



Digital Transformation Management in Madrasahs: Leadership Strategies, Human Resource Readiness, and Educational Quality Improvement

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Abstract

This study aims to analyze digital transformation management at Madrasah Tsanawiyah Assalimiyah, Purbolinggo, East Lampung, focusing on leadership strategies, human resource readiness, and educational quality improvement. This study employed a qualitative approach with a case study design, using interviews, observations, and documentation for data collection. The findings indicate that digital transformation is supported by the leadership of the madrasah principal through efforts to improve teachers' digital competencies, develop an adaptive work culture, and conduct regular monitoring. Human resource readiness is a crucial factor in the success of digital transformation, although several challenges remain, including differences in digital competencies, limited infrastructure, and adaptation to organizational change. Digital transformation contributes to improving administrative effectiveness, the learning process, communication, and teacher professionalism.



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I. INTRODUCTION

The development of digital technology has brought significant changes to various aspects of life, including education. Digital transformation in education is no longer limited to the use of technological devices as learning media but has evolved into a process of change encompassing institutional governance, administrative systems, human resource management, learning processes, decision-making, and mechanisms for improving educational quality. These changes require educational institutions to possess strong adaptive capabilities so that the use of technology can generate a tangible impact on the effectiveness and quality of educational provision. UNESCO emphasizes that technology has the potential to support improvements in educational quality, efficiency, and equity; however, these benefits do not automatically emerge merely because educational institutions possess or use technology[1].

Digital transformation is essentially an organizational change process involving the integration of digital technology into various operational and strategic aspects of an

institution. In education, this transformation includes changes in the ways institutions manage information, communicate, develop educator competencies, conduct learning activities, perform evaluations, and make data-driven decisions. Therefore, digital transformation needs to be positioned as part of an institution's management strategy rather than merely as a technology procurement program. When technology is understood only as an additional tool without corresponding changes in organizational systems and culture, digitalization may remain limited to the use of devices or applications without producing substantive improvements in educational quality[2],[3]

This condition is particularly relevant to madrasahs as one of the forms of Islamic educational institutions in Indonesia. Madrasahs are required to keep pace with technological developments while maintaining the educational character oriented toward Islamic values. Accordingly, digital transformation in madrasahs is not only concerned with the ability to use technology in the learning process but also with how technology is managed to strengthen institutional governance, improve teacher professionalism, enhance the quality of educational services, and support the achievement of Islamic educational objectives. In this context, madrasah digitalization needs to be directed toward the development of adaptive and innovative educational organizations capable of providing quality educational services.[4],[5]

The urgency of digital transformation has also increased in line with changes in student characteristics and the social environment. Today's students live in an environment that is increasingly connected to digital technology, requiring educational institutions to adapt their management and learning strategies. Nevertheless, the use of technology in education does not necessarily result in an immediate improvement in quality. The Global Education Monitoring Report indicates that the impact of technology on education is strongly influenced by the context of its use, teacher readiness, infrastructure availability, governance, and the suitability of technology to educational needs [1]. The report further emphasizes that attention to technology should not shift the focus away from teachers, learning processes, and students' needs.

These issues demonstrate that the success of digital transformation in madrasahs is not determined solely by the availability of hardware, internet networks, applications, or digital platforms. Human factors constitute a critical component. Teachers and educational staff are the primary human resources responsible for translating digital transformation policies into organizational and learning practices. If human resources do not possess adequate competencies and readiness, technological investments made by educational institutions may not be utilized optimally. Therefore, human resource readiness is one of the fundamental aspects of digital transformation management in education [2],[6],[7].

Human resource readiness for digital transformation is not limited to technical skills in operating technological devices. Such readiness encompasses an understanding of the benefits of technology, willingness to accept change, adaptability, digital competence, confidence in using technology, and the ability to integrate technology into work and learning activities. Latifah et al.[2], through their study of digital transformation readiness in education, demonstrate that digital transformation readiness is closely associated with the preparedness of institutions and educators to respond to technological change. Therefore, digital transformation programs need to be accompanied by systematic development of human resource competencies and readiness.[6][7][8]

In the context of madrasahs, human resource readiness becomes increasingly important because teachers are required not only to possess pedagogical and professional competencies but also to utilize technology to support learning processes and educational management. The rapid pace of technological change requires teachers' digital competencies to be developed continuously. One-time training is insufficient to guarantee that teachers can keep pace with technological developments. Therefore, madrasah

management needs to establish a professional development system that provides teachers with training, mentoring, collaboration, and opportunities to develop innovations continuously[9][6][10].

In addition to human resource readiness, leadership is a strategic factor in determining the success of digital transformation in madrasahs. The head of a madrasah plays an important role in formulating a vision for change, determining technology development priorities, allocating resources, building an organizational culture, providing support to teachers, and ensuring that digital transformation is implemented in accordance with institutional objectives. Leadership in the context of digital transformation requires not only administrative competence but also the ability to lead organizational change in a dynamic environment.[11]

AlAjmi found that digital leadership by school principals has a positive influence on teachers' technology integration. The study demonstrates that visionary leadership can help maximize digital resources and encourage technology integration within the school environment. These findings indicate that the mere availability of technology is insufficient; leadership is required to provide direction, support, and strategies so that technology can be effectively utilized in educational practices [11].

Similar findings have also been reported in the Indonesian educational context. Timan et al.[12] found that several dimensions of digital leadership, including visionary leadership, digital-age learning culture, excellence in professional practice, systemic improvement, and digital citizenship, are directly related to teacher[12][9]

II. RESEARCH METHODS

This study employed a qualitative approach with a case study design. The qualitative approach was selected because the study aimed to obtain an in-depth understanding of the management process of digital transformation in a madrasah, particularly in relation to leadership strategies, human resource readiness, digital technology implementation, and its contribution to educational quality improvement. The case study design was employed because the research focused on the phenomenon of digital transformation within a specific institutional context in a natural and comprehensive manner, enabling the researchers to understand the interrelationships among policies, leadership practices, human resource readiness, organizational culture, and quality improvement processes. The qualitative approach enabled the researchers to obtain data concerning the experiences, perspectives, actions, and practices of educational actors in implementing digital transformation. Thus, the study did not merely describe forms of technology utilization but also examined how the transformation process was planned, implemented, experienced, and evaluated by the madrasah.

The research was conducted at Madrasah Tsanawiyah Assalimiyah, Purbolinggo, East Lampung, which was purposively selected based on the consideration that the madrasah had implemented or was developing digital transformation in educational management. The site selection was based on several criteria: (1) the madrasah had utilized digital technology in managing learning administration; (2) there were leadership policies or programs related to digital transformation; (3) teachers and educational staff were involved in implementing digital technology; and (4) the madrasah had quality improvement programs utilizing technology or information systems.

The research participants were selected purposively based on their involvement in and knowledge of the madrasah's digital transformation process. The main informants consisted of the madrasah principal, vice principal, teachers, and educational staff. When necessary, students or parents could also be involved as supporting informants to obtain perspectives regarding changes in the quality of educational services following the implementation of digital transformation. Data were collected through in-depth interviews,

observation, and documentation. These three techniques were employed in an integrated manner to obtain comprehensive data and enhance the credibility of the research findings. First, in-depth interviews were conducted with the madrasah principal and relevant informants to obtain information concerning policies, leadership strategies, digital transformation planning, human resource competency development, implementation challenges, and efforts to improve educational quality. The interviews were semi-structured, allowing the researchers to use an interview guide while providing informants with sufficient opportunities to explain their experiences and perspectives broadly.

Second, observation was conducted on activities related to the implementation of digital transformation in the madrasah. The observations focused on the use of technology in administrative activities, learning, institutional communication, data management, and other activities indicating changes in madrasah governance. Direct observation was conducted to examine the consistency between the policies described by informants and actual practices in the field. Third, documentation was used to obtain supporting data in the form of digital transformation policy documents, madrasah work programs, teacher competency development records, training documentation, information systems used by the madrasah, evaluation reports, and other documents relevant to educational quality improvement.

III. RESULTS

1. Overview Of Digital Transformation at MTs Assalimiyah, Purbolinggo, East Lampung.

The research findings indicate that digital transformation at MTs Assalimiyah, Purbolinggo, East Lampung, has begun to be directed toward the development of educational governance and services. Technology utilization is not limited to learning activities but has also begun to support administrative activities, communication, information management, and coordination among the madrasah principal, teachers, educational staff, students, and parents. This transformation indicates a shift from a fully conventional educational management pattern toward a management model that utilizes digital technology as a supporting instrument. However, the level of utilization is not yet uniform across all areas. Some activities have adopted technology more intensively, whereas other activities continue to combine digital and conventional systems.[3]

This condition indicates that digital transformation in madrasahs is a gradual process. Transformation does not occur merely through the provision of technological devices but also requires changes in work patterns, human resource competencies, organizational culture, and the way leaders direct the institution. This finding is consistent with Sheng's [1] view that digital transformation in education develops through several stages, beginning with local technology implementation, institutional integration, work-process reorganization, organizational change, and continuous evaluation. Therefore, digital transformation at MTs Assalimiyah can be understood as an ongoing management change process. The main focus is not merely on technology utilization but on how technology is gradually integrated into the madrasah's work system.[2]

2. Leadership Strategies of the Madrasah Principal in Digital Transformation

The findings indicate that the leadership of the madrasah principal is an important factor in directing the digital transformation process. The principal plays a role in determining policy directions, encouraging teachers and educational staff, and developing awareness that technology utilization is an essential requirement in contemporary educational management. The identified leadership strategies can be grouped into several forms.

a. Building Awareness of the Importance of Digital Transformation

The madrasah principal seeks to develop an understanding that technology is not merely an additional facility but an essential component of educational management. Teachers are encouraged to begin using various digital devices and applications appropriate to their work and learning needs.

This approach indicates that change begins with awareness and acceptance of change. Digital transformation will not progress effectively if members of the madrasah perceive technology as an additional burden. Therefore, the principal plays an important role in developing an understanding of the benefits of technology for work effectiveness and improved educational service quality. This finding is consistent with Sheng [1], who identifies awareness of innovation and acceptance of change as important stages in educational digital transformation.

b. Encouraging Teachers to Improve Their Digital Competencies

The next strategy involves encouraging teachers to improve their ability to utilize technology. The principal provides opportunities and support for teachers to participate in training activities, learn to use educational applications, and share experiences with fellow teachers.

This effort is important because the success of digital transformation is strongly determined by human resource capabilities. The principal should not merely provide facilities but must also ensure that teachers possess the competencies required to utilize those facilities effectively.

Research by Bahasyim and Hamzah [9] shows that madrasah principals play an important role in developing teachers' digital competencies through professional development, mentoring, and the creation of an environment that supports digital adaptation.

c. Developing a Technology-Adaptive Work Culture

The findings also indicate efforts to develop a work culture that is more open to technology utilization. Teachers are given opportunities to experiment with various digital approaches according to learning and administrative needs.

Organizational culture is important because digital transformation is fundamentally not merely a change in technological devices but also a change in the way an organization works. The madrasah principal acts as a change leader by creating an environment that enables teachers to learn, experiment, and adapt.

This finding is consistent with research on educational digital transformation, which indicates that technological change needs to be accompanied by organizational and work-culture changes to ensure sustainable transformation.[2]

d. Monitoring Digital Implementation

The madrasah principal also performs a supervisory function regarding technology utilization. Monitoring is conducted to ensure that technology use remains connected to educational needs rather than becoming merely an administrative activity.

In this context, the madrasah principal acts as a change leader, rather than merely an administrator. Digital leadership requires the ability to connect technology with organizational objectives and educational quality.

Research on digital leadership practices among school principals in developing countries demonstrates that conventional leadership alone is insufficient to support digital change. Leaders require specific knowledge and strategies to guide schools toward becoming digital learning environments [12].

3. Human Resource Readiness in Supporting Digital Transformation

The research findings indicate that human resource readiness at MTs Assalimiyah is one of the factors determining the success of digital transformation. Such readiness is reflected in teachers' and educational staff's ability to use digital devices, accept change, and adapt their work to technological developments. However, human resource readiness is not uniform. Differences exist in individual levels of digital competence. Some teachers adapt relatively quickly to technology, whereas others still require mentoring and habituation. These differences indicate that digital transformation requires a continuous human resource development strategy. Teachers cannot be assumed to possess the same level of digital competence merely because they already use technological devices.

Turrohmah and Suryanto [4] found that teachers may possess adequate mental readiness and knowledge to face digital transformation while still experiencing difficulties in adapting to various digital devices, media, and platforms. Therefore, digital literacy training and peer learning are important strategies [13]. Based on these findings, human resource readiness at MTs Assalimiyah can be viewed through several aspects. First, technical readiness, referring to teachers' ability to use digital devices and applications to support their work. Second, psychological readiness, referring to their willingness to accept change and move away from some established work patterns. Third, pedagogical readiness, referring to the ability to connect technology utilization with learning objectives. Fourth, learning readiness, referring to teachers' willingness to continuously develop their competencies in response to technological changes. Thus, human resource readiness should not be measured solely by the ability to operate technology but also by the ability to use technology appropriately and in accordance with educational objectives.

4. Implementation of Digital Transformation in Madrasah Management

The research findings indicate that the implementation of digital transformation at MTs Assalimiyah occurs in several major areas, namely administration, communication, learning, and information management. In the administrative area, technology helps accelerate the management and storage of information. The use of digital documents and systems enables data to be accessed and shared more easily by relevant stakeholders. In communication, digital technology facilitates the madrasah in delivering information to teachers, students, and parents. Communication that previously required face-to-face meetings can now be conducted more quickly through digital media. In learning, teachers have begun to utilize technology to provide learning resources, deliver instructional materials, assign tasks, and support learning interactions. The level of technology utilization may differ among teachers depending on their competencies, experience, and subject characteristics.[14]

Meanwhile, in information management, technology provides opportunities for the madrasah to manage data more systematically. This is important because educational decision-making increasingly requires accurate and accessible data. These findings are consistent with research by Mahsusi et al.[15] on digital transformation in madrasah management. Their study indicates that digital transformation can contribute to administrative efficiency, curriculum development, learning implementation, and evaluation systems.

5. The Impact of Digital Transformation on Educational Quality

The findings indicate that digital technology utilization contributes in several ways to improving the quality of educational services at MTs Assalimiyah.

a. Improving Administrative Effectiveness

Technology utilization helps reduce manually performed administrative tasks. Data management and information dissemination can be conducted more quickly, allowing time and resources to be allocated to other educational activities.

b. Improving Access to Learning Resources

Technology provides teachers and students with opportunities to access more diverse learning resources. Teachers are no longer dependent solely on textbooks but can utilize various digital resources relevant to learning materials.

c. Improving Communication

The use of digital media enables communication among the madrasah, teachers, students, and parents to take place more rapidly. Information regarding academic and non-academic activities can be disseminated more efficiently.[16]

d. Improving Teacher Professionalism

Digital transformation encourages teachers to continuously develop their competencies. Teachers are required to learn new applications, seek digital learning resources, and adjust their teaching strategies to students' characteristics.

e. Strengthening an Innovation Culture

Technology utilization encourages the development of habits of experimenting with new approaches to learning and educational management. In the long term, this condition can contribute to the development of a more adaptive organizational culture.

These findings reinforce the research by Mahsusi et al.[4], which demonstrates that digital transformation can support improvements in madrasah governance through administrative efficiency, learning development, and evaluation systems.

6. Challenges in Madrasah Digital Transformation

Although digital transformation provides various benefits, the findings also indicate that digital transformation at MTs Assalimiyah faces several challenges. First, differences in teachers' digital competencies. Not all teachers possess the same level of ability and experience in utilizing technology. This condition results in differences in the speed of adaptation to digital transformation. Second, limitations in digital infrastructure and facilities can become obstacles. Digital transformation requires devices, internet networks, supporting systems, and continuous maintenance. Third, resistance to change may occur. Some individuals may feel more comfortable with established work patterns. The transition toward digital systems requires time and a process of habituation. Fourth, limitations in continuous competency development remain a challenge. The rapid development of technology means that existing competencies must continually be updated. Fifth, the integration of technology with management systems is not yet optimal. Technology can provide maximum benefits when the various applications and systems used are integrated with organizational objectives rather than operating independently. These findings are consistent with Meredo[6], who identifies four important dimensions of successful digital transformation in schools: leadership and organizational change, teacher competence and digital readiness, technology integration and pedagogical innovation, and sustainability supported by policies and institutional frameworks.

VI. CONCLUSION

Based on the research findings on digital transformation management at MTs Assalimiyah, Purbolinggo, East Lampung, it can be concluded that digital transformation is a management change process that involves not only the utilization of technology but also changes in leadership patterns, human resource readiness, organizational culture, and an orientation toward improving educational quality. Digital transformation in the madrasah takes place gradually through the utilization of technology in administrative

management, communication, learning, and educational information management. The leadership strategy of the madrasah principal plays an important role in directing the digital transformation process. The principal is responsible for building awareness among madrasah stakeholders regarding the importance of technology, providing support to teachers and educational staff, encouraging the development of digital competencies, fostering an adaptive organizational culture, and monitoring technology implementation. Such leadership serves as a driving force for change because the success of digital transformation is determined not only by the availability of technological facilities but also by the leader's ability to direct and manage organizational change.

Human resource readiness is another important factor in the success of digital transformation. Teachers and educational staff demonstrate varying levels of readiness and digital competence; therefore, continuous competency development is required. Human resource readiness encompasses not only technical skills in using digital devices and applications but also the willingness to accept change, adaptability, the ability to integrate technology into learning, and the commitment to continuously learn in response to technological developments. The implementation of digital transformation contributes to improving the effectiveness of madrasah management, particularly in administration, communication, access to learning resources, teacher professional development, and learning innovation. However, digital transformation continues to face several challenges, including differences in human resource digital competencies, limitations in facilities and infrastructure, adaptation to organizational change, and the need for continuous competency development. Therefore, digital transformation needs to be managed as a long-term process that requires continuous evaluation and improvement.

Overall, this study demonstrates that leadership, human resource readiness, technology utilization, and educational quality improvement are interrelated components of digital transformation management in madrasahs. The madrasah principal's leadership provides direction and support for change, human resource readiness serves as the primary foundation for implementation, while technology functions as an instrument for improving management effectiveness and the quality of educational services. Thus, the success of digital transformation at MTs Assalimiyah should not be measured merely by the level of technology utilization but by the extent to which technology supports the development of effective, adaptive, innovative, and quality-oriented madrasah governance. Based on these findings, the madrasah needs to strengthen digital competency development strategies for teachers and educational staff, gradually improve infrastructure support, foster a culture of innovation, and regularly evaluate technology utilization. For madrasah principals, strengthening digital leadership should be directed not only toward administrative aspects but also toward teacher professional development, learning innovation, data-driven decision-making, and improvement of educational service quality. Through these strategies, digital transformation is expected to move beyond digitalization toward sustainable institutional transformation while remaining aligned with the values of Islamic education.

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