

## Research Article

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# Optimization of Based Academic Management Information Systems E-Learning in Improving the Quality of Learning in State Madrasah Aliyah 1 and 2 Bandung City

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**Abstract:** This research is motivated by the existence and role of information technology which has brought a new era in the development of education but has not been matched by an increase in human resources. These conditions encourage changes in various aspects to accelerate improvements to achieve the goal of quality education. The aim of this research is to identify planning, organizing, implementing, monitoring, supporting and inhibiting factors as well as the impact of an e-learning based academic management information system in improving the quality of learning in MAN 1 and 2 Bandung City. The approach to this research uses a qualitative approach. The research method used in this research is the case study method. The impact of an e-learning based Academic Management Information System in improving the quality of learning in MAN 1 and 2 Bandung City, namely with attractive slide displays (eye-catching), good learning methods, teachers and students can carry out the learning process in a serious and fun way. This is acknowledged by students, that with the implementation of an e-learning based academic management information system in improving the quality of learning in schools, the learning process becomes varied and not boring.

**Keywords:** management information systems, academic, e-learning based, learning quality.

## Introduction

The development and use of Information and Communication Technology (ICT) has penetrated and colored all aspects of society's life, including the field of education. The use of information and communication technology by society has now become commonplace, no longer a dream that is difficult to realize, including its use in the world of education. Considering that the use of information and communication technology for the world of education has become an inseparable part, it is necessary to popularize and implement an appropriate education management information system so that its implementation and use are optimal in accordance with the interests and goals of the world of education. (Wahyudi et al., 2015) One of these needs is providing access to data and information obtained from the process of collecting, recording, processing, duplicating,

storing, and sending until the information is received by decision makers. (Hisbanarto, 2014)

The industrial revolution 4.0 is growing rapidly in various areas of life, one of which is the education sector. The rapid development of technology has had a positive impact on every element of society. The use of sophisticated information technology is increasingly in demand by every individual or organization, making it a supporting tool in making daily work easier. One sector that takes advantage of developments in information technology is the education sector. Educational institutions are required to be able to develop management information systems (SIM) to improve the quality of educational services. Currently educational institutions have various needs in implementing and managing their institutional organizations. (Hisbanarto, 2014)

The existence and role of information technology has brought a new era in the development of education, but it has not been matched by an increase in human resources. These conditions encourage changes in various aspects to accelerate improvements to achieve the goal of quality education. Quality/quality is reflected in other components such as high performance, efficiency, effectiveness, and productivity supported by Information and Communication Technology (ICT) which is a solid unit that must be integrated in the system management. Applications in information system processing are known as Management Information System (MIS) or driving license.

MIS is a collection of information system interactions that provide information for both managerial and operational needs. (Prasojo, 2013) Therefore, the development of information systems must be balanced with the presence of adequate human resources. The development of SIM in educational institutions is very necessary, to face globalization competition, educational institutions are required to provide information more quickly, accurately, and conveniently which is part of service quality, so that it will become a competitive advantage in educational institutions (competitive advantage). (Rochaety, 2006) Competitive advantages can be achieved if the institution can provide services or services that suit customer needs so that customers are satisfied with the services provided. (Sallis, 2006) Apart from that, users of educational services are also satisfied with the results/ output obtained as well as the outcome which is competitive.

Indeed, SIM is not intended to shift the conventional system which has existed. This old process still needs to be used in several learning processes, such as face-to-face meetings between students and their teachers. According to Riyana in (Arifudin, 2019), as part of learning, information technology has three positions, namely as a supplement, complement and substitute. Students do not have the obligation to

access learning material via information technology, so it is called a supplement. However, students who use it will certainly have additional knowledge or insight.

Planning for implementing activities to improve the quality of the learning process by utilizing SIM is carried out through several strategies. The planning strategy refers to the vision, mission, and goals of each school. Apart from that, the policy of preparing a program for implementing activities to improve the quality of the learning process by using SIM based on phenomena and facts in the madrasa environment and society shows that implementation activities to improve the quality of the learning process by using management information systems are optimal in accordance with the objectives of using SIM. (Hambali, 2021)

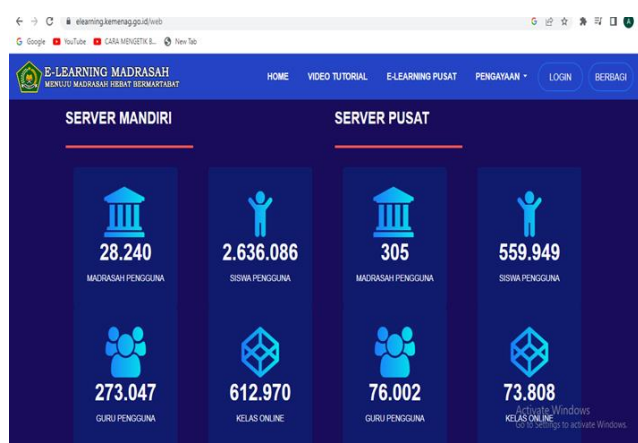
Madrasah as a formal educational institution under the supervision of the Ministry of Religion, grows and develops along with the times. The demand for educational services is a challenge for madrasas to carry out effective madrasa management based on digitalization. It is important that madrasas are well managed because management challenges in the 21st century are more developed than in the previous century.

The challenges faced by the world of education, including madrasas, in the industrial era 4.0 are increasingly showing rapid and complex intensity. This clearly has a big influence on madrasas, becoming digitalization-based madrasas. So, a new mindset is needed in facing the challenges of industry 4.0. The current extraordinary conditions after Covid 19 have brought about very rapid changes in the world of education, especially Madrasah Aliyah.

The existence of a management information system based on e-learning in the world of education today has an influence as a learning tool to improve student learning outcomes at the high school level. As stated by the Director of the Facilities, Institutions and Student

Affairs Curriculum (KSSK) of the Ministry of Religion, Umar A, currently the Academic SIM is based on e-learning, Madrasahs with optimal management can provide various features for students. Madrasahs in Indonesia make it easy to obtain learning information quickly so that learning interactions can run optimally. (Farikhah, 2020)

MAN 1 and 2 Bandung City itself has implemented learning using the platform e-learning Madrasah. E-Learning Madrasah is an online learning application designed by the Director of Curriculum Facilities, Institutions and Student Affairs (KSSK), Ministry of Religion of the Republic of Indonesia. To date, there are around 28,240 madrasah application users e-learning, including MAN 1 and 2 Bandung City. Based on the data in the picture below, the number of teacher instructors who use the application e-learning There are 273,047 madrasahs, while the number of madrasah students using the application is 2,636,086 students. Meanwhile, the number of online classes as of April 2023 was recorded at around 612,970. E-learning Madrasahs also have 6 access roles including access roles for madrasa operators, subject teachers, Guidance Counseling teachers, homeroom teachers and supervisors. (<http://e-learning.kemenag.go.id>)



**Figure.** Madrasah e-learning data

Management information systems are part of management science. All management

functions, including planning (planning), organizing (organizing), leadership (leading/actuating), and control (controlling) are necessary for successful activities in an organization, including educational institutions. Success in carrying out management functions is supported by an information system that can provide the information needed by managers (leaders of educational institutions. SIM is a computer-based system that provides information for users who have the same needs. (Moekijat, 2015) This is in line with the Minister of National Education Regulation number 19 of 2007 concerning Management Standards, in the attachment it is stated that schools/madrasahs manage an adequate management information system to support effective, efficient, and accountable education administration.

Management as the key to successful e-learning in increasing the effectiveness of learning, it needs to be supported by various aspects, both human resources and infrastructure. However, the current educational reality that is problematic is the lack of optimization of madrasahs in managing and empowering the system e-learning. Whether it is influenced by the lack of competence of educational staff, incomplete infrastructure, which has an impact on the intensity of interaction and the quality of learning information. (Darmawan, 2016)

Putra A's research results stated that to support the existing learning system at MA Kare Madiun, there needs to be a new learning system to support learning using electronic media in the form of computers, namely e-learning. To provide solutions to the teaching and learning process at MA Kare Madiun so that it can make it easier for students and teachers in the learning process which can be carried out at any time without limits as provided by the school. (Putra, 2019)

According to (DeLone and McLean, 2003) that the quality of information is related to the system use, user satisfaction, And net benefits. Information quality has attributes such as

information obtained from a system, accuracy of information, relevance of information, timeliness, and completeness of information. Meanwhile, service quality is more important than other applications because system users are now customers rather than employees or internal users of the organization.

As institutions under the Ministry of Religion, MAN 1 and 2 Bandung City have implemented madrasa management using Academic SIM in accordance with current technological developments. MAN 1 and 2 Bandung City have implemented educational services through SIM-Based Academics e-learning, to respond to all changes and developments, especially in the field of education, both in the process of teaching and learning activities, or in personnel administration services, infrastructure, libraries, finance, etc.

Strengthening and expanding SIM-based academics e-learning one component that cannot be separated from educational activities. Apart from that, the level of understanding of madrasah managers regarding madrasah management information systems still varies, including Moodle, Website, Simpatika, Madrasah Self Evaluation (EDM), and Digital Madrasah Report Cards (RDM). Therefore, the head of the madrasah should understand the implementation of the madrasah information system so that later a policy will be made in developing the madrasah SIM.

MAN 1 and 2 Bandung City currently uses an Academic-based SIM e-learning in the learning process. Implementation of SIM based Academic e-learning requires students to be independent in the hope of being able to increase understanding in the learning process which is ultimately in line with increasing the effectiveness of the quality of learning. Goals to be achieved from using SIM-based Academics e-learning, namely making it easier for students to find deeper information about the subject matter being

studied and making it easier for students to understand the material.

Only implementation of SIM based Academic e-learning Currently MAN 1 and 2 in Bandung City are not running optimally, due to educators not consistently using SIM-based academics e-learning in learning. Apart from that, educators are lazy about using SIM and some educators are still technologically clueless about using SIM-based e-learning. This was seen when researchers carried out initial research, as seen from the less-than-optimal interactions between teachers and students or even between students themselves. This lack of interaction can slow down formation values in the teaching and learning process so that it has an impact on low learning outcomes. In general, the e-learning based Academic Management Information System in improving the quality of learning has not been implemented optimally in MAN 1 and 2 Bandung City, namely older teachers have difficulty following or carrying out SIM implementation. Apart from that, errors often occur in SIM technology, and in learning students have difficulty following deadlines which has been determined in the documentation of coverage of school activities in e-learning.

Apart from that, there are also those who abuse online learning as a relief for not participating in learning so that the implementation of learning tends to be passive. This problem occurs because teachers lack mastery of technological and information developments, students and teachers are less responsive to the features available in the application. and-learning, students' backgrounds are different both in terms of economics for purchasing quotas or signal strength at their place of residence so that usage and-learning is not optimal, there is a lack of teacher ability to implement learning effectively and-learning. Even though the madrasah has carried out training, it has even been stated in the Madrasah Work Plan that the implementation of the

Academic SIM is to create a digitalization-based madrasah.

Based on the background above, the researcher intends to examine this problem more deeply. Researchers conducted research with the title: Optimization of Based Academic Management Information Systems e-learning in Improving the Quality of Learning in State Madrasah Aliyah (Research in State Madrasah Aliyah 1 and 2, Bandung City).

## Method

According to Rahardjo, quoted in (Arifudin, 2021), research methods are a way to obtain and search for tentative truths, not absolute truths. The result is scientific truth. Scientific truth is a truth that is open to continuous testing, criticism and even revision. Therefore, there is no best method for searching for the truth, but there is a method that is appropriate for a particular purpose according to the existing phenomenon. Budiharto was quoted in (Ramli, 2024) that the choice of research method must be adjusted to the research being carried out so that the results are optimal.

This research seeks to analyze and describe the optimization of an e-learning based academic management information system in improving the quality of learning at Madrasah Aliyah Negeri 1 and 2 Bandung City. The type of research used in this research is a descriptive analysis method. According to (Ningsih, 2024) descriptive analysis is empirical research that investigates a specific symptom or phenomenon in a real-life setting. The results of this research were collected using primary data and secondary data.

The approach used in this research is a qualitative approach. According to Bogdan and Taylor in (Rifky, 2024), a qualitative approach is a research procedure that produces descriptive data in the form of written or spoken words from people and observable behavior. According to

(Kartika, 2022) the method is to transcribe the data, then coding the notes in the field and interpreting the data to obtain conclusions.

This research uses qualitative research with field research methods (field research). According to (Nuary, 2024) this approach is adapted to the main aim of the research, namely describing, and analyzing the optimization of an e-learning based academic management information system in improving the quality of learning at Madrasah Aliyah Negeri 1 and 2 Bandung City. So that this method will be able to explain the problems of the research (Djafri, 2024).

Determining appropriate data collection techniques greatly determines the scientific truth of research. The data collection techniques used in this research are observation, interviews, and documentation.

Engineering can be seen as a means of carrying out technical work carefully using the mind to achieve a goal. Even though the study is an effort within the scope of science, it is carried out to collect realistic data systematically to realize the truth. Research methodology is a means to find a cure for any problem. In this case, the author collected information about the analysis of optimizing an e-learning-based academic management information system in improving the quality of learning at Madrasah Aliyah Negeri 1 and 2 Bandung City, articles, journals, theses, theses, ebooks, etc. (Arif, 2024).

Because it requires material from the library as a data source, this research utilizes library research. Researchers need books, scientific articles and other literature related to the topics and problems they explore, both print and online (Arifudin, 2020).

Searching for information from data sources requires the use of data collection techniques. Amir Hamzah in (Sembiring, 2024) claims that data collection is an effort to collect information related to the subject under study. The author uses library research methods to collect

data. Specifically, the author started with the library to collect information from books, dictionaries, journals, encyclopedias, papers, periodicals, and other sources that share views on optimizing e-learning-based academic management information systems in improving the quality of learning at Madrasah Aliyah Negeri 1 and 2 Bandung.

Amir Hamzah further said that data collection means various efforts to collect facts related to the topic of discussion that is being or will be explored. (Arifin, 2024). These details can be found in scientific literature, research and scientific writings, dissertations, these, and other written sources. According to (Rohimah, 2024) data collection can be carried out in various circumstances, using different sources, and using different techniques.

Observation is part of the research process directly regarding the phenomena to be researched (Kartika, 2021). With this method, researchers can see and directly feel the atmosphere and condition of the research subject (Sanulita, 2024). The things observed in this research are about optimizing an e-learning based academic management information system in improving the quality of learning at Madrasah Aliyah Negeri 1 and 2 Bandung City.

The interview technique in this research is a structured interview, namely interviews conducted using various standard guidelines that have been established, questions are arranged according to information needs and each question is needed to reveal any empirical data (Kartika, 2024).

Documentation is a data collection technique through existing documents or written notes (Kartika, 2023). Documentation comes from the word document, which means written items. In implementing the documentation method, researchers investigate written objects, such as books, magazines, meeting minutes and diaries. According to Moleong in (Nasem, 2018) the documentation method is a way of collecting

information or data through examining archives and documents. Furthermore, according to ((Ulimaz, 2024) documentation strategy is also a data collection technique proposed to research subjects. This data collection method using the documentation method was carried out to obtain data about the condition of the institution (research object), namely the optimization of an e-learning based academic management information system in improving the quality of learning at Madrasah Aliyah Negeri 1 and 2 Bandung City.

Muhadjir in (Ulfah, 2022) states that data analysis is the activity of carrying out, searching for and compiling records of findings systematically through observations and interviews so that researchers focus on the research they are studying. After that, make the found material for other people, edit, classify and present it.

## **Results and Discussion**

In implementing an academic-based management information system E-learning There are two influencing factors, including supporting factors, and inhibiting factors. Based on several presentations of the results previously discussed, it can be concluded what factors influence the implementation of an academic-based management system E-learning, as follows: Supporting factors for implementing an academic-based management information system E-learning: 1) completeness of supporting facilities (hardware and software), and 2) cost capabilities.

In the monitoring process that has been carried out on activities, there are changes that result in both progress and setbacks. If the changes caused lead to setbacks, deviations or obstacles have occurred in the implementation of activities. A leader must understand these deviations to provide the best solutions in the future.

Referring to the lack of planned supervision, the process of identifying various obstacles to the implementation of the academic management information system is based on E-learning in both madrasahs. It is less than optimal. However, findings in the field based on interviews, direct observations and documentation studies show that there are at least several obstacles to the implementation of an academic management information system based on E-learning including: obstacles due to the limited ability of teachers' human resources towards IT, and obstacles due to insufficient support from external parties such as the madrasah committee, local community, government, and madrasah partners.

Impact of Academic Management Information Systems based E-learning in improving the quality of learning in MAN 1 and 2 Bandung City based on the following indicators:

1) Cognitive

Implementation of an Academic Management Information System based E-learning in improving the quality of learning, it was found that there was timeliness and various forms of activities in terms of program planning, program organization, program implementation and program supervision. In terms of capacity, the recently established madrasahs are quite representative places. Meanwhile, from a psychological perspective, various parties, especially the madrasah academic community, namely the madrasah principal, deputy madrasah principal, IT Team, teachers, and students, are very enthusiastic and motivated to continue implementing the program for implementing an Academic Management Information System based on E-learning in improving the quality of cognitive learning for students at MAN 1 Bandung City.

Other findings regarding the implementation of the Academic Management Information System are based E-learning in improving the quality of learning at MAN 1

Bandung City, it has an impact on improving the quality of learning services in the classroom, this can be seen from the enthusiasm of students in participating in the learning process using the Academic Management Information System media. E-learning improves the quality of learning. With attractive (eye-catching) slide displays, good learning methods, teachers and students can carry out the learning process in a serious and enjoyable manner. This is recognized by students, that with the implementation of an Academic Management Information System based on E-learning in improving the quality of learning at MAN 1 Bandung City, the learning process will be varied and not boring. In line with the students, teachers also gave good comments on the implementation of the Academic Management Information System E-learning in improving the quality of learning, they no longer have the hassle of carrying laptops or lots of textbooks.

If additional material is needed that is not yet available, teachers can access additional learning material via the hotspot area (wifi) provided at the madrasah. In the cognitive domain, project-based learning treatment in the experimental class familiarizes students with thinking critically and creatively in dealing with problems given in the form of real projects.

Teachers who previously were not or were less literate with information technology, after the implementation of the Academic Management Information System E-learning in improving the quality of learning at MAN 2 Bandung City, the quality of teachers' Human Resources (HR) is increasing.

Whatever their disciplinary background, they are no longer technologically ignorant about information technology. Through socialization and training provided by the IT Team as well as the use of an Academic Management Information System E-learning in improving the quality of learning in the classroom, teachers become intelligent and skilled in optimizing the function

of computers as an auxiliary medium in the learning process in the classroom. Impact on the Quality of Student Human Resources Implementation of an Academic Management Information System based E-learning in improving the quality of learning at MAN 2 Bandung City, it has a good impact on students. This can be seen from the increasing ability of students in the field of information technology.

This is in line with (Muharto, 2017) who states that the use of the internet (IT) in learning is divided into two stages, namely first, Web Enhanced Course, which supports learning in class (face to face) which can be accessed online and distance learning, namely participants and teachers separated by time and space; Second, distance learning is development and the first stage, although in certain situations a new institution may be able to implement E-learning only in the first stage.

Hartley as quoted (Tanjung, 2022) stated that E-learning is a type of teaching and learning that allows teaching materials to be delivered to students using the internet, internet, or other computer network media. While Frame Com in the Glossary of E-learning the term states a broader definition, that E-learning is an education system that uses electronic applications to support teaching and learning using the internet, computer networks, or stand-alone computers.

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## 2) Affective

The results of student learning in the affective domain conclude that from every aspect

of observation it turns out that most students who learn by implementing project-based learning have good criteria. In its implementation, the project-based learning model in E-learning is carried out using experimental methods in the form of projects, demonstrations, discussions and questions and answers as well as lectures. With a project-based learning model implemented through practicum methods, students can be more creative and innovative, think critically, and apply the material they learn in everyday life.

The results of the affective domain assessment show that there are 4 aspects that have a very high average, namely presence, discipline, curiosity, and project assignments. Meanwhile, the next 6 aspects are included in the high category, namely discipline in carrying out complete work and tasks, individual accuracy of tasks, active time, responsibility, cooperation, and thoroughness. This is due to the assisted project-based learning model E-learning provides opportunities for students to participate actively in learning that involves students in learning so that it can provide fun and an impression that arouses students' motivation and interest in learning.

This is in line with (Munir, 2009) who explains that E-learning is one of the most effective media or learning methods that can reach a wide area, at a relatively low cost. Learning materials can be accessed whenever and wherever needed. Through E-learning, students can take information and material based on lesson plans or criteria set by educators or education managers. This is in line with the opinion of Riyanto and Prasojo in (Prawiradilaga, 2013) who stated that E-learning is internet and internet-based online learning that requires a medium to be able to display materials and questions to exchange information between students and educators.

Application E-learning Madrasah can be accessed from anywhere and at any time. From anywhere, this means that this application can be opened even if you are not in a madrasah environment. At any time, this means that there is



some free time that can be used to open even though the learning activities are still adjusted to a predetermined schedule. Application E-learning Madrasah is a very complete application for the continuity of online data in Madrasahs because it contains data about madrasah administration, data on educators and education staff, and student data. (Insiyah, 2020)

E-learning Madrasahs also provide menus for teachers to distribute teaching materials that will be delivered to students. Teachers can create as many classes as the teacher teaches, be they subject teachers, class teachers or guidance and counseling teachers. Teachers even usually create online classes that provide electronic books that students can access whenever and wherever they are. So that students can still carry out literacy activities well. Using E-learning will make it easier for educators and students because everything is well structured.

So, it can be concluded that E-learning is an application that contains a digital platform that educators and students use to access learning. E-learning can be done anytime and anywhere. Educators don't just upload teaching materials that will be delivered to students. However, educators also usually carry out assessments directly on E-learning and can also be seen by students and parents.

### 3) Psychomotor

Basically, E-learning is a learning model that requires students to participate actively both individually and in groups through collaboration so that it involves students in problem-solving investigations. Through project-based learning, apart from learning outcomes in the psychomotor domain, students' other abilities such as creativity and learning motivation can be increased. This is the basis for the assessment aspect of the psychomotor domain during the learning process, showing that students can carry out each stage of the project well in accordance with the assessment criteria that have been determined.

Apart from that, the results of student learning in the affective domain concluded that from every aspect of observation it turned out that most students who studied by implementing project-based learning had good criteria. In its implementation, the project-based learning model is carried out using experimental methods in the form of projects, demonstrations, discussions and questions and answers as well as lectures.

With a project-based learning model implemented through practicum methods, students can be more creative and innovative, think critically, and apply the material they learn in everyday life. Project-based learning is a learning model that requires students to participate actively both individually and in groups through collaboration so that it involves students in problem-solving investigations. Through project-based learning, apart from learning outcomes in the cognitive domain, students' other abilities such as creativity and learning motivation can be increased, supported by E-learning which is adequate.

The indicator of psychomotor achievement at MAN 2 Bandung City is learning. E-learning is a learning model that requires students to participate actively both individually and in groups through collaboration to involve students in problem-solving investigations. Through project-based learning, apart from learning outcomes in the cognitive domain, students' other abilities such as creativity and learning motivation can be increased. This is the basis for the assessment aspect of the psychomotor domain during the learning process, showing that students can carry out each stage of the project well in accordance with the assessment criteria that have been determined.

Benefit E-learning in this learning is in line with Syafiul Muzid quoted by (Rahardja et al, 2017) who stated that there are many benefits that will be obtained from implementing E-learning that is:

- a) Facilitate and increase interaction time both between students and learning materials, between students and teachers and between fellow students.
- b) Makes it possible for students to still be able to learn even if they are not physically present in the classroom.
- c) Enables students and teachers to share information or opinions about learning material so that they can optimize the face-to-face time available to concentrate on the material.
- d) Improving the quality and performance of lecturers by developing better learning models and learning materials that are easy for students to understand and study.
- e) Reducing the digital gap between lecturers and students by implementing an integrated and integrated internet technology-based system.
- f) Makes it easier to refine and store learning materials.

## Conclusion

The impact of an e-learning based Academic Management Information System in improving the quality of learning in MAN 1 and 2 Bandung City, namely with attractive slide displays (eye-catching), good learning methods, teachers and students can carry out the learning process in a serious and fun way. This is acknowledged by students, that with the implementation of an e-learning based academic management information system in improving the quality of learning in schools, the learning process becomes varied and not boring.

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