

Digital Transformation in Administrative and Learning Management at MTs Muallimin Univa Medan in the Society 5.0 Era

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Abstract

This study aims to analyze the implementation of digital transformation in administrative and learning management at MTs. Muallimin UNIVA Medan in the Society 5.0 era. The research is motivated by the limited study of digital transformation that integrates aspects of administration, learning, human resource readiness, and Islamic education values comprehensively in the madrasah environment. The research uses a descriptive qualitative approach with data collection techniques through interviews, observations, and documentation. The research informants consist of madrasah heads, deputy madrasah heads, teachers, administrative staff, and students who are directly involved in the implementation of education digitalization. The results of the study show that digital transformation at MTs. Muallimin UNIVA Medan has had a positive impact on the quality of education, especially in improving learning effectiveness, administrative efficiency, and digital literacy of students and teachers. The use of digital media, online learning platforms, and the use of EMIS and Madrasah Digital Report Cards help accelerate data management and create more interactive learning. However, the implementation of digital transformation still faces several obstacles, such as limited technology infrastructure, a gap in teachers' digital competencies, and the lack of a comprehensive administrative system. This study concludes that the success of digital transformation requires policy support, readiness of human resources, technological infrastructure, collaborative culture, and integration of Islamic education values so that digitalization can run optimally and sustainably.

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INTRODUCTION

The development of digital technology in the Society 5.0 era has brought significant changes in various aspects of life, including in the education sector. The Society 5.0 era places humans as the center of technological development so that the use of digital technology is directed to improve the quality of life, work effectiveness, and strengthen the capacity of human resources. In the context of education, digital transformation is no longer understood as just the use of technological devices, but has become a strategic need to support the management of administration and learning processes that are more effective, efficient, and adaptive to changing times. The transformation includes digitizing administrative services, using technology-based learning media, utilizing digital platforms, and strengthening digital literacy for

educators and students. Studies show that digital transformation in education plays a role in increasing institutional efficiency, learning innovation, and strengthening technology-based education policies that support the modern education system (Bakti et al., 2025).

These changes require educational institutions to be able to adapt dynamically to information technology developments. Education in the Society 5.0 era is not only oriented towards knowledge transfer, but also emphasizes critical thinking skills, creativity, collaboration, communication, and digital literacy as the main competencies of the 21st century. Therefore, educational institutions are required to develop learning systems that are relevant to the needs of the times through the integration of digital technology in all aspects of education. Digital literacy is one of the important competencies that

educators and students must possess in order to be able to use technology wisely, productively, and responsibly. Research shows that digital literacy not only includes technical abilities in using technological devices, but also includes ethical understanding, information filtering skills, and responsibility in the use of digital media (Judijanto et al., 2024).

From an Islamic perspective, mastery of science and technology is an important part of efforts to develop human quality. Islam places knowledge as a means to improve the human condition and build a better civilization. This is reflected in QS. Al-Mujadilah verse 11 means: "O you who believe! If it is said to you, "Give space in the assemblies," then make room for it, and Allah will certainly give space for you. And when it is said, "Stand up," then stand up, and Allah will surely raise up the believers among you and those who are given knowledge of some degrees. And Allah is Aware of what you do." This verse explains that Allah exalts the status of those who believe and have knowledge. In addition, QS. Al-'Alaq verses 1–5 mean: "(1) Recite in the name of your Lord who created, (2) He has created man from a clot of blood, (3) Read, and your Lord is the Exalted, (4) Who teaches (man) with the pen, (5) He teaches man what he does not know". This verse also emphasizes the importance of reading and learning as the main foundation for the development of science. These values show that the use of technology in education can be understood as a form of actualization of Islamic teachings in developing science and improving the quality of human resources. Thus, digital transformation in Islamic education is not only oriented towards technological modernization, but also remains based on spiritual and moral values.

The application of digital transformation in education has a wide impact on the learning process. The use of digital media, learning applications, and interactive platforms has been proven to increase student involvement in the learning process. Technology allows learning to be more flexible, interactive, and accessible so that learners can have a more engaging and contextual learning experience. Research shows that the use of digital learning media is able to increase students' motivation to learn, creativity, and understanding of learning materials (Gemilang et al., 2025). In addition, the use of technology also supports the creation of student-centered learning so that students are more active in building

knowledge independently.

In addition to learning, digital transformation also affects the management of education administration. Administration that was previously done manually began to shift to a more effective and efficient digital system. Digitization of administration allows data management to be faster, more accurate, transparent, and more accessible. The use of education management information systems can help institutions in the process of data archiving, financial management, academic services, and data-based decision-making. Research shows that the digitalization of educational administration is able to improve the work efficiency and service quality of educational institutions (Damayanti et al., 2025). This is in line with the concept of education administration which emphasizes the importance of structured and professional management of the system in order to achieve optimal educational goals (Siahaan, 2014).

Although digital transformation provides various opportunities to improve the quality of education, its implementation still faces various challenges. Some of the obstacles that are often found include limited technological infrastructure, low digital competence of educators, lack of training, and suboptimal institutional policy support. In addition, not all educational institutions have the same readiness to adopt digital technology, especially in religious-based educational institutions such as madrasas. Research shows that the success of digital transformation is greatly influenced by the readiness of human resources, management support, and the right technology adaptation strategy (Karmilawati et al., 2024). Therefore, digital transformation requires a planned, sustainable process, and supported by all elements of educational institutions.

In the context of Islamic education, digital transformation is not only related to the use of technology, but also related to the integration of Islamic values in the educational process. Islamic education has different characteristics from general educational institutions because it is not only oriented to the academic aspect, but also the formation of the character and spirituality of students. Therefore, the application of digital technology in madrasas needs to pay attention to the balance between mastery of science, the use of technology, and the strengthening of religious values. Previous research shows that the

integration of religious science and science in Islamic education still faces various challenges, especially in the implementation of learning concepts and practices (Lubis et al., 2022). This condition shows that digital transformation in the madrasah environment requires a more comprehensive approach so that technology is not only a tool for modernization, but also supports the creation of education with character.

A lot of research has been done on digital transformation in education, but most of the research focuses more on public schools, colleges, or only highlights one specific aspect, such as digital learning or technology-based administration separately. Previous research also tends to focus on the technical aspects of the use of technology without in-depth examining the readiness of human resources and the integration of Islamic educational values in the implementation of digital transformation. In addition, studies on digital transformation in Islamic educational institutions, especially madrasas, are still relatively limited. This condition shows that there is a research gap, namely there have not been many studies that have examined digital transformation in an integrated manner between administrative and learning aspects in the context of madrasas in the Society 5.0 era.

Based on these conditions, this study has novelty in a study conducted comprehensively on the implementation of digital transformation in the management of administration and learning in madrasas. This research not only analyzes the use of technology in the learning process, but also examines the digitalization of educational administration in an integrated manner. In addition, this study highlights the level of readiness of teachers, education staff, and students in facing digital transformation, as well as analyzing the supporting and inhibiting factors of its implementation. The uniqueness of this research lies in the integration between the perspective of digital transformation, Islamic education management, and the readiness of human resources in facing the challenges of Society 5.0. Thus, this research is expected to be able to make a theoretical and practical contribution to the development of technology-based Islamic education.

This research is important considering that digital transformation has become an unavoidable need in the modern world of education. Madrasah

as an Islamic educational institution is required to be able to adapt to technological developments without abandoning Islamic values that are its main identity. Therefore, the right strategy is needed so that the implementation of digital transformation can run optimally and sustainably. This research focuses on how to implement digital transformation in the management of administration and learning in madrasas, how the readiness of human resources to deal with these changes, and the factors that affect the success of digital transformation in the Society 5.0 era. This research uses a descriptive qualitative approach to gain a deep understanding of the phenomenon of digital transformation in the Islamic education environment, so that the results of the research are expected to be a reference in the development of education digitalization policies and strategies in the future.

METHODS

This study uses a qualitative approach with a descriptive research type to analyze the implementation of digital transformation in administrative and learning management at MTs. Muallimin UNIVA Medan. The research was carried out at MTs. Muallimin UNIVA Medan from January to March 2026. The selection of the research location is based on the consideration that the madrasah has implemented digitalization in several aspects of administration and learning so that it is relevant to the focus of the research. The research informants were selected using the purposive sampling technique, which is based on the consideration that the informants have direct involvement in the implementation of digital transformation in madrasas (Scott, 2021). The informants in this study consisted of the head of the madrasah, the deputy head of the madrasah for curriculum, 2 subject teachers who also served as the deputy head of madrasah field 1 and field 3, 1 administrative staff, and 1 student who actively used digital-based learning media. The research data is in the form of primary data obtained directly from the field and secondary data in the form of administrative documents, digital learning tools, and other supporting archives.

Data collection techniques are carried out through in-depth interviews, observations, and documentation (Nasution, 2023). The interviews were conducted to obtain information related to the implementation of digitalization, the readiness of human resources, as well as supporting and

inhibiting factors for digital transformation. Observations were carried out on administrative activities and technology-based learning processes, while documentation was used to complement research data in the form of digital archives, photos of activities, and administrative tools. Data analysis uses the Miles and Huberman model which includes data reduction, data presentation, and systematic conclusion drawn. To ensure the validity of the data, this study uses source triangulation techniques and triangulation techniques. Source triangulation is carried out by comparing information from madrasah heads, teachers, administrative staff, and students, while technical triangulation is carried out by comparing the results of interviews, observations, and documentation so that the data obtained is more valid and reliable.

DISCUSSION

Analysis of the Impact of Digital Transformation on Education Quality

Digital transformation at MTs. Muallimin UNIVA Medan shows significant changes in the quality of education, especially in the aspects of learning effectiveness, access to information, and improving students' digital literacy. Based on the results of interviews and observations, the use of digital media such as learning videos, interactive presentations, online platforms, and other visual media is able to increase student involvement in the learning process. Students seem to be more active in discussing, easier to understand the material, and show higher enthusiasm than when learning is done conventionally. These findings show that digital transformation is not just a change in learning tools, but has changed the pattern of learning interaction to be more participatory and communicative.

The findings are in line with constructivism theory which places students as active subjects in building knowledge through interactive learning experiences. The use of digital technology allows students to have a more contextual learning experience because the material can be presented visually, audio, or simulatively. In this context, technology serves as a medium that helps students construct understanding independently. Gemilang et al. (2025) It also shows that the use of digital media can increase student involvement and strengthen concept understanding through the presentation of more interesting and interactive materials. Thus, the findings of this study

strengthen the argument that digital transformation has a real contribution to improving the quality of the learning process.

In addition to increasing student involvement, digital transformation also has an impact on improving students' digital literacy. Based on the results of the research, students began to get used to using technology to find information, access learning materials, and complete digital-based assignments. In fact, several additional programs such as coding and the use of design applications show that there are efforts by madrasahs to strengthen students' technological competence. These findings show that madrasahs are not only utilizing technology as a learning tool, but also seeking to shape 21st-century skills that are relevant to the demands of Society 5.0.

This is in line with the study of Judijanto et al. (2024) which states that digital literacy includes technical skills, critical thinking skills, creativity, collaboration, and the ability to filter information wisely. In this study, the increase in students' digital literacy can be seen from their ability to adapt to technology-based learning media and active involvement in digital activities. These findings show that digital transformation can be a strategic means in forming a generation that is adaptive to technological developments.

However, this study also found that improving the quality of education through digital transformation is not only influenced by the availability of technology, but is highly dependent on the readiness of human resources. Some teachers still have difficulties in operating digital media optimally so that the use of technology is not fully evenly distributed in all subjects. These findings show that technology does not automatically improve the quality of education if it is not balanced with the digital competence of educators.

This condition is in line with the opinion Karmilawati et al. (2024) which confirms that the success of digital transformation is greatly influenced by teacher readiness and continuous training support. In the context of this study, teachers who have good digital skills tend to be more creative in developing learning media, while teachers who are not used to using technology still rely on conventional methods. This shows that there is a digital competency gap that can affect the effectiveness of digital transformation implementation.

The findings of this study also show that digital transformation is able to create more flexible learning that is not limited to the classroom. Students can access learning materials through digital platforms and online media so that the learning process does not only depend on the teacher's explanation in class. This condition shows a change in the learning paradigm from teacher-centered learning to student-centered learning. Teachers are no longer the only source of information, but act as facilitators who help students access and manage information independently.

This is in line with modern learning theories that emphasize the importance of learning independence and the development of critical thinking skills. Research by Bakti et al. (2025) He also explained that digital transformation in education is able to improve the efficiency of information access and strengthen the modern technology-based learning system. The findings of this study show that the use of technology has opened up wider learning opportunities and is adaptive to the needs of students.

On the other hand, this study found that digital transformation also has challenges in maintaining a balance between the use of technology and the formation of students' character. The uncontrolled use of technology has the potential to cause dependence on digital devices and reduce direct social interaction. Therefore, madrasas continue to apply certain supervision and restrictions on the use of students' personal devices. These findings show that digital transformation in Islamic education is not only oriented towards technological modernization, but also considers the moral aspects and character of learners.

From the perspective of Islamic education, technology must be used as a means of developing science that is still based on spiritual values. Thus, digital transformation is not only interpreted as a process of modernizing education, but also as an effort to build a balance between mastery of technology and moral formation. These findings are a differentiator from some previous studies that have focused more on the technical aspects of digitalization without highlighting the dimensions of value and character in Islamic education.

Digital Transformation in Administration

Digital transformation in administration at MTs. Muallimin UNIVA Medan shows that there

are efforts to adapt institutions to technological developments in education management. Based on the results of the interviews, the administrative system that was previously carried out manually has now begun to switch to using spreadsheet applications and national digital platforms such as EMIS and Madrasah Digital Report Cards. The use of this technology has a positive impact on the effectiveness of data management, especially in recording student data, storing archives, and preparing administrative reports. These findings show that administrative digitization is able to help madrasas speed up the work process and reduce the risk of recording errors that often occur in manual systems. This condition is in line with the research of Damayanti et al. (2025) which states that the digitization of educational administration can improve data accuracy, work efficiency, and transparency in the management of educational institutions. Thus, the digital transformation of administration in madrasas has contributed to improving the quality of educational services more effectively and systematically.

However, the results of the study show that the digital transformation of administration at MTs. Muallimin UNIVA Medan is still at the basic digitalization stage and has not fully led to an integrated database-based management system. The use of spreadsheets does make it easier to process data, but it is not yet able to connect all administrative systems automatically. As a result, some processes are still carried out repeatedly and require manual input, potentially causing work inefficiencies. These findings show that the digitalization carried out is still partial and has not achieved a comprehensive systemic transformation. This is in contrast to the concept of ideal digital transformation which emphasizes the importance of system integration, data automation, and the use of database-based technology to support fast and accurate decision-making. Awards (2023) Explained that the digital transformation of education administration is not only about changing manual systems to digital, but also creating information systems that are interconnected and able to manage data comprehensively. Therefore, this study shows that madrasas are still in the transition stage to a more modern and integrated digital administration system.

In addition to the limitations of the system, this study also found that there are obstacles in

synchronization between the internal madrasah system and external digital platforms such as EMIS and Madrasah Digital Report Cards. Data that has been input into the internal system often has to be adjusted again when uploaded to the national platform. This condition causes administrative personnel to have to do additional work, increasing the workload and risk of data mismatches. These findings show that the success of the digital transformation of the administration is not only determined by the internal readiness of the institution, but also influenced by the integration capabilities between the platforms used. Research by Wahyudin et al. (2023) emphasized that system integration is an important factor in the success of the digitalization of education administration. Without good integration, the use of technology can actually increase the complexity of administrative work. In the context of this study, this condition shows the need to develop a more synchronous and integrated administrative system so that data management can run more effectively, efficiently, and sustainably.

In terms of human resources, this study found that administrative personnel already have basic skills in the use of technology, but still need to improve competence in operating more complex digital systems. Some administrative personnel still rely on simple technical skills so they are not able to take full advantage of digital features. These findings show that digital transformation is not only related to the provision of technological devices, but also requires adequate human resource readiness. This is in line with human capital theory which emphasizes that the quality of human resources is the main factor in the success of organizational innovation. Good technology will not provide optimal results if the user does not have enough competence. Therefore, training, mentoring, and strengthening digital competencies are important needs in supporting the success of digital transformation of administration in madrasahs. These findings also show that the human factor remains the most decisive aspect in the successful implementation of technology in the educational environment.

On the other hand, this study shows that administrative digitalization has had a positive impact on the quality of education services as a whole. The data search process becomes faster, archive storage is safer, and information distribution can be done more efficiently than the

previous manual system. In addition to increasing the effectiveness of administrative work, digital transformation also helps madrasahs in building a more organized and accessible information management system. These findings show that administrative digitalization not only serves as a technical tool, but is also part of education management modernization efforts. Thus, although it still faces various limitations in terms of system integration, infrastructure, and human resource competencies, the digital transformation of administration at MTs. Muallimin UNIVA Medan has shown quite progressive developments. Therefore, it is necessary to develop a more integrated database-based system, improve the competence of administrative personnel, and strengthen the technology infrastructure so that the digital transformation of administration can run more optimally and support the improvement of the quality of education management in a sustainable manner.

Digital Transformation in Learning

Digital transformation in learning at MTs. Muallimin UNIVA Medan shows that there are significant changes in the learning strategies implemented by teachers in the classroom. Based on the results of the research, teachers began to utilize various digital media such as learning videos, interactive presentations, online platforms, and internal learning studios to support the teaching and learning process. The use of digital media makes the learning process more interesting, communicative, and easy for students to understand. Students look more active when the material is delivered through visual media compared to the conventional lecture method. These findings suggest that technology has transformed learning patterns that were previously one-way to be more interactive and participatory. This is in line with the multimedia learning theory which states that the combination of text, images, audio, and video is able to improve students' understanding because information is received through various sensory channels (Kasmawati et al., 2025). In addition, the transformation of digital learning media also encourages the creation of a more dynamic and student-centered learning environment.

This research also shows that the use of digital media has a positive impact on student motivation and involvement in the learning process. Based on the results of observations and

interviews, students are more enthusiastic when learning using videos, interactive media, and material visualizations compared to conventional learning. This condition shows that the characteristics of the digital generation are easier to receive information through visual and interactive media. Gemilang et al. (2025) Explaining that the use of digital media is able to increase learning motivation and strengthen students' understanding of concepts through the presentation of more interesting material. The findings of this study show that digital transformation not only improves the quality of material delivery, but also builds a more enjoyable and adaptive learning experience to the needs of students. These findings are in line with a study on the transformation of digital learning media that emphasizes the importance of using technology in creating more flexible, collaborative, and experience-based learning for students (Kasmawati et al., 2025).

In addition to the use of digital media, the existence of an internal learning studio is one of the innovations that is quite interesting in this research. The studio is used by teachers to create educational content that is tailored to the needs of students and the characteristics of learning materials. These findings show that digital transformation in madrassas is not only limited to the use of available technology, but also encourages teachers' creativity in producing learning media independently. This is in contrast to some previous studies that have highlighted the use of learning platforms without discussing teachers' ability to develop digital content creatively. The findings of this study show that the success of digital transformation is also influenced by teachers' innovative ability to create relevant and contextual learning media. In the context of modern education, teachers no longer only play the role of conveyors of information, but also as learning creators who are able to utilize technology to improve the quality of the teaching and learning process (Nurhopipah et al., 2025). This transformation shows a change in the educational paradigm towards more innovative learning and adaptive to technological developments.

However, the implementation of digital transformation in learning at MTs. Muallimin UNIVA Medan still faces several limitations. One of the main obstacles is the madrasah policy that does not allow students to bring mobile phones to

school. This policy aims to maintain discipline and avoid misuse of technology, but on the other hand limits the use of personal device-based learning applications. These findings show that there is a dilemma between the need for digital transformation and efforts to maintain control over the use of technology in the Islamic education environment. In contrast to some educational institutions that provide freedom to use personal devices, this study shows that the implementation of technology needs to be adjusted to the characteristics and culture of educational institutions. In the context of Islamic education, supervision of the use of technology is important so that digitalization does not have a negative impact on student behavior (Hasniati et al., 2025). This condition is also in line with various national policies related to child protection in the digital space which emphasizes the importance of supervising the use of technology for students (Nasyomia & Pradana, 2026).

As a form of adaptation to these limitations, teachers use school devices such as laboratory computers, infocus, and other visual media to continue to integrate technology in learning. This strategy shows that the limitations of personal devices are not completely an obstacle if institutions are able to provide adequate alternative learning facilities. From the pedagogical side, digital transformation also changes the role of teachers in the learning process. Teachers no longer only function as conveyors of information, but also as facilitators and mentors in the use of technology for learning. This change shows a paradigm shift towards student-centered learning, where students are given space to learn more independently, actively seek information, and develop creativity and critical thinking skills. These findings show that digital transformation in learning is not only related to the use of technology, but also creates a learning culture that is more adaptive, innovative, and relevant to the demands of the Society 5.0 era. The government also emphasized that the digitalization of learning is an important part of strengthening national education through the provision of devices, the development of digital content, and the improvement of teacher competence.

Supporting Factors for Digital Transformation

The success of digital transformation at MTs. Muallimin UNIVA Medan is influenced by

several supporting factors that are interrelated and form a digital ecosystem in the madrasah environment. One of the main factors is the policy support from madrasas that are open to technological developments. Based on the results of the interview, the management provides space for teachers to develop digital-based learning innovations and support the use of technology in administration and learning processes. This support can be seen from policies that provide opportunities for teachers to utilize digital media, use technological devices in learning, and develop educational content independently. These findings show that institutional leadership has a strategic role in the success of digital transformation. Policy support not only provides legitimacy for the use of technology, but also creates a work environment that is more adaptive to change. This is in line with education management theory which emphasizes that transformational leadership plays an important role in building an organizational culture that is innovative and responsive to the times. Thus, the success of digital transformation in madrasas is inseparable from the commitment of leaders in creating policies that support the development of educational technology.

In addition to policy factors, the availability of basic facilities is also an important aspect in supporting digital transformation at MTs. Muallimin UNIVA Medan. Based on the results of the research, madrasas already have several supporting facilities such as computers, infocusts, internet networks, computer laboratories, and internal learning studios used in teaching and learning activities. Although these facilities are not completely complete and modern, their existence is enough to help teachers in developing technology-based learning. These findings show that digital transformation can be started gradually according to the capabilities of the institution without having to wait for the availability of highly sophisticated facilities. Award Research (2023) explained that basic infrastructure is an important prerequisite in supporting the success of educational digitalization because technology cannot run optimally without adequate support. However, the results of this study show that the success of digital transformation is not only determined by the completeness of facilities, but also by the ability of institutions to utilize existing facilities effectively. This shows that creativity and optimization of the use of facilities are important factors in supporting the successful

implementation of technology in the educational environment.

Another factor that greatly determines the success of digital transformation is the readiness of human resources, especially teachers as the main implementers of the learning process. Based on the results of the study, young teachers tend to adapt faster to the use of digital technology and have high motivation to continue learning and developing digital competencies. They find it easier to utilize technology-based learning media such as learning videos, interactive presentations, and digital platforms in the teaching and learning process. These findings show that the experience of using technology and digital skills affects the level of teachers' readiness to face digital transformation. In the context of modern education, teachers' digital competence is one of the main factors that determine the success of technology implementation in learning. This is in line with human capital theory which emphasizes that the quality of human resources is the main capital in supporting organizational innovation. Good technology will not provide optimal results if it is not supported by adequate user capabilities. Therefore, improving teachers' digital competence through training and professional development is an important step in strengthening digital transformation in madrasas.

Although there are differences in the level of digital skills between teachers, this study found that collaborative culture in the madrasah environment is an important factor in overcoming this competency gap. Teachers who are more tech-savvy often help other colleagues in using digital media, creating learning materials, or operating technological devices in the teaching and learning process. This condition shows that digital transformation is not only influenced by individual abilities, but also by the collective work culture within educational institutions. These findings show that cooperation and knowledge sharing are one of the main strengths in supporting the success of digitalization in madrasas. From the perspective of educational organizations, a collaborative culture can accelerate the process of adapting to change and improve the ability of institutions to face the challenges of digital transformation. In addition, a mutually supportive work culture also creates a professional learning environment for teachers so that the process of improving competencies can take place in a sustainable manner. Thus, the success of digital

transformation at MTs. Muallimin UNIVA Medan does not only depend on technological factors, but also on the quality of social relations and work culture that develops in the madrasah environment.

In addition to internal factors, this study also found that external system support is an important factor that accelerates the digital transformation process in madrasahs. The use of national platforms such as EMIS and Madrasah Digital Report shows that madrasahs have been connected to a broader digital-based education system. Government policy support related to education digitalization also provides an encouragement for educational institutions to start integrating technology in administration and learning. These findings show that the digital transformation of education cannot be separated from macro policy support that drives digitalization nationally. The existence of a national platform helps madrasahs in data management, administrative reporting, and standardization of technology-based education systems. Thus, the digital transformation at MTs. Muallimin UNIVA Medan is the result of synergy between the madrasah internal policies, the readiness of human resources, the availability of facilities, the collaborative culture, and the support of external systems. All of these factors are interrelated and form an important foundation in supporting the successful implementation of sustainable digital transformation in the Islamic education environment.

Obstacles and Solutions in Digital Transformation

Although the digital transformation at MTs. Muallimin UNIVA Medan shows quite positive developments, its implementation still faces various obstacles that affect the effectiveness of its implementation. One of the main obstacles is the limitation of technological infrastructure, especially related to the quality of the internet network and the availability of learning and administrative support devices. Based on the results of the study, unstable internet connections often hinder the digital learning process, especially when teachers use online-based media or access digital platforms in teaching and learning activities. In addition, the limitations of technological devices also cause the use of digital media to not be carried out optimally in all classes and administrative units. These findings show that

infrastructure is a key foundation in the success of digital transformation in educational institutions. Without the support of an adequate internet network and devices, the use of technology cannot run optimally. This is in line with Anugerah's research (2023) which emphasizes that limited infrastructure is one of the main obstacles in the digitalization of education. Thus, the success of digital transformation is greatly influenced by the readiness of technological facilities and infrastructure that support the education process in a sustainable manner.

In addition to infrastructure factors, this study also found a digital competency gap among teachers. Young teachers tend to adapt faster to the use of digital technology because they are used to using technology-based devices and applications in daily activities. On the other hand, some senior teachers still have difficulties in operating digital platforms, creating interactive learning media, or making the most of technology in the learning process. These findings show that digital transformation can create a skills gap if it is not balanced with equitable training and mentoring. This condition is different from some studies that consider that the provision of technology alone is enough to encourage the digitalization of education. This research shows that the human factor remains the most important element in the success of digital transformation. Technology will not have an optimal impact if users do not have adequate skills to operate it. Therefore, digital competency training and technical assistance are strategic solutions that must be carried out on an ongoing basis so that all teachers have the same readiness to face digital changes in the educational environment (Wiwik & Murniyati, 2025).

Another obstacle found in this study is the lack of comprehensive integration of the administrative system. The use of spreadsheets as the main tool for data management does help speed up the administrative process compared to manual systems, but it still causes some work to be done repeatedly and requires manual data input. This condition shows that the digital transformation of administration in madrasahs is still at the basic digitalization stage and has not fully led to an integrated database-based system. As a result, data synchronization between departments is still not running optimally and has the potential to cause information mismatches. These findings show that the digital transformation of administration requires the

development of a more modern and integrated information system so that data management can be carried out automatically, quickly, and accurately. In the context of education management, an integrated administrative system is essential to support data-driven decision-making and improve the efficiency of the institution's work (Prince & Laxsniky, 2025). Therefore, the development of a more comprehensive database system is one of the important needs in supporting the success of the digital transformation of administration at MTs. Muallimin UNIVA Medan.

On the learning side, the madrasah policy that prohibits students from bringing mobile phones to school is also a challenge in the implementation of digital transformation. The policy aims to maintain student discipline and avoid the negative impact of the use of technology, but on the other hand limits the use of personal device-based learning applications. These findings show that there is a dilemma between the need for digitization of learning and efforts to maintain control over the use of technology in the Islamic education environment. Nevertheless, this study shows that madrasas are able to adapt by utilizing school devices such as computer laboratories, infocusts, and other visual media as an alternative to digital learning. This strategy shows that limitations are not always an obstacle if institutions have adaptive and innovative capabilities in adapting technology to existing conditions. These findings also show that digital transformation does not necessarily depend on the use of students' personal devices, but can be developed through the optimization of school facilities and teachers' creativity in managing technology-based learning.

As a solution to these various obstacles, this study recommends several strategic steps to support the sustainability of digital transformation in madrasas. First, it is necessary to improve technological infrastructure, especially in the aspect of internet networks and the provision of learning and administrative support devices. Second, digital competency training for teachers and administrative staff needs to be carried out regularly so that all human resources have adequate capabilities to utilize technology. Third, the development of a more integrated database-based administration system is an important step to improve the effectiveness of data management and education services. In addition, madrasas also

need to develop a digital learning policy that is more flexible but still controlled so that the use of technology can run optimally without neglecting aspects of discipline and character development of students. This research shows that digital transformation is not just a change in the use of technology, but a process of changing organizational culture, work patterns, and the education system as a whole. Therefore, the success of digital transformation requires the integration of technology, human resources, policies, and organizational culture in one system that is mutually supportive and sustainable.

CONCLUSION

The conclusion of this study shows that digital transformation at MTs. Muallimin UNIVA Medan has had a significant impact on improving the quality of administration and learning in the Society 5.0 era. The implementation of technology in learning through the use of educational videos, interactive media, online platforms, and internal learning studios has been proven to be able to increase student involvement, strengthen digital literacy, and create a more participatory and student-centered learning pattern. These findings reinforce the theory of constructivism and multimedia learning which emphasizes that the use of digital media can help students build understanding in a more contextual and interactive manner. On the administrative side, the use of spreadsheets, EMIS, and Madrasah Digital Report Cards has increased the effectiveness of data management, the efficiency of educational services, and the security of digital archives as stated by Damayanti et al. (2025). However, this study also shows that digital transformation in madrasas is still at the transition stage to a more integrated system because there are still infrastructure constraints, limited digital competencies, and not optimal synchronization of the administrative system. The findings of this study provide a theoretical contribution in the form of strengthening the concept of digital transformation of Islamic education which is not only oriented towards technological modernization, but also on the integration of Islamic values, the readiness of human resources, organizational culture, and the strengthening of students' character. The novelty of this research lies in a study that integrates the digital transformation of administration and learning comprehensively in the context of madrasas,

which has been relatively limited in Islamic education research.

Although this study provides a fairly in-depth picture of the implementation of digital transformation in madrasahs, this research still has some limitations. The research was only carried out on one educational institution so that the results of the research could not be generalized to all madrasahs in Indonesia with different conditions and characteristics. In addition, the qualitative approach used emphasizes more on the depth of data so that it has not quantitatively measured the level of effectiveness of digital transformation on student learning outcomes and statistical administrative performance. Therefore, further research is recommended to use a mixed methods or quantitative approach with a wider coverage of the area in order to obtain a more comprehensive picture of the effectiveness of digital transformation in Islamic educational institutions. The next research also needs to examine the development of an integrated database-based administrative system, strengthening character-based digital literacy, and transformational leadership strategies in supporting the digitalization of education. The findings of this study confirm that the success of digital transformation is not only determined by technological sophistication, but also by the readiness of human resources, collaborative culture, policy support, and the ability of institutions to maintain a balance between technological innovation and Islamic educational values. Thus, digital transformation in madrasahs must be understood as a process of changing the education system as a whole that requires continuous synergy between technology, people, and organizational culture.

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