

## Implementation of ICT Management System in Madrasah (Multi-Site Study of State Madrasah Aliyah (MAN) in the District of Central Tapanuli)

Putra Mahendra Gunawan Nasution<sup>1</sup>, Mesiono<sup>2</sup>, Siti Halimah<sup>3</sup>

<sup>1</sup> Universitas Islam Negeri Sumatera Utara, Indonesia; masgunword@gmail.com

<sup>2</sup> Universitas Islam Negeri Sumatera Utara, Indonesia; mesiono@uinsu.ac.id

<sup>3</sup> Universitas Islam Negeri Sumatera Utara, Indonesia; sitiehalimah@gmail.com

Received: 25/02/2024

Revised: 02/04/2024

Accepted: 05/05/2024

### Abstract

This study analyzes the differences and similarities in implementing ICT management systems in MAN Sekabupaten Tapanuli Tengah. This study used qualitative research methods with data collection techniques through observation, interviews, and documentation. The results showed that (1) The difference in planning in MAN 1 is more about problem identification, and MAN 2 is more about achieving goals. In comparison, MAN 3 is more about adjusting the needs of madrasahs, and implementation in MAN 1 prioritizes learning with laptops, projectors, and the internet. At the same time, MAN 2 has not been carried out optimally. At the same time, MAN 3 prioritizes the implementation of learning in mastering office materials, graphic design, and animation, and evaluation in MAN 1 is more about implementing supervision. MAN 2 is more about evaluating results. In comparison, MAN 3 is more about assessment. (2) The planning equation is carried out through teamwork, implementation by utilizing all types of IT based on the madrasah's needs, and evaluation is carried out as material for improvement. This study concludes that there are significant differences and similarities in implementing ICT systems, as assessed by planning, implementation, and evaluation.

### Keywords

Implementation; Management System; ICT; Madrasah

### Corresponding Author

Putra Mahendra Gunawan Nasution

Universitas Islam Negeri Sumatera Utara, Indonesia; masgunword@gmail.com

## 1. INTRODUCTION

Currently, the world is transitioning from paper media to digital media, which initially used paper in various fields of work. Now, many have switched to technology (paperless) (Anwas, 2016). The rapid development of science and technology has allowed people to easily and quickly obtain information from various sources worldwide (Lestari, 2015). Almost all fields of work are related to the use of technology, including the field of education. Education is required to follow technological developments, especially the use of ICT in learning, to improve the quality of education. ICT is widely used to communicate, manipulate, and store data by electronic means (Jaritos et al., 2022).

Implementing the ICT management system is one of the most important components in educational institutions. This component refers to all aspects that can improve the process of providing education. The system consists of components connected to interrelate and interact to achieve



© 2024 by the authors. This is an open access publication under the terms and conditions of the Creative Commons Attribution 4.0 International License (CC-BY-SA) license (<https://creativecommons.org/licenses/by-sa/4.0/>).

predetermined goals (Zainiyati, 2017). The basic concept of a system is a set of manufactured computer components used to process data, store, operate work systems, and coordinate human and computer resources to direct the input system to the output system so that goals can be achieved (Awalia et al., 2022). The system can be a reference for a set of tools in the framework of student learning to achieve goals in the learning process.

Management is all activities that include planning, implementing, controlling, and evaluating all organizational resources to achieve goals. If related to education, then management is the management of all educational resources so that goals can be achieved optimally (Jamaluddin, 2018). Therefore, management functions to process and regulate all educational activities systematically to achieve goals, so madrasah must be able to manage the ICT management system applied because the application of good management will produce maximum goals. An information and communication technology management system monitors and administers tools such as computers, software, internet networks, and data that focus on the work of ICT systems to operate systematically.

Through a good and directed national education system, Indonesia has high hopes for the nation's next generation, who are qualified so that they can adjust to living their daily lives. The birth of a smart nation is one of the main pillars and capital of national development (Asep Saepudin, 2016). Education can be the most strategic means of cultivating morals, teachings, and self-abilities that arise from outside and enter students (Aisyah, 2018). Education is the most important factor in developing a quality next generation of the nation, so education is one of the Indonesian government's programs for changing the state order. Through education, students will have the potential and ability to bring change in the future. The quality of education delivery in madrasah can be determined by ICT availability, including the implementation of its management system. Today, technology is the most important thing in helping organizations such as educational institutions and others progress and develop (Juhriyansyah Dalle, A. Akrim, 2020). The ICT management system in the madrasah supports improving madrasah performance (Putra et al., 2021). The use of technology in the cyber-physical era must pay attention to the learning system so that goals can be achieved. The achievement of educational success indicators is contained in clear learning outcomes and goals to be achieved optimally (Ulya, 2021).

To provide quality education, educational institutions must keep up with the increasingly rapid times, implement ICT management systems, and utilize them in education, especially the learning process. Educators often use ICT-based learning tools as learning resources, such as computers, projectors, mobile phones, and Internet networks (Innayah, 2018). To achieve learning objectives, teachers must be able to implement the ICT management system fully. Developing ICT-based learning tools is highly recommended in the learning process (Kusumawati Dwiningsih, Sukarmin, Muchlis, 2018). The development and advancement of technology today require teachers to have competence and skills in utilizing technology in learning. Teachers must be skilled and creative in fostering the spirit of learning of students through technology so that teachers will find it easier to direct students in receiving learning.

The ICT management system serves as a means of improving the quality of student achievement. This can be a fundamental reason for ICT to be included in learning programs that produce optimal and maximum student learning outputs (Andri Sukmaindrayana & Aneu Yulianeu, 2022). The use of technology needs to be completed so that access to learning resources can increase through innovation in learning and teaching outcomes (Sjahrudin et al., 2022). ICT is a very important subject in the Indonesian education curriculum because the use of ICT will bring changes to a more creative learning model so that students can be actively involved and participate in learning activities that will create a two-way relationship between teachers and students, which will create a more comfortable learning environment.

Every country must be responsive to changing times to overcome everything that is a demand for the dynamics of education that continues to develop. Based on this, both have a close relationship

between improving the quality of education and the demands of changing times. The demands of this changing era include the use of ICT in education in the current era of globalization (Haryanto, 2015). Current technological advances require every country to continue to improve the quality of education nationally, preparing a generation that can bring major changes to improve the education system that is run so that education does not lag with current technological developments and advances. ICT management systems have great potential to be implemented in education. Still, the use of ICT in Indonesia is generally more dominant as entertainment and communication only, so its application is still very low (Yuni Sugiarti, 2017). The Indonesian government still has limited ability, especially in facilities and infrastructure. In the learning process, teachers must innovate and be creative in designing strategies using madrasah conditions to maximize learning. Low attention to the quality of learning in madrasah because the learning process is still dominant with classical methods such as lectures and questions and answers causes learning to be still a "teacher center" so that the application of ICT becomes less meaningful which results in student achievement has not been optimal and maximized (Miftah, 2014).

Many people in Indonesia have not mastered the application of ICT. Even teachers and staff employees in schools/madrasah have not been able to implement the ICT system in applying their main duties and functions as educators. ICT management systems have a high position in educational technology because ICT is created to process, share, develop, discuss, and create communication. The government has programmed a policy for implementing ICT in education. Still, the readiness of teachers, facilities, and infrastructure is not supportive and adequate, so skilled human resources do not accompany the ICT program and lack facilities. This can hamper the smooth application of ICT for education (Istiyarti, 2014). In the application of ICT, not all teachers use technology in the learning they teach even though they already know the application of ICT is a learning tool that serves to help the level of mastery of students in receiving learning materials (Lestari, 2015). Today, technology is not neutral because it is based on insights on a particular value. The relationship between human resources and ICT is no longer adequate from the perspective of impersonal and exclusive relationships (Sutjipto, 2016).

The challenges faced in Indonesia in improving the quality of education, especially in implementing the ICT management system, impact educational institutions in Indonesia, causing the quality of education in implementing ICT also to be low. This can be seen from the continuous problems in each educational institution. Problems often faced in schools are new problems that continue to arise in the application of ICT and school management because schools have not provided adequate ICT infrastructure for learning, and teachers have not been able to utilize ICT in the learning process (Widyastono, 2017). Learners' methods and learning styles have changed, and they are more likely to choose problem-solving learning over memorization. 55% of students find it difficult to memorize, only 20% know learning skills in the 21st century, and 13% are ready to take advantage of cloud computing (Warsita, 2017). Constraints in the application of ICT in the development of learning and school management due to the gap in ICT-based infrastructure and facilities in cities and villages also widen and create a digital divide in Indonesia (Widyastono, 2015).

In addition, the problems experienced by madrasah are also very diverse, namely: (1) in terms of teacher ability in lesson planning, developing media and assessment systems; (2) the ability of madrasahs to manage facilities that can support student learning practices, especially ICT-based contemporary learning, such as e-learning and interactive multimedia and (3) the ability of madrasahs to manage programs that can improve teacher quality (Budiyono, Haryono, 2015). ICT's presence in education provides challenges for madrasahs because students are more interested in technology-based learning than other learning materials. Students spend a long time using computers to obtain information from anywhere, which provides a great challenge to madrasahs so that madrasahs can facilitate and provide academic services to students to be able to apply ICT in terms of hardware and software.

Many studies have examined the implementation of information and communication technology in education. Still, each school certainly has its characteristics related to the theme, both from the implementation of ICT in each educational institution and who is involved in using ICT in schools. Previous research conducted by Ary Kurniawan (2020) entitled "Implementation of Information and Communication Technology-Based Learning in Vocational High Schools" examines that the Fine Arts Expertise Program of SMK Negeri 5 Yogyakarta includes schools that have implemented Information and Communication Technology (ICT)-based learning using multimedia presentation learning media, using computer tools, laptops, and LCD projectors and using learning resources from the internet. Implementing learning by utilizing various ICT-based facilities is very important to achieve effective and efficient learning objectives. These findings can be attributed to research by the author because, in educational institutions, the application of ICT is very important to be implemented optimally to achieve the educational goals that have been set.

The novelty of this research is that the application of information and communication technology is carried out in several stages, namely planning, implementation, and evaluation, as well as looking for differences and similarities in ICT management systems so that cross sites are found from the similarities of ICT management systems in three madrasah institutions. This is interesting to do because the implementation of the ICT management system has received very high attention in the three institutions with efforts to empower all components of madrasah in planning, implementing, and evaluating ICT system activity programs that have been implemented, so researchers want to study more of these problems. So, the problem that will be studied further is to find out the differences in information and communication technology management systems in MAN 1, MAN 2, and MAN 3 Central Tapanuli and the similarities of information and communication technology management systems in MAN 1, MAN 2 and MAN 3 Central Tapanuli.

## **2. METHODS**

This study used a qualitative descriptive research method with multi-site analysis. Data collection techniques are carried out through observation, interviews, and documentation. Data is analyzed iteratively through single-site and multi-site analysis. Researchers use qualitative methods with this multi-site design because they want to understand the problem under study in depth. Furthermore, because there are three locations of this study with characteristics that have many differences and similarities, namely in MAN 1, MAN 2, and MAN 3 Central Tapanuli, this study uses multi-site analysis. The reason this research was conducted in the three institutions is because the implementation of the ICT management system received very high attention in the three institutions with efforts to empower all components of the madrasah in planning, implementing, and evaluating the ICT system activity programs that have been implemented. Data analysis techniques are carried out using single-site data analysis, starting from data reduction and data presentation, verification conclusion drawing, and multi-site analysis. Researchers use data collection tools extracted from key informants to obtain data. These key sources or informants include the head of the madrasah and the deputy head of the madrasah for curriculum.

## **3. FINDINGS AND DISCUSSIONS**

### **Single Site Findings**

#### *ICT System in MAN 1 Central Tapanuli*

To improve the quality of education in MAN 1 Central Tapanuli, MAN 1 Central Tapanuli implements the ICT system in its education process, starting with planning, implementing, and evaluating the ICT system. In the process of planning the ICT system as an effort to improve the quality

of madrasahs, careful planning is needed to achieve the expected results.

As the head of the madrasa explained as follows:

“In planning, we held a joint meeting involving all components of the madrasah. The decision of the meeting resulted in planning by identifying problems and program activities to be implemented, such as conducting coaching plans through workshop activities and accessing the internet to find various necessary information. Then, the ICT management system was implemented in MAN 1 Central Tapanuli such as the use of technology-based tools such as loudspeakers, sound systems, CCTV, laptops/computers, internet, cellphones, projectors, learning applications, learning videos, the use of online applications in managing madrasah data and ICT counseling guidance. To find out the weaknesses of the implementation of the ICT system, we can know from the evaluation activities that we carry out regularly through joint meetings, documenting the progress achieved and problems and monitoring changes objectively.”

In line with this, WKM in the curriculum field explained that:

“At the beginning of each school year, we hold meetings with all components of the madrasah by planning workshops that are carried out both within the madrasah by bringing in people who are experts in the field of ICT to improve the ICT skills of teachers and students. Then, the ICT program was implemented in MAN 1 Central Tapanuli such as utilizing all technology-based facilities and infrastructure such as the use of sound systems, CCTV, loudspeakers, computers/laptops, internet, cellphones, projectors, learning applications, learning videos, the use of online sites in managing madrasah data and ICT counseling guidance. The Head of MAN 1 Central Tapanuli and supervisors from the Ministry of Religious Affairs always monitor all teachers' readiness, learning tools used, discipline in teaching, teaching programs, and student attendance. This is very helpful for teachers to be able to prepare all things related to teacher demands in professional teacher qualifications.”

Based on the explanation above, it can be concluded that the ICT system in MAN 1 Central Tapanuli has been implemented through the stages of planning, implementation, and evaluation. Planning is carried out by holding regular meetings every year to plan all programs and activities to be implemented, such as using ICT facilities in the educational and learning processes. Then, an evaluation is carried out to determine the success or failure of the activities that have been carried out by conducting monitoring and supervision activities by the head of the madrasah and related educational institution bodies.

### ***ICT System in MAN 2 Central Tapanuli***

The initial stage in carrying out an activity is to do careful planning so that the activity can be carried out properly and smoothly. The planning stage is the first management function that is very important to be carried out in preparing everything needed so that the goals can be achieved as well. The ICT management system applied in educational institutions requires careful planning so that the ideals of the madrasah can be achieved optimally.

As the head of the madrasah explained as follows:

“In improving the quality of madrasahs, we first plan programs that will improve the performance of all madrasah residents, especially teacher performance in teaching by integrating technology into the learning process in the form of activities, namely so that teachers participate in various seminar activities and internet access so that qualified ICT competence for teachers will have an impact on its implementation in madrasahs, such as the use of technology-based tools such as sound systems, CCTV, laptops, internet projectors, utilizing various online applications, learning videos and managing madrasah administration.

In evaluating the activities that have been carried out every month right on Friday of the fourth week, regular meetings are held with all components of the madrasah to discuss the results of the achievements that have been achieved and the obstacles that occur, especially efforts to improve ICT competence by teachers through seminar activities, whether they have increased, decreased or just moved in place.”

Furthermore, the WKM in the curriculum field is explained as follows:

“As a WKM in the curriculum field, I also plan to develop ICT competencies for teachers by planning to involve teachers in various seminar activities and access information that develops on the internet to achieve educational goals through professional ICT competencies owned by teachers. Then, I strongly support all ICT programs planned by the head of the madrasah, such as using ICT-based tools such as laptops, projectors, internet, CCTV, sound systems, and loudspeakers, using learning applications, learning videos, and managing madrasah data. In evaluating ICT competency development by teachers, we also plan for MAN 2 Tapanuli Tengah teachers to have ICT competence so that teachers become professionals in carrying out their duties and functions as educators. Evaluation activities on ICT competency development are carried out by students' being required to read many books related to science and technology and direct practice in using technology.”

Based on this explanation, it can be concluded that MAN 2 Tapanuli Tengah implements an ICT system that is carried out with stages of planning, implementation, and evaluation. Planning is carried out by planning programs to foster ICT competencies for teachers and students. Still, the ICT system has not been implemented optimally due to the inadequate completeness of ICT facilities and infrastructure, so evaluation activities are needed to improve the quality of education in madrasahs, especially in technology such as monitoring and supervision.

### *ICT System in MAN 3 Central Tapanuli*

Planning is first carried out to implement the ICT management system in MAN 3 Central Tapanuli so that the plan is easy to carry out and evaluate. MAN 3 Central Tapanuli, in planning the ICT management system, strives to have qualified and adequate educators and learners, especially those who can integrate learning using various technological tools to carry out educational activities in madrasah.

As the head of the madrasa explained as follows:

“Madrasahs need qualified teachers, especially ICT competencies, to create quality students as well, so it has been planned through joint meetings on coaching ICT competencies for teachers through activities such as training, practicum, and accessing developing information so that all MAN 3 Central Tapanuli teachers have qualified and adequate ICT competencies. The ICT management system in the madrasah has been implemented starting from the use of ICT-based facilities and infrastructure such as the use of loudspeakers, sound systems, CCTV, laptops, projectors, LAN networks, learning applications, learning videos, online applications to manage madrasah administration and carry out computer extracurricular activities. This extracurricular activity is carried out to prepare students to master office materials, graphic design, and animation. Evaluation of ICT competency development by my teachers is carried out by monitoring, assessing, and controlling the process of ICT competency development by my teachers.”

In line with this, WKM in the curriculum field said as follows:

“The teachers in this madrasah not only prioritize intelligence but also pay attention to the ability to master technology, so teachers are expected to integrate learning with technological advances. In addition, students' achievements have been planned through

active learning coaching, discipline learning, and learning integrated with technology, including training and practicum through computer extracurricular activities. I strongly support implementing the ICT management system in MAN 3 Central Tapanuli to support madrasah education. By implementing this system, I hope that MAN 3 Central Tapanuli becomes a madrasah in great demand by the community so that the number of students entering has increased. Evaluation of ICT implementation is carried out through meetings at the end of each semester. In the meeting, things were presented that showed the teachers' performance, and the teacher council's performance was assessed, whether the program's implementation had been carried out well and whether obstacles had been found so that solutions could be found."

Based on the explanation above, it can be concluded that the ICT system carried out at MAN 3 Central Tapanuli has run well, starting from the planning carried out by holding regular meetings involving all components of the madrasah whose form of activity is planning the development of ICT competencies for teachers and students such as workshops, seminars and accessing developing information, so that the implementation of learning using ICT facilities can run well. To get maximum results, MAN 3 Tapanuli Tengah evaluates material for improvement in the future by conducting supervision, monitoring, and evaluation meetings.

### Multi-Site Findings

The findings of multi-site research on ICT management systems of Islamic educational institutions conducted by MAN 1, MAN 2, and MAN 3 Central Tapanuli are as explained in the following table:

**Table 1.** Differences In Findings on Multiple Sites

| Research Focus            | Data Differences                                                                       |                                                                                                 |                                                                                                         |
|---------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                           | MAN 1 Central Tapanuli                                                                 | MAN 2 Central Tapanuli                                                                          | MAN 3 Central Tapanuli                                                                                  |
| ICT System Planning       | Identify the problem.                                                                  | Determine the goals to be achieved.                                                             | Adjusting the needs of the madrasah.                                                                    |
| ICT System Implementation | Prioritize the implementation of learning using laptops, projectors, and the Internet. | It has not been implemented optimally because ICT facilities and infrastructure are inadequate. | Prioritize the implementation of learning in mastering office materials, graphic design, and animation. |
| ICT System Evaluation     | More about the implementation of supervision.                                          | More about the implementation of the evaluation of the results.                                 | More about assessment.                                                                                  |

**Table 2.** Site Data Findings

| Research Focus      | Site Data                                                       |                                                                                          |                                                                                         |                                                                 |                                                                                          |                                                                                         | Cross-Site                                      |
|---------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------|
|                     | MAN 1 Central Tapanuli                                          | MAN 2 Central Tapanuli                                                                   | MAN 3 Central Tapanuli                                                                  | MAN 1 Central Tapanuli                                          | MAN 2 Central Tapanuli                                                                   | MAN 3 Central Tapanuli                                                                  |                                                 |
| ICT System Planning | Implement a teamwork system in the ICT system planning process. | MAN 2 Central Tapanuli implemented a teamwork system in the ICT system planning process. | MAN 3 Central Tapanuli implements a teamwork system in the ICT system planning process. | Implement a teamwork system in the ICT system planning process. | MAN 2 Central Tapanuli implemented a teamwork system in the ICT system planning process. | MAN 3 Central Tapanuli implements a teamwork system in the ICT system planning process. | ICT system planning is carried out by teamwork. |
| ICT System          | Carry out technology-                                           | Carry out ICT-based                                                                      | Carry out                                                                               | Carry out                                                       | Carry out                                                                                | Carry out                                                                               | Implementing the                                |

|                       |                                                                                                                                                                                                                     |                                                                                                                                                                       |                                                                                                                                                                                                            |                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Implementation        | based learning such as learning ICT maple, loudspeakers, sound systems, CCTV, projectors, laptops/computers, internet, cellphones, online applications, learning videos, fingerprints, and ICT Counseling Guidance. | learning such as learning ICT maple and using loudspeakers, sound systems, CCTV, laptops, projectors, internet, cellphones, online applications, and learning videos. | technology-based learning such as learning ICT maple, loudspeakers, sound systems, CCTV, laptops/computers, cellphones, online applications, learning videos, fingerprints, and extracurricular computers. | ICT system is carried out simultaneously by utilizing all types of IT to the needs of the madrasah. |
| ICT System Evaluation | Conduct evaluation meetings as material for improvement in the future.                                                                                                                                              | Conduct evaluation meetings to find the best solution.                                                                                                                | Conduct evaluation meetings as material for improvement in the future.                                                                                                                                     | ICT system evaluation is carried out as material for improvement.                                   |

## Discussion

After finding the necessary data, both from the results of observational research, interviews, and documentation, researchers analyze existing results and modify existing theories, then develop new theories and explain the implications of research findings on the implementation of information and communication technology management systems in MAN, MAN 2 and MAN 3 Central Tapanuli. As explained in data analysis techniques in research, researchers use qualitative descriptive analysis (exposure) and data obtained through observation, interviews, and documentation from parties who know about the data needed by researchers. The data are as follows:

### *Planning of ICT System in MAN in Central Tapanuli District*

Based on the findings, there are differences and similarities in the ICT system planning process carried out in MAN Sekabupaten Tapanuli Tengah. The difference is that the ICT system planning process in MAN 1 Central Tapanuli is carried out by identifying problems that occur in MAN 1 Central Tapanuli so that the madrasah determines the program of activities to be implemented in solving these problems. The problems found in MAN 1 Central Tapanuli are the lack of understanding of teachers and students about technology and the provision of incomplete facilities and infrastructure, so MAN 1 Central Tapanuli decided to plan ICT competency development for teachers and students by involving all teachers and students in various workshop activities related to ICT, require all teachers to access developing information, conduct direct practice and plan the provision of complete and adequate ICT facilities and infrastructure. ICT system planning carried out in MAN 1 Central Tapanuli aims to find solutions to the problems that occur in MAN 1 Central Tapanuli by planning various quality activity programs.

Unlike MAN 1 Central Tapanuli, MAN 2 Central Tapanuli carries out ICT system planning by determining and formulating goals to be achieved so that MAN 2 Central Tapanuli plans to develop ICT competencies for teachers and students through seminar activities, motivating teachers and students on how important it is to have qualified ICT skills, requiring all teachers to access information that is developing on the internet and plan provision of adequate ICT facilities and infrastructure. The ICT system planning carried out at MAN 2 Central Tapanuli aims to realize the goals and ideals of the madrasah so that MAN 2 Central Tapanuli can produce quality madrasah graduates. Meanwhile, ICT system planning carried out at MAN 3 Central Tapanuli is planning that adapts to the needs of madrasahs through activities, namely ICT training, practicum, and ICT guidance. Students are required to learn actively, and teachers are required to access information that is developing both national and



international issues. MAN 3 Central Tapanuli needs to plan and provide complete and adequate ICT facilities and infrastructure to meet these needs.

The similarity of the ICT system planning process carried out in MAN 1, MAN 2, and MAN 3 Central Tapanuli is that ICT management system planning must involve all components of the madrasah so that the planning carried out in MAN 1, MAN 2, and MAN 3 Central Tapanuli has similarities with implementing a teamwork system. All these components are very important in the ICT management system planning process to improve the quality of the madrasah and make it competitive. This is according to Detoro's theory: "Teamwork is a group of individuals working together to reach a common goal." The definition of teamwork explains that teamwork is a group of people who work together to achieve the same goal, and these goals will be easier to realize by working together than by working alone. This is reinforced by Gasperzs, who states that human resources at the organizational level are the most important factor and that their full involvement is used for the organization's benefit.

#### ***Implementation of ICT System in MAN in Central Tapanuli District.***

Based on research findings, the implementation of the ICT system in MAN 1 Central Tapanuli is different from the implementation of the ICT system in both MAN 2 Central Tapanuli and MAN 3 Central Tapanuli. MAN 1 Tapanuli Tengah implements an ICT system by prioritizing the implementation of learning using laptops, projectors, and the internet, where teachers provide learning materials with PowerPoint slideshows in front of the projector screen that gives a more attractive impression and can increase student motivation to learn. MAN 1 Central Tapanuli prioritizes a learning system that has a more meaningful impact on increasing student performance. The implementation of the ICT system in MAN 2 Central Tapanuli has not been carried out optimally because ICT facilities and infrastructure are not complete and adequate, computer rooms and computers are not yet available in MAN 2 Central Tapanuli, so students cannot do practicum to operate computers directly. Meanwhile, MAN 3 Central Tapanuli prioritizes implementing learning in mastering office materials, graphic design, and animation. Students are required to understand and master office materials, graphic design, and animation as their provision after graduating from MAN 3 Central Tapanuli.

The similarity in the implementation of ICT in MAN Sekabupaten Tapanuli Tengah has been implemented in the daily education process such as the use of technology-based tools such as loudspeakers (toa, mic, loudspeaker, and sound system) as well as the use of CCTV,

which functions to monitor all daily educational activities. ICT subjects are taught to all learners. ICT systems in MAN 1, MAN 2, and MAN 3 Central Tapanuli have also been implemented based on mutually agreed programs. The work program can know this of the head of the madrasah that has been implemented, such as seminars, training, workshops, ICT guidance, access to developing information, and planning the provision of complete ICT facilities and infrastructure so that teachers have new knowledge and experience and can apply it to the educational process, especially what learning process they have obtained in the training activities, such as using laptops, projectors and internet networks, teachers have been able to carry out learning that can create an interesting atmosphere such as the use of PowerPoint, so that students easily understand learning materials.

#### ***Evaluation of the ICT System in MAN in Central Tapanuli District***

Based on the findings, there are differences in evaluation activities carried out in MAN 1, MAN 2, and MAN 3 Central Tapanuli. The difference in evaluation activities is that MAN 1 Tapanuli Tengah conducts evaluation activities on the ICT system, namely by carrying out supervision by the head of the madrasah and supervisors from the Ministry of Religious Affairs so that they can visit the madrasah every month to guide and supervise or by the needs and problems faced by MAN 1 Central Tapanuli. This is done to know the extent of the results achieved by the plan determined at the beginning of educational activities. This is achieved through good and active communication between all components of the madrasah. Unlike MAN 1 Central Tapanuli, the evaluation activities for the ICT

system carried out at MAN 2 Central Tapanuli are carrying out result evaluation activities.

Meanwhile, the evaluation activities carried out at MAN 3 Central Tapanuli are evaluations through assessment. Evaluation of ICT competency development by teachers is carried out by monitoring, assessing, and controlling the learning process taught by teachers to students and whether teachers can create interesting learning by integrating learning with technological advances. The head of the madrasah motivates all teachers to strive to develop ICT competencies so that students can study diligently and become more active and achieve. Then, an evaluation of ICT competency development activities by students is carried out by assessing activities carried out in the madrasah, such as assessing the learning process, supervising student activities related to technology, monitoring the results of midterm exams and semester exams of students, and monitoring the activeness of students in carrying out the learning process in class. This is done so that a sense of responsibility arises for teachers and students so that learning motivation can be maintained and even increased.

The similarity of ICT system evaluation activities carried out in MAN 1, MAN 2, and MAN 3 Central Tapanuli is by holding evaluation meetings that produce wise decisions to find the best solution. The evaluation aims to supervise various activities in an organization or educational institution, whether by the plan that has been determined and find out the obstacles experienced during the implementation of the activity program (Muh. Hambali, 2020).

#### 4. CONCLUSION

Based on research on implementing ICT management systems in educational institutions with multi-site analysis in MAN 1, MAN 2, and MAN 3 Central Tapanuli, several findings were discussed in the discussion of single and multi-site sites. The conclusion of this study is the difference in implementing the ICT management system based on planning aspects. Namely, the ICT system planning carried out in MAN 1 is more about identifying problems, and MAN 2 is more about determining the goals to be achieved. In comparison, MAN 3 is more about adjusting the needs of the madrasah. The implementation aspect is that MAN 1 prioritizes the implementation of learning using laptops, projectors, and the Internet. MAN 2 has not been implemented optimally because ICT facilities and infrastructure are inadequate.

In contrast, MAN 3 prioritizes the implementation of learning in mastering office materials, graphic design, and animation, and the evaluation aspect, namely evaluation activities in MAN 1, is more about the implementation of supervision. MAN 2 is more about evaluating results. In comparison, MAN 3 is more about assessment. While the similarities between MAN 1, MAN 2, and MAN 3 Central Tapanuli from the planning aspect, namely the ICT system is carried out in a teamwork manner, the implementation of the ICT system is carried out simultaneously by utilizing all types of IT by the needs of the madrasah and the evaluation of the ICT system is carried out as material for improvement.

#### REFERENCES

- Aisyah, S. (2018). *Manajemen Pendidikan Islam*. Pustaka Cendekia.
- Andri Sukmaindrayana, & Aneu Yulianeu. (2022). The Roles of Information and Communication Technology (ICT) in Transforming Student's Learning Outcomes at STMIK DCI Tasikmalaya. *Jurnal Iqra' : Kajian Ilmu Pendidikan*, 7(2). <https://doi.org/10.25217/ji.v7i2.1712>
- Anwas, O. M. (2016). Model Buku Teks Pelajaran Berbasis Teknologi Informasi Dan Komunikasi. *Jurnal Kwangsan*, 4(1). <https://doi.org/10.31800/jtp.kw.v4n1.p17--32>
- Ary Kurniawan, F. N. M. (2020). Pelaksanaan Pembelajaran Berbasis Teknologi Informasi Dan Komunikasi Di Sekolah Menengah Kejuruan. *Jurnal Al-Tanzim*, 4(2).

- <https://doi.org/http://doi.org/10.33650/al-tanzim.v4i2.1156>
- Asep Saepudin, B. N. M. (2016). Menumbuhkan Minat Baca Masyarakat Melalui Taman Bacaan Masyarakat Berbasis Teknologi Informasi. *Jurnal Kwangsan*, 4(1). <https://doi.org/10.31800/jurnalkwangsan.v4i1.34>
- Awalia, S., Sihombing, N. S., Sudiantini, D., Sabtohadhi, J., & Rasyid, K. H. (2022). *Sistem Informasi Manajemen*. CV. Pena Persada. [http://repository.ubharajaya.ac.id/13622/1/buku system infor mnjmn.pdf](http://repository.ubharajaya.ac.id/13622/1/buku_system_infor_mnjmn.pdf)
- Budiyono, Haryono, H. T. B. (2015). Implementasi Tim Pengembang Teknologi Pendidikan Di Sekolah. *Jurnal Kwangsan: Jurnal Teknologi Pendidikan*, 3(1). <https://doi.org/10.31800/jurnalkwangsan.v3i1.21>
- Haryanto. (2015). *Teknologi Pendidikan*. UNY Press. [http://staffnew.uny.ac.id/upload/131656343/penelitian/buku Teknologi Pendidikan.pdf](http://staffnew.uny.ac.id/upload/131656343/penelitian/buku_Teknologi_Pendidikan.pdf)
- Innayah. (2018). Evaluasi Pemanfaatan Media Audio “Abc” (Aku Baca Dalam Cerita) Untuk Mengenalkan Huruf Pada Paud. *Kwangsan: Jurnal Teknologi Pendidikan*, 6(2). <https://doi.org/10.31800/jtp.kw.v6n2.p107--121>
- Istiyarti. (2014). Pemanfaatan TIK Untuk Pembelajaran. *Jurnal KWANGSAN*, 2(1). <https://jurnalkwangsan.kemdikbud.go.id/index.php/jurnalkwangsan/article/view/15/14>
- Jamaluddin. (2018). *Manajemen Mutu Layanan Akademik*. Salim Media Indonesia.
- Jaritos, V. R., Vanegas, E., Facundo Nogueira, J., Leiva Agüero, S., Giovini, V., Rey de Castro, J., Rodríguez Reyes, Y., Luis Carrillo Alduenda, J., Torres Gittaim, P., Romero, Z., Terán Pérez, G., Angélica Bazurto, M., Sarfraz, A., Sarfraz, Z., José Farfán Bajaña, M., Mautong, H., Felix, M., & Cherez- Ojeda, I. (2022). Frequency Of Use And Preferences For Information And Communication Technologies In Patients With Sleep Apnea: A Multicenter, Multinational, Observational Cross-Sectional Survey Study. *International Journal of Medical Informatics*, 162. <https://doi.org/10.1016/j.ijmedinf.2022.104760>
- Juhriyansyah Dalle, A. Akrim, B. (2020). *Pengantar Teknologi Informasi*. PT. Rajagrafindo Persada. [http://eprints.ulm.ac.id/9247/1/Buku\\_Pengantar Teknologi Informasi.pdf](http://eprints.ulm.ac.id/9247/1/Buku_Pengantar_Teknologi_Informasi.pdf)
- Kusumawati Dwiningsih, Sukarmin, Muchlis, P. T. R. (2018). Pengembangan Media Pembelajaran Kimia Menggunakan Media Laboratorium Virtual Berdasarkan Paradigma Pembelajaran Di Era Global. *Kwangsan: Jurnal Teknologi Pendidikan*, 6(2). <https://doi.org/10.31800/jtp.kw.v6n2.p156--176>
- Lestari, S. (2015). Faktor-Faktor Yang Mempengaruhi Pemanfaatan TIK Oleh Guru. *Jurnal Kwangsan*, 3(2). <https://doi.org/10.31800/jurnalkwangsan.v3i2.29>
- Miftah, M. (2014). Pemanfaatan Media Pembelajaran Untuk Peningkatan Kualitas Belajar Siswa. *Jurnal Kwangsan*, 2(1). <https://doi.org/10.31800/jurnalkwangsan.v2i1.11>
- Muh. Hambali, M. (2020). Manajemen Pendidikan Islam Kontemporer: Strategi Pengelolaan Pendidikan Islam di Era Industri 4.0. In *IRCisod*. IRCISod. <http://digilib.iain-jember.ac.id/id/eprint/1045>
- Putra, M. R. E., Marianita, M., & Pranansa, A. G. (2021). Information Management Database System Managerial Supervision of School Supervisors. *Jurnal Iqra': Kajian Ilmu Pendidikan*, 6(1). <https://doi.org/10.25217/ji.v6i1.1264>
- Sjahrudin, H., Ramli, M., Bangkara, B. M. A. S. A., Nawassyarif, N., & Fatmawati, E. (2022). Technological Innovation to Support 21st Century Learning Outcomes and Sustainability at Universitas Islam Negeri (UIN) Antasari. *Jurnal Iqra': Kajian Ilmu Pendidikan*, 7(1). <https://doi.org/10.25217/ji.v7i1.1473>

- Sutjipto, Nf. (2016). PENGEMBANGAN KURIKULUM DENGAN MEMANFAATKAN TEKNOLOGI INFORMASI DAN KUMUNIKASI, SUATU GAGASAN. *Jurnal Kwangsan*, 4(2). <https://doi.org/10.31800/jtp.kw.v4n2.p119--137>
- Ulya, H. (2021). The Implementation of ICT-Based Flipped Classroom for Linear Algebra Course. *Jurnal Iqra': Kajian Ilmu Pendidikan*, 6(1). <https://journal.iaimnumetrolampung.ac.id/index.php/ji/article/view/1091>
- Warsita, B. (2017). Peran Dan Tantangan Profesi Pengembang Teknologi Pembelajaran Pada Pembelajaran Abad 21. *Jurnal Kwangsan*, 5(2). <https://doi.org/10.31800/jurnalkwangsan.v5i2.42>
- Widyastono, H. (2015). Pendayagunaan Teknologi Informasi Dan Komunikasi (TIK) Dalam Pengembangan Pembelajaran Dan Manajemen Sekolah Rintisan Penerapan Kurikulum 2013. *Jurnal Kwangsan*, 3(2). <https://doi.org/10.31800/jurnalkwangsan.v3i2.26>
- Widyastono, H. (2017). Pemanfaatan Teknologi Informasi Dan Komunikasi Pada Sekolah Menengah Pertama Negeri Akreditasi A Di Provinsi Jawa Timur. *Jurnal Kwangsan*, 5(1). <https://doi.org/10.31800/jurnalkwangsan.v5i1.37>
- Yuni Sugiarti, N. K. (2017). Pengembangan Knowledge Management System Berbasis Web Dalam Meningkatkan Kompetensi Guru Madrasah Tsanawiyah. *Jurnal Kwangsan*, 5(1). <https://doi.org/10.31800/jurnalkwangsan.v5i1.40>
- Zainiyati, H. S. (2017). *Pengembangan Media Pembelajaran Berbasis ICT: Konsep dan Aplikasi pada Pembelajaran Pendidikan Agama Islam*. Kencana. [http://repository.uinsa.ac.id/id/eprint/1461/1/Husniyatus\\_Salamah\\_Zainiyati\\_Pengembangan media pembelajaran berbasis ICT.pdf](http://repository.uinsa.ac.id/id/eprint/1461/1/Husniyatus_Salamah_Zainiyati_Pengembangan_media_pembelajaran_berbasis_ict.pdf)