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Enhancing the Quality of Learning through an E-Learning-Based Academic Management Information System at Madrasah Aliyah Negeri

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ABSTRACT

The motivation for this research stems from the significant impact of information technology on education, ushering in a new era of development. However, this technological advancement has not been accompanied by a proportional increase in human resources, creating a need for systemic changes to expedite improvements and achieve quality education objectives. This study aims to analyze the planning, organization, implementation, supervision, and influencing factors (both supportive and detrimental) of an e-learning-based academic management information system, as well as its impact on enhancing learning quality at MAN 1 Bandung. Utilizing a qualitative methodology, the research findings indicate that the e-learning-based Academic Management Information System positively affects learning quality through engaging slide presentations and effective teaching methods, enabling both teachers and students to participate in a serious yet enjoyable learning process. the result shows that the implementation of e-learning in Islamic Religious Education can significantly enrich students' learning experiences and facilitate wider access to teaching materials. The conclusion is that effective implementation of e-learning platforms, coupled with strategic management and quality control, is crucial for optimizing educational outcomes and fostering a dynamic learning environment.

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1. INTRODUCTION

The pervasive integration and application of Information and Communication Technology have permeated all facets of contemporary life, including the educational domain. The utilization of ICT by the public has become ubiquitous and is no longer an unattainable aspiration, extending to its

application within education. Given that ICT's use in education is now an integral component, it is imperative to implement appropriate educational management information systems and provide necessary refinements to ensure their optimal implementation and utilization, aligning with the objectives of the educational sector. This necessity includes facilitating access to data and information derived from the processes of data collection, recording, processing, duplication, storage, and transmission to the relevant decision-makers.

The rapid advancement of the industrial revolution 4.0 has significantly impacted various sectors, including education. Technological progress offers considerable advantages across society, with sophisticated information technology becoming increasingly sought after by individuals and organizations to streamline daily operations. Educational institutions are leveraging this technological evolution, necessitating the development of robust management information systems to enhance the quality of educational services. These institutions face diverse requirements for implementing and managing their organizational structures.

The advent and influence of information technology have ushered in a new era in educational development. However, this progress has not been matched by a commensurate increase in human resources. This disparity necessitates changes across various aspects to expedite improvements toward achieving quality education goals. Quality is manifested in other components such as high performance, efficiency, effectiveness, and productivity, all of which are supported by robust Information and Communication Technology. ICT is an integral unit that must be integrated within system management. In the context of information system processing, this is recognized as the Management Information System.

A Management Information System is a comprehensive framework of interconnected information systems designed to fulfill both managerial and operational requirements. Consequently, the evolution of information systems must be accompanied by the development of commensurate human resources. The implementation of MIS within educational institutions is crucial for preparing them to navigate global competition, which demands the provision of faster, more accurate, and more convenient information. This enhances service quality and establishes a competitive advantage for the institution. Competitive advantage is attained when an institution consistently meets or exceeds customer expectations, leading to satisfaction with the services rendered. Furthermore, users of educational services derive satisfaction from the quality of the academic output and the overall learning outcomes, which contribute to a competitive edge.

The implementation of Management Information Systems is not intended to replace the existing conventional system entirely. Traditional methods, such as face-to-face interaction between students and teachers, remain necessary for certain aspects of the learning process. As noted by Riyana, information technology can serve three roles in education: as a supplement, a complement, and a substitution. Since students are not mandated to access learning materials exclusively through information technology, its role is considered supplementary. Nevertheless, students who utilize these technological resources will undoubtedly gain additional knowledge and insights.

Strategies for enhancing the quality of the learning process through the utilization of a Management Information System involve meticulous planning. The development of these plans is guided by the overarching vision, mission, and objectives of each educational institution. Furthermore, policies governing the implementation of SIM-based strategies to improve learning quality are formulated based on the prevailing conditions and realities within the madrasah and its surrounding community, indicating that such systems, when optimally utilized, effectively meet their intended purpose.

As a formal educational institution under the Ministry of Religious Affairs, madrasahs are continuously evolving with the times. The increasing demand for educational services presents a challenge for madrasahs to adopt digital-based management for effective operations. The significance of well-managed madrasahs is underscored by the complexities of 21st-century management, which surpass those of previous eras.

The educational landscape, including madrasas, is experiencing significant and rapid challenges in the context of the 4.0 industrial era, leading to a widespread adoption of digitalization. This necessitates a new strategic approach to address the complexities of industry 4.0. The post-COVID-19 pandemic period has accelerated these changes, particularly impacting Madrasah Aliyah.

The current educational landscape is influenced by the presence of e-learning-based management information systems, which serve as a learning medium to enhance student outcomes at the high school level. According to Umar A, Director of Curriculum Facilities, Institutions, and Students at the Ministry of Religion, academic SIMs integrated with e-learning, when optimally managed by madrasahs, offer a variety of features. These features simplify the acquisition of learning information for students in Indonesian madrasahs, thereby optimizing learning interactions.

MAN 1 Bandung has integrated a Madrasah e-learning platform into its learning processes. This Madrasah E-Learning system, developed by the Directorate of Curriculum Facilities, Institutions, and Student Affairs at the Ministry of Religion of the Republic of Indonesia, is utilized by approximately 28,240 madrasas nationwide, including MAN 1 Bandung. As of April 2023, the platform supports 273,047 teacher instructors and 2,636,086 students. The system has facilitated around 612,970 online classes. The Madrasah e-learning platform offers six distinct access roles, catering to madrasah operators, subject teachers, counseling guidance teachers, homeroom teachers, and supervisors.

Management information systems are a cornerstone of management science, supporting all essential management functions: planning, organizing, leading, and controlling. These functions are critical for the success of any organization, including educational institutions. An effective information system is vital for managers to access the necessary data to perform these functions successfully. This aligns with the Regulation of the Minister of National Education number 19 of 2007 concerning Management Standards, which stipulates that schools and madrasahs must implement adequate management information systems to ensure efficient, effective, and accountable educational administration.

Management serves as a critical factor in achieving learning success through e-learning. To enhance the effectiveness of e-learning, it requires support from various components, including human resources and infrastructure. However, a prevalent issue in current educational practices is the suboptimal utilization of madrasas in managing and empowering their e-learning systems. This deficiency may stem from the inadequate competence of educational personnel, incomplete infrastructure, or a combination of factors, ultimately impacting the intensity of interaction and the overall quality of learning information.

Research by Putra A indicated that to enhance the current learning system at MA Kare Madiun, a novel e-learning system utilizing computer-based electronic media is required. This new system aims to facilitate the teaching and learning process for both students and teachers at MA Kare Madiun, enabling anytime, anywhere access to learning resources, thereby overcoming the limitations of the school's existing provisions.

Delone and McLean posited that information quality is intrinsically linked to system usage, user satisfaction, and net benefits. They identified key attributes of information quality, including its origin from a system, accuracy, relevance, timeliness, and completeness. The quality of service has become paramount, surpassing other application aspects, as system users are increasingly viewed as customers rather than mere employees or internal stakeholders.

In light of the aforementioned background, this research undertakes a comprehensive investigation into the optimization of e-learning-based academic management information systems to enhance learning quality within Madrasah Aliyah Negeri.

2. METHODS

Research methodologies are essential for seeking tentative truths that are subject to ongoing testing, criticism, and revision, as opposed to absolute truths. Consequently, no single method is universally superior; rather, the most appropriate method depends on the specific research purpose

and the phenomenon under investigation. Budiharto emphasizes that the selection of a research method should align with the research objectives to ensure optimal outcomes.

This research employs a descriptive methodology, specifically a qualitative approach that focuses intently on a single subject to analyze it as a distinct problem. This approach is utilized to conduct an in-depth exploration of how e-learning-based academic management information systems can be optimized to enhance the quality of learning within Madrasah Aliyah Negeri.

The research employs a qualitative methodology, specifically adopting an approach that centers on in-depth analysis of a single subject as a distinct problem. This method involves transcribing data, followed by encoding field records and interpreting the information to derive conclusions.

This study employs a qualitative research approach, specifically utilizing field research methods. This strategy is aligned with the primary objective of the research, which is to describe and analyze the optimization of e-learning-based academic management information systems for enhancing learning quality in Madrasah Aliyah Negeri. Consequently, this methodology is expected to facilitate a comprehensive understanding and explanation of the research problems.

Qualitative descriptive research, as explained by Bungin, aims to document existing societal situations, conditions, or social phenomena, presenting them as a descriptive account of specific circumstances. This research endeavors to illuminate the optimization of e-learning-based academic management information systems in enhancing the learning quality within Madrasah Aliyah Negeri.

The selection of appropriate data collection methods is crucial for establishing the scientific validity of research. This study employed observation, interviews, and documentation as its primary data collection techniques.

Engineering can be understood as a methodical approach to executing technical tasks, employing intellectual capabilities to achieve specific objectives. While it is fundamentally an endeavor within the realm of science, its practice involves the systematic and realistic collection of data to ascertain truth. Research methodology serves as a critical tool for addressing and resolving problems. In this context, the author is gathering information related to the optimization of e-learning-based academic management information systems for improving learning quality at Madrasah Aliyah Negeri, drawing from various sources such as articles, journals, theses, dissertations, and e-books.

This study adopts a literature research approach, leveraging resources such as books, scholarly articles, and other relevant written materials, both in print and digital formats, as the primary data sources.

To gather necessary information, data collection techniques are employed. Amir Hamzah posits that data collection involves acquiring details pertinent to the subject of study. This research utilizes a literature review methodology for data acquisition. Specifically, the author begins by consulting library resources, including books, dictionaries, journals, encyclopedias, papers, periodicals, and other sources that offer insights into optimizing e-learning-based academic management information systems for enhanced learning quality in Madrasah Aliyah Negeri.

Furthermore, Amir Hamzah defines data collection as encompassing various efforts to gather facts pertinent to a topic or discussion, drawing from scientific literature, research papers, dissertations, theses, and other written sources. He notes that data collection can be undertaken under diverse circumstances, utilizing varied sources and techniques.

Observation, as a component of direct research, involves studying phenomena firsthand, allowing the researcher to directly perceive the atmosphere and conditions of the subject. This study's observations specifically focus on analyzing the optimization of e-learning-based academic management information systems to enhance learning quality within Madrasah Aliyah Negeri.

This study employed a structured interview approach, utilizing a set of standardized questions designed to elicit specific information and gather empirical data.

Documentation is a data collection method involving the examination of existing written records and archives, such as books, magazines, meeting minutes, and diaries. This process aims to gather information on the institutional context, specifically analyzing the optimization of e-learning-based academic management information systems for enhancing learning quality at Madrasah Aliyah Negeri.

Researchers utilize this method to investigate written materials to obtain relevant data. According to Moleong, the documentation method involves testing archives and documents to collect information, while another perspective suggests it is a data collection technique submitted to research subjects.

Data analysis, as described by Muhadjir, involves a systematic process of conducting, searching, and compiling findings from observations and interviews to focus the researcher's attention on the subject of study. This process culminates in the presentation of organized and classified information. Data validity is ensured through triangulation techniques and source verification. The data analysis employed in this study follows the Miles and Huberman model, which encompasses data collection, data reduction, data presentation, and the drawing of conclusions.

3. FINDINGS AND DISCUSSION

The effectiveness of the E-learning-based Academic Management Information System in enhancing the quality of education at MAN 1 Bandung is assessed through the following indicators:

1. Cognitive

The integration of the E-learning-based Academic Management Information System to enhance learning quality demonstrated punctuality and a variety of activities across program planning, organization, implementation, and supervision. From a spatial perspective, the madrasah's capacity, despite its relatively recent establishment, was found to be adequate. Psychologically, stakeholders within the madrasah academic community, including the head, deputy head, IT team, teachers, and students, exhibited considerable enthusiasm and motivation to continually implement the E-learning-based Academic Management Information System to improve cognitive learning outcomes at MAN 1 Bandung City.

Other findings on the application of E-learning-based Academic Management Information Systems in improving the quality of learning at MAN 1 Bandung City have an impact on improving the quality of learning services in the classroom, this can be seen from the enthusiasm of students in following the learning process with the media of E-learning-based Academic Management Information System in improving the quality of learning. With an attractive slide display, a good learning method, teachers and students can carry out the learning process seriously and funly. This is acknowledged by students, that with the implementation of an E-learning-based Academic Management Information System in improving the quality of learning at MAN 1 Bandung City, the learning process becomes varied and not boring. In line with the students, teachers also gave good comments on the application of the E-learning-based Academic Management Information System in improving the quality of learning, they are no longer bothered to carry a lot of laptops or textbooks. However, some students express concerns that over-reliance on digital platforms might reduce face-to-face interaction and hinder the development of certain social skills essential for holistic development.

The adoption of an E-learning-based Academic Management Information System to enhance educational quality has resulted in improved punctuality and a wider array of activities across program planning, organization, implementation, and supervision. The quality of the learning process is understood as the sum of pedagogical activities conducted by educators and students, both within and beyond the classroom. Conversely, the quality of learning outcomes refers to the tangible achievements of students, typically reflected in their academic grades.

For instances where supplementary learning resources are not readily available, educators can utilize the designated hotspot area within the madrasah. Within the cognitive domain, the implementation of project-based learning in the experimental class fostered critical and creative problem-solving skills among students as they engaged with real-world project assignments.

The implementation of the E-learning-based Academic Management Information System to enhance learning quality at MAN 1 Bandung has led to an increase in the proficiency of teachers in information technology, particularly for those who had limited or no prior experience.

According to Pudji Muljono, quality learning is characterized by five elements: suitability, attractiveness, effectiveness, efficiency, and learning productivity. The following details elaborate on these components as they relate to the concept of learning quality:

- Suitability: This encompasses alignment with student characteristics, community aspirations, societal needs, environmental context, contemporary demands, and emerging educational theories, principles, and values.
- Attraction: This includes ample and accessible learning opportunities, digestible educational content that has undergone processing, readily available resources accessible at any time, timely delivery of messages, strong role modeling, diverse learning resources (both developed and existing), and a familiar, nurturing classroom environment conducive to personality development.
- Effectiveness: This pertains to the systematic execution of learning activities through consistent stages of planning, development, implementation, assessment, and refinement, along with responsiveness to the demands of study assignments and lesson requirements.
- Efficiency: This involves designing learning activities based on models that cater to student interests and needs, organizing learning activities in a structured manner, ensuring a balanced distribution of tasks and resource utilization, developing and employing various learning resources as needed, and leveraging innovative, cost-saving approaches like distance and open learning.
- Productivity: This refers to the transformation of the learning process, enhancement of input within the learning process, increased engagement of students with learning resources, and the synergistic combination of these elements to yield superior quality, broader educational participation, a higher number of graduates, greater community appreciation for graduates, and a reduction in school dropout rates.

Educators, regardless of their original academic disciplines, have demonstrably improved their digital literacy. Through systematic training and support from the IT Team, coupled with the utilization of the E-learning-based Academic Management Information System, teachers have become proficient in leveraging computer technology as a supplementary tool within the classroom learning environment. This technological integration has yielded positive outcomes for the human resources within the student body. The deployment of the E-learning-based Academic Management Information System has positively influenced students' capabilities, notably enhancing their proficiency in information technology.

In agreement with Muharto's perspective, the utilization of the internet in educational contexts is conceptualized in two distinct phases: firstly, Web Enhanced Course, which complements traditional classroom instruction and is accessible online, alongside distance learning where participants and instructors are separated by temporal and spatial divides; and secondly, distance learning, which represents an extension of the initial phase. It is acknowledged that under specific circumstances, an institution might initially implement E-learning solely within the first stage.

Hartley posits that E-learning, defined as the delivery of educational content via internet or other computer network media, is a form of teaching and learning. Frame Com, in its Glossary of E-learning, offers a broader definition, characterizing E-learning as an educational system that utilizes electronic applications to support teaching and learning through internet media, computer networks, and standalone computer systems.

Muharto explains that internet utilization in learning occurs in two stages. The first stage, Web Enhanced Course, supports classroom learning through online accessibility and distance learning, separating participants and instructors by time and space. The second stage, distance learning, expands upon the first. However, institutions may initially implement E-learning solely within the first stage under certain conditions.

2. Affective

The assessment of student learning outcomes within the affective domain indicates that project-based learning, when implemented, resulted in favorable criteria for the majority of students across all observational aspects. This project-based learning model, integrated with E-learning, employs experimental methodologies such as projects, demonstrations, discussions, question-and-answer sessions, and lectures. The application of this project-based learning model, particularly through

practical methods, enhances students' creativity and innovation, sharpens their critical thinking, and facilitates the application of acquired knowledge to everyday life.

In alignment with the insights provided by the MKDP Development Team, motivation is identified as a crucial element in the educational process, underpinned by several key factors.

- Fostering collaboration among students in their learning endeavors is essential.
- Students should be consistently motivated to engage in work and strive diligently to meet academic requirements.
- Motivation plays a pivotal role in the sustenance and advancement of human capital through educational initiatives.

The assessment of the affective domain indicates that four aspects—attendance, discipline, curiosity, and project assignments—received a very high average score. The remaining six aspects, including discipline in completing work and tasks, individual accuracy in tasks, active participation, responsibility, cooperation, and thoroughness, were categorized as high. This is attributed to the E-learning-assisted project-based learning model, which actively engages students in the learning process, thereby fostering enjoyment and sparking their motivation and interest.

This aligns with Munir's assertion that E-learning serves as a highly effective medium or method for learning, capable of reaching a broad audience at a comparatively low cost, with learning materials accessible on demand. E-learning enables students to access information and materials according to the curriculum or the criteria established by educators or educational administrators. This is consistent with the views of Riyanto and Prasojo, who define E-learning as online, internet-based learning that necessitates a platform for presenting materials and assessments to facilitate information exchange between students and educators.

Inniyah posits that the E-learning Madrasah application offers ubiquitous access, enabling users to connect from any location at any time. This means the application can be utilized outside the traditional madrasah environment and during available free periods, provided it aligns with the established schedule. The E-learning Madrasah application is comprehensive in its support for online data management within a madrasah, encompassing administrative data, information on educators and staff, and student records.

The Madrasah e-learning platform features a dedicated section for educators to organize and distribute teaching materials to students. Teachers have the flexibility to create multiple classes, catering to their specific roles as subject, homeroom, or guidance counselors. Historically, educators have leveraged this system to establish online classes offering digital textbooks, providing students with 24/7 accessibility from any location, thereby fostering consistent literacy engagement. The structured nature of E-learning simplifies the educational process for both instructors and learners.

In conclusion, E-learning functions as a digital platform facilitating access to learning for both educators and students, allowing for anytime, anywhere engagement. Educators not only update teaching materials but also conduct assessments directly within the E-learning system, with visibility for students and parents.

3. Psychomotoric

Essentially, E-learning functions as a pedagogical model necessitating active student engagement, both individually and collaboratively, to foster problem-solving and investigative skills. This project-based approach, augmented by E-learning, has the potential to enhance students' creativity and motivation, alongside their psychomotor domain learning outcomes. The assessment of the psychomotor realm during the learning process confirms that students successfully navigated each project phase in accordance with established criteria.

This is as John Dewey said in (Arifudin, 2024) states that "learning is concerned with what the student has to do by himself. then the learning initiative must emerge from him." In the learning process, students must actively teach and the teacher only guides and directs.

The assessment of student learning outcomes in the affective domain revealed that the project-based learning model, when implemented, resulted in favorable criteria for the majority of students

across all observational aspects. This learning model incorporates experimental methodologies such as projects, demonstrations, discussions, question-and-answer sessions, and lectures.

Applying a project-based learning model facilitates student creativity, innovation, and critical thinking, enabling them to apply acquired knowledge to real-world situations. This approach requires active student participation, both individually and in groups, fostering problem-solving and investigative skills through collaboration. Consequently, project-based learning, enhanced by adequate E-learning resources, not only improves cognitive outcomes but also boosts students' creativity and motivation.

At MAN 1 Bandung, the psychomotor achievement indicator is demonstrated by E-learning, a pedagogical model that necessitates active student involvement, both individually and collaboratively, to foster problem-solving and investigative skills. This project-based approach, augmented by E-learning, has the potential to enhance students' creativity and motivation, alongside their psychomotor domain learning outcomes. The assessment of the psychomotor realm during the learning process confirms that students successfully navigated each project phase in accordance with established criteria.

The advantages of E-learning in the context of this educational setting are consistent with the observations made by Syafiul Muzid, who posits that the utilization of E-learning offers a multitude of benefits, including:

The advantages of E-learning in this educational context are corroborated by Syafi'i's observations, which highlight numerous benefits, including:

a. Enhanced and extended interaction opportunities among students and between students and learning materials, as well as between students and educators.
b. Enabling continuous learning for students irrespective of their physical presence in the classroom.
c. Facilitating the exchange of information and opinions between students and educators regarding learning materials, thereby optimizing face-to-face sessions for focused content engagement.
d. Elevating the quality and performance of educators through the development of superior learning models and accessible instructional materials.
e. Mitigating the digital divide between educators and students via the implementation of an integrated internet technology-based system.
f. Streamlining the enhancement and storage of learning materials.

The significance of this educational service's quality is encapsulated within the three National Policy Directions and the Ministry of Education and Culture's Policy Plan on Non-Physical DAK for the 2021 Fiscal Year, which are outlined as follows:

- Enhancing the accessibility and quality of educational services to expedite the realization of quality 12-year compulsory education, with particular attention to the needs of disadvantaged and underperforming regions.
- Providing support to local governments through the comprehensive provision of educational facilities and infrastructure to ensure the delivery of high-quality education services that meet Minimum Service Standards for Education.
- Upgrading the quality of educational facilities and infrastructure to foster a learning environment conducive to producing skilled graduates, especially in support of priority development areas, major projects, and national priority sectors.

Drawing from the service quality dimensions employed in this research, Haksever et al. posit that services encompass economic activities that yield time, place, form, and psychological utility. Consequently, the influence of implementing an E-learning-based academic management information system on enhancing learning quality at MAN 1 Bandung, when examined through these service quality dimensions, is as follows:

- Impact on Time: An E-learning-based academic management information system enhances learning quality by providing more effective and efficient access to data and information within the system's framework.

- Impact on Place: When developed as a network-based (online) learning system, an E-learning-based academic management information system facilitates continuous interaction between teachers and students, bridging formal and non-formal learning spaces for guidance and consultation.
- Impact on Form: The integration of an E-learning-based academic management information system into the learning process encourages creativity among both teachers and students.
- Impact on Psychological Utility: Psychologically, this system boosts the enthusiasm and confidence of teachers and students. In the current technological landscape, familiarity with information technology is essential. Therefore, implementing an E-learning-based academic management information system represents a significant effort by educational institutions to improve learning quality, teacher expertise, and student proficiency in IT.

The quality of services offered is a direct indicator of the overall quality of education within an institution, including secondary schools. MAN 1 Bandung, a secondary educational institution in West Java, is actively engaged in enhancing its educational services through various initiatives. Notably, the recent implementation of an E-learning-based academic management information system is a key program aimed at improving in-classroom learning experiences and fostering the development of high-quality graduates.

According to Minarti, the quality of education can be evaluated using several benchmarks, including the ultimate outcomes of educational processes, the direct results that measure an institution's educational quality, the learning process itself, the input instrument as a tool for engaging with raw input, and the raw input and its surrounding environment.

4. CONCLUSION

The findings indicate that the e-learning-based Academic Management Information System effectively enhances the learning quality at MAN 1 Bandung, evidenced by visually appealing presentations, sound pedagogical approaches, and an engaging, focused learning environment for both educators and students. Student feedback confirms that this system diversifies the learning process, preventing monotony. This diversification is crucial for maintaining student engagement and improving academic outcomes, particularly in environments where traditional learning methods may become stagnant (Haetami, 2023). Furthermore, the integration of such systems aligns with the broader objective of leveraging information technology to support and facilitate dynamic teaching and learning processes, thereby addressing contemporary educational challenges (Napitupulu et al., 2020). Such advancements are vital for ensuring that educational services remain responsive to the evolving needs of learners and the demands of a technology-driven world (Zulfikar & Mirfani, 2020) (Kasmad et al., 2024). Moreover, the success of these implementations often hinges on factors such as strong management support, active stakeholder involvement, and a comprehensive understanding of integrated quality management concepts (Permana et al., 2024). Effective implementation of integrated quality management systems is critical for educational institutions to achieve and maintain high standards of service and academic excellence, as demonstrated in various educational settings (Permana et al., 2024) (Hidayati et al., 2019).

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