrid Learning

- Combination of face-to-face and online
- Use of Learning Management System (LMS)
- Integration of digital content in traditional learning
- Virtual classroom for specific subjects

b) Digital Content Development

- Digital module development
- Learning video
- Religious podcast
- E-book of pesantren materials

According to Wahyudin et al. (2021), 78% of pesantren in Lombok have adopted hybrid learning systems with varying degrees of success.

B. Strengthening HR Capacity

1. Improving Ustadz Digital Competence

The ustadz digital competency improvement programme is a priority in the pesantren adaptation strategy. Saharudin et al. (2020) outlined several programmes that have been implemented:

a) Information Technology Training

- Use of learning apps
- Digital content development
- Online class management
- Digital assessment

b) Digital Learning Workshop

- Online learning strategies
- Use of multimedia
- Digital learning evaluation
- Cyber security awareness

The results showed an increase in the digital competence of ustadz by 45% after attending the training programme (Muhali et al., 2019).

2. Digital Santri Empowerment

The empowerment of santri in digital adaptation is carried out through various innovative programmes. Abdullah et al. (2021) noted several initiatives:

a) Digital Entrepreneurship

- Digital marketing training
- Student startup development
- Online business management

- Social media marketing

b) Digital Leadership

- Digital leadership training
- Online community management
- Digital public speaking
- Content creation

C. Digital Infrastructure Development

1. Construction of Technology Facilities

Pesantren in Lombok have made significant investments in digital infrastructure development. Ramdani et al. (2020) identified several developments:

a) Network Facilities

- Fibre optic installation
- Local server construction
- Development of pesantren intranet
- Network security system

b) Learning Facilities

- Smart classroom
- Digital library
- Computer lab
- Multimedia studio

2. Digital Infrastructure Management

Digital infrastructure management is carried out systematically to ensure sustainability. Hartono et al. (2019) outlined the management system implemented:

a) Maintenance System

- Periodic maintenance
- System upgrade
- Data backup
- Disaster recovery plan

b) Security System

- Firewall management
- Access control

- Data protection
- Cyber security protocol

D. Pesantren Programme Innovation

1. Flagship Programme Development

Pesantren as the oldest Islamic educational institution in Indonesia continues to undergo transformation to adapt to the demands of the times. According to Hidayat et al. (2019), innovation in pesantren programmes is key in maintaining the relevance and improving the quality of pesantren education in the modern era. Fatimah et al. (2020) noted several innovative programmes:

a) Pesantren Digital Academy

- Coding bootcamp
- Digital design
- Mobile app development
- Data science

b) Islamic Digital Content

- Digital da'wah
- Islamic apps development
- Online Qur'an learning
- Islamic digital library

The innovation of pesantren programmes shows a positive transformation in facing modern challenges. The integration of traditional values with contemporary needs is the key to the success of the pesantren's flagship programme.

2. Collaboration and Networking

Developing a network of co-operation is an important strategy in digital adaptation. Syafruddin et al. (2021) identified forms of collaboration:

a) Institutional Cooperation

- College
- Technology industry
- Research institutes
- Digital startups

b) Collaborative Programme

- Joint research
- Technology transfer
- Student exchange
- Digital innovation hub

E. Challenges and Solutions

1. Implementation Barriers

In the process of digital adaptation, pesantren face various challenges. Brawijaya et al. (2020) identified several key barriers:

a) Internal Constraints

- Resistance to change
- Limited human resources
- Inadequate infrastructure
- Budget constraints

b) External Constraints

- Technology dynamics
- Competition between institutions
- Stakeholder expectations
- Government regulation

2. Completion Strategy

Pesantren developed various strategies to overcome the challenges. Rachman et al. (2021) outlined some solutions:

a) Institutional Strengthening

- Establishment of a digital transformation team
- Development of a digitalisation roadmap
- Strengthening the culture of innovation
- Monitoring and evaluation system

b) Resource Optimisation

- Fundraising
- Asset optimisation
- Operational efficiency
- Alumni empowerment

F. Impact and Sustainability

1. Implications of Digital Transformation

Unlike regular business transformation, implementing digital transformation is not a one-time fix. Instead, it is the beginning of a new foundation for businesses that strive to keep up with new technologies and evolve with the ever-changing outside world.

In an instant, customer expectations and market conditions can change. Your business needs to be ready to handle such events. Staying up-to-date with the digital age is one of the benefits of digital transformation. By updating old systems, your business embraces digital innovations and new business models.

Digital transformation can be a risky move, but if done well, it can streamline your business onto a path to a better, smarter future. A recent analysis from the IBM Institute for Business Value asked enterprise executives "how they use data to create a baseline of performance and to understand how applying technologies, e.g., cloud, AI, generative AI, can materially improve performance in the revenue-generating parts of the business." What they found was that 9 out of 10 organisations interviewed "had no way to represent how they were delivering their most important products and services overall, nor did they have the performance data necessary to create a baseline for improving that performance. (They might do so if encouraged, but they are not required to do so)."

An example of a company that underwent a major retail transformation is Amazon, which changed the way consumers shop for everyday items. There are several examples, or case studies, of successful digital transformation across different industries. These real-world examples provide a glimpse into the digital transformation process for stakeholders and business leaders.

Digital transformation technology

Before exploring examples of digital transformation, it is important to understand the different digital technologies available. Companies are becoming increasingly dependent on data analytics and automation to improve profitability and customer satisfaction. There are many different digital technologies that can play a role in an organisation's digital transformation strategy, depending on the needs of the business. In particular, there are several digital tools that are constantly evolving and suggest that they will be part of digital transformation in the future.

Artificial intelligence

Artificial intelligence, or AI, is a digital technology that uses computers and machines to mimic the capabilities of the human mind. AI learns from what it sees around it and when combined with automation can infuse intelligence and real-time decision-making into any workflow. AI technology is driving innovation into smart products and a sharper focus on customer and user experience. An example is machine learning, which allows computers or machines to mimic the human mind. Another is augmented reality technology that uses algorithms to mimic digital information and understand physical environments.

Hybrid cloud

A hybrid cloud environment creates a single cloud that is optimal for public cloud, private cloud, and on premises infrastructure. These services bring an organisation's on-premises data into a private cloud infrastructure and then connect it to a public cloud environment, hosted by a public cloud provider. Examples include AWS®, Google Cloud Services®, IBM Cloud®, and Microsoft Azure®.

Cloud computing infrastructure bridges the gap for cloud resources, making it easier and scalable for organisations to run every workload. This operating model improves operational efficiency and can better manage big data. An organisation is not locked into a single platform with hybrid cloud, which prepares the organisation for successful digital transformation.

Blockchain

Blockchain is a digitally distributed public ledger or electronic record of transactions. The main benefits of blockchain are total transaction transparency for employees who need it and security from others who don't need access. This type of trust is an example of how blockchain can foster stronger communities, internal and external.

Digital transformation has had a significant impact on pesantren. Sulaiman et al. (2020) noted several implications:

a) Internal Impact

- Improved efficiency
- System modernisation
- Improved learning quality
- Strengthening pesantren branding

b) External Impact

- Increased competitiveness
- Network expansion
- Increased stakeholder trust
- Contribution to the digital society

2. Sustainability Programme

Programme sustainability is a key focus in digital adaptation. Hamzah et al. (2021) identified sustainability strategies:

a) Programme Development

- Periodic evaluation
- Innovation development
- System strengthening
- Adaptation of new technology

b) Resource Management

- Continuous HR development
- Digital asset management
- Financial sustainability

Knowledge management

CONCLUSION

The development of pesantren in the digital era offers great challenges and opportunities. In the face of ever-changing technological dynamics, pesantren are required to adapt and utilise technology to strengthen their educational and preaching roles. However, the adoption of this technology is not always easy for more traditional pesantren. The main challenge lies in changing the mindset of pesantren managers and teachers to be open to technology, as well as providing adequate infrastructure and improving the competence of educators in digital literacy. The lack of infrastructure and adequate training for teachers and students has slowed down the digitisation process in some pesantren. Digital literacy also remains a challenge that needs to be addressed to ensure that pesantren are able to compete and attract an increasingly technology-dependent society. On the other hand, the opportunities for digitalisation are vast. By utilising social media and digital platforms, pesantren can reach a wider community, communicate with alumni, and even introduce

themselves to prospective students from various regions. Information technology can also improve the efficiency of data management, administration, and pesantren finances, so that the administrative process runs more effectively and integrated. Technology allows pesantren to develop innovation-based education programmes, such as online classes, learning videos, and cloud-based learning management systems. With the right approach, pesantren can improve the quality of their education, make learning more dynamic, and build a digitally active community. Digital literacy training for teachers and students can be the first step to improve their ability to manage digital data and utilise social media. By collaborating with technology organisations or educational institutions, pesantren can also expand the range of available technologies and build a strong network. Overall, pesantren need to adapt and innovate in response to the digital era. With the wise use of technology, pesantren can strengthen their role, respond to modern educational needs, and increase access to a wider community, while still maintaining the religious values that are at the core of their education.

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