

Analysis of the Implementation of a Learning Management System in Supporting the Digital Transformation of Education Based on Information Technology

Dhiyaa Rihadatul Aisya¹, Khusnul Khotimah², Muhammad Rizqi³,

Ahmad Noor Bayu Ramadan⁴, Abdul Azis⁵

^{1,2,3,4,5} State Islamic University of Palangka Raya, Indonesia,

Article Info

Article history:

Received : 05 05, 2026

Revised : 05 16, 2016

Accepted : 06 11, 2026

Keywords:

Learning Management
System;
excess;
Benefit ;
Implementation;

Abstract

This study aims to examine the use of Learning Management Systems (LMS) by highlighting their advantages, disadvantages, and implementation solutions in the context of online learning. LMS is a digital platform designed to facilitate distance learning processes, especially amidst the increasing demand for technology-based education. Literature analysis shows that LMS has several advantages, such as simplifying access to learning materials, providing flexibility in learning time, enhancing two-way communication, and providing systematic evaluation tools. However, its implementation still faces various shortcomings, including low interaction between teachers and students, minimal learning motivation, and suboptimal utilization of available features. To overcome these obstacles, solutions are needed in the form of ongoing training for educators, development of engaging content, and selection of LMS features that are appropriate to learning needs. The study's conclusion confirms that optimal use of LMS, by considering its advantages and addressing its disadvantages, can be an effective strategy for implementing quality online learning.

Corresponding Author:

Dhiyaa Rihadatul Aisya,
thiadhiya2@gmail.com

INTRODUCTION

The development of digital technology has brought significant changes to various aspects of life, including education. One increasingly popular form of technology implementation is the use of Learning Management Systems (LMS), digital platforms designed to manage, control, and support online and hybrid learning processes. LMSs have become one of the most widely adopted tools by educational institutions due to their ability to provide learning flexibility, easy access to materials, and interactive teaching methods that support the needs of 21st-century education (Missouri et al., 2025).

A Learning Management System (LMS) generally aims to facilitate instructors in delivering learning materials, managing online interactions between students and instructors, and streamlining administrative tasks such as assigning assignments, collecting answers, and assessing them. A Learning Management System is a web-based software program for the management, documentation, monitoring, reporting, administration, and distribution of educational content, training programs, technical manuals, instructional videos, or digital library materials, as well as learning and development projects (Şahin Kölemen, 2024). The

idea of a Learning Management System originated from e-learning. E-learning developed from the need for educational content and training tools that are affordable, accessible, easy to use, dynamic, and collaborative (Harini et al., 2024). E-learning platforms provide the infrastructure the internet where learning occurs through various participation techniques. An LMS delivers content in a format that can be accessed, downloaded, and worked on from any location where an internet connection is available. This flexibility and cost savings are two key elements of an LMS. (Shafa, 2024)

The use of technology in education has become a crucial need in today's digital era, which now utilizes digital platforms. One form of digital platform in implementing this technology is the use of a Learning Management System (LMS) as a learning medium. A Learning Management System (LMS) is a digital platform designed to manage online and hybrid learning processes, and serves as the primary medium for delivering teaching materials, conducting interactions, and evaluating learning. A study by Budiman et al. (Budiman et al., 2023) shows that an LMS allows students and teachers to interact flexibly and share understanding and experiences continuously through digital media. (Hastuti et al., 2026)

An LMS offers various advantages that can improve the quality of learning. This system simplifies material distribution, evaluation, and communication between teachers and students. Furthermore, an LMS supports flexible learning tailored to individual needs. Students can access materials anytime and anywhere. This aligns with the demands of 21st-century education, which emphasizes digital literacy. These advantages make an LMS a modern solution in education (Ibrahim et al., 2020). On the other hand, LMS also has several shortcomings that need to be considered. Not all schools or madrasas have adequate technological infrastructure, and limited internet access is a major obstacle for some students. Furthermore, the digital literacy of teachers and students varies. The lack of face-to-face interaction can reduce the depth of emotional communication in learning (Nirsal, 2025). These shortcomings demonstrate that LMS is not a single solution but requires the support of other strategies.

Implementing an LMS in education requires careful planning. Teachers must be able to integrate the LMS with the applicable curriculum. LMS-based learning strategies must be tailored to student characteristics (Putra et al., 2025). Furthermore, support from school and government policies is essential. Good implementation will enhance learning effectiveness. Therefore, this study emphasizes the importance of a realistic and contextual implementation strategy. The research problem formulation in this study is how the advantages, disadvantages, and implementation of an LMS can affect learning quality. The research questions cover the extent to which an LMS supports learning flexibility (Purnomo et al., 2024). Furthermore, they examine how technical and non-technical barriers affect LMS effectiveness. The study also formulates how implementation strategies can address existing shortcomings. This research problem formulation serves as the basis for a comprehensive analysis. Thus, this research has a clear direction.

The purpose of this research is to analyze the advantages and disadvantages of LMS and provide recommendations for appropriate implementation. The research aims to produce a deeper understanding of the role of LMS in education. In addition, this research is expected to provide practical solutions for teachers and schools. Another goal is to encourage increased digital literacy in students. This research also contributes to the development of technology-based education policies. Thus, the research results are expected to benefit the world of education more broadly. (Hastuti et al., 2026)

METHOD

This study uses a qualitative approach with a literature study method. This approach was chosen because the study focuses on an in-depth analysis of the advantages,

disadvantages, and solutions for implementing a Learning Management System (LMS) in online learning. The study was conducted in 2026 with a literature-based study location obtained from various academic sources, such as scientific journals, reference books, and research reports available online through databases. The research target is the use of LMS in the context of online education, with the subject being relevant literature discussing the advantages, disadvantages, and solutions for implementing LMS. Selection subjects are done use technique purposive sampling, that is choose literature based on criteria relevance, source quality , and currency information . Selected literature covering article journal national accredited, books references, and previous research reports. The research instrument used was a spreadsheet. data extraction form . This sheet load information important from each literature , such as source identity , research methods, and findings main issues related to LMS. The research procedure was carried out through a number of stages : first, search literature with the keywords "Learning Management System", " advantages of LMS", "disadvantages of LMS", and " solutions. " LMS implementation ". Second, selection literature according to criteria inclusion and exclusion . Third , grouping data based on focus study (advantages , disadvantages, solutions). Fourth , descriptive-analytical analysis to find patterns , challenges , and recommendations . Data collection techniques were conducted through literature searches in scientific databases, while data analysis techniques used a descriptive-analytical approach . Analysis This aim to describe findings from the literature , , as well as identify advantages , disadvantages and solutions LMS implementation . Data obtained Then interpreted with link it on problems and goals research , so that produce description comprehensive about utilization of LMS in learning online .

RESULTS AND ANALYSIS

Learning Management System or known as LMS is an application designed to be used in managing learning conducted online. The concept of learning using LMS is often referred to as E-Learning-based learning, where when delivering learning content, interaction, and guidance is done using an internet connection as a medium to connect students and lecturers. LMS allows users to create learning media, manage learning, manage the learning created, deliver materials, to assess assignments and exams from the learning that has been created. Learning using LMS combines the concept of learning in general with media in the form of internet technology so that this makes the service of LMS very helpful in improving time utilization, because it can be accessed online anywhere and anytime as long as the user is connected to the internet.

The learning system in the LMS application can not only be used to manage formal learning. However, further development in the world of education can be applied to the learning system in educational institutions, both in schools and universities, where the development of the LMS is expected to help implement the learning system that was previously carried out conventionally to a form of learning based on information technology. The learning concept in the LMS is carried out using internet network services as a medium of connection between users, and the LMS is used as a virtual classroom. Utilization of the internet network is a very important part of implementing online learning. This is because the internet connection is used as a medium for communication. Communication in question includes discussions, questions and answers, and consultations submitted by students to lecturers or material providers related to learning in a lecture .

A Learning Management System (LMS) application is designed to support the optimal running of online teaching and learning processes. LMS applications also have advantages and disadvantages. The following are the advantages of an LMS in supporting online learning:

1. Expanding the Reach of Access to Islamic Education

The use of a Learning Management System (LMS) offers Islamic educational institutions a significant opportunity to reach a wider audience. Through an LMS, the learning process is

no longer limited by time and space, as students can access course materials anytime and from anywhere as long as they have an internet connection. This significantly aids in the dissemination of Islamic knowledge, especially for students in remote areas or those with limited mobility. In the context of Islamic education, the use of an LMS also aligns with the principle of lifelong learning. Students can study materials such as tafsir, hadith, fiqh, creed, and Islamic history through learning videos, e-books, podcasts, and digital discussion forums. Thus, an LMS can serve as a modern tool to more effectively support Islamic preaching and education. In addition, LMS helps Islamic educational institutions provide learning materials that are well-organized and easily accessible to students. Uploaded materials can be studied repeatedly, giving students the opportunity to understand the lessons more deeply.

2. Making Learning More Interactive

One of the advantages of an LMS is its ability to provide more varied and interactive learning. Teachers can combine text, images, audio, video, animation, and even interactive quizzes to enhance students' understanding of Islamic learning materials. The discussion forum feature in the LMS also allows for two-way communication between teachers and students. Students can ask questions, discuss Islamic law, and even offer opinions on religious issues. This makes the learning process more active than with one-way learning methods.

3. Facilitating Learning Process Management

An LMS helps teachers manage learning activities more systematically and efficiently. All learning activities, such as distributing materials, giving assignments, administering exams, and assessing them, can be done on a single digital platform. In Islamic education, structured management is essential to maximizing learning objectives. Teachers can organize materials based on the competencies they wish to achieve and monitor student progress through learning activity reports available in the system. Furthermore, the automation features in the LMS can also reduce the administrative burden on teachers. Quiz grading can be automated by the system, allowing teachers more time to prepare learning materials and guide students more effectively.

4. Cultivating Learning Independence

Using an LMS indirectly trains students to be more independent in their learning. Students are required to manage their study schedule, read materials independently, and complete assignments within specified deadlines. From an Islamic educational perspective, independence is essential for developing good character. Islam teaches its followers to have a passion for learning and to be responsible for the knowledge they acquire. An LMS can help foster disciplined study habits because students have direct access to a variety of digital learning resources. Furthermore, the LMS encourages students to actively seek out additional references from scientific sources relevant to Islamic learning materials. This can positively enhance students' digital literacy skills.

5. Facilitating Learning Evaluation

The presence of an LMS facilitates learning evaluation. Teachers can create online quizzes, exams, and digital assignments, the results of which can be directly summarized by the system. Through an LMS, the evaluation process becomes faster, more practical, and more transparent. Teachers can determine students' level of understanding of Islamic material more accurately through learning outcome data stored in the system.

This data can also be used as evaluation material to improve the learning methods implemented. This way, the quality of Islamic education can be continuously improved according to student needs and technological developments.

The following image shows an example of an LMS display that makes it easy for students to access materials flexibly.

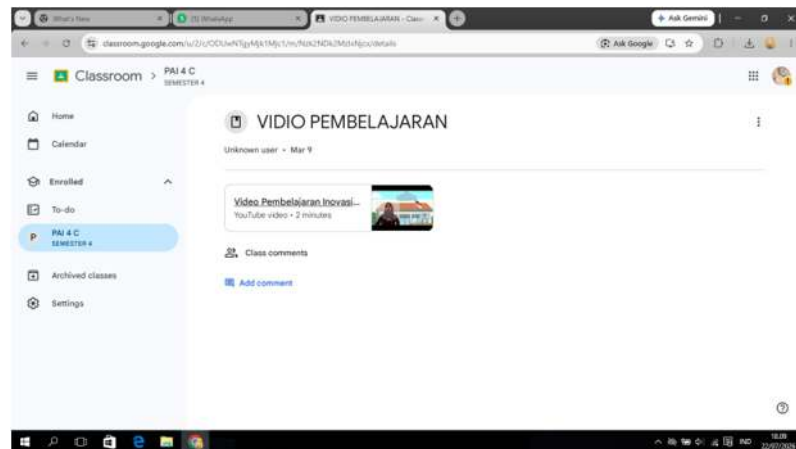


Figure 1. shows an example of an LMS display used to access online learning videos.

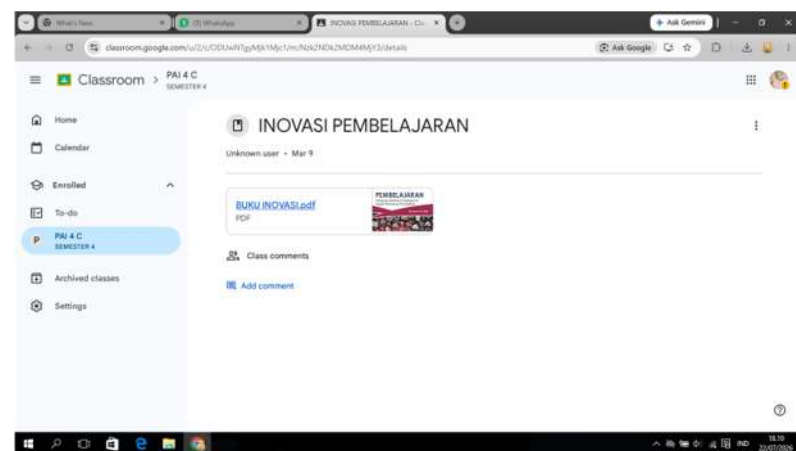


Figure 2. Shows an example of an LMS display used to access digital books.

Disadvantages of LMS in Islamic Education

1. **Decreased Personal Relationships between Teachers and Students**
Although LMS offers many conveniences, the use of technology in Islamic learning also has its drawbacks, particularly in terms of the emotional relationship between teachers and students. In Islamic educational tradition, teachers serve not only as transmitters of knowledge but also as role models in morals and behavior. LMS-based learning tends to reduce direct interaction, which is usually a means of building character and morals in students. Students may understand the subject matter, but they are not necessarily able to optimally emulate the teacher's attitudes and morals. [17] However, in Islamic education, moral and spiritual development is a primary goal that cannot be completely replaced by digital technology. Therefore, face-to-face learning is still needed to complement the use of LMS.
2. **Dependence on Internet Networks and Technology**
Implementing an LMS requires electronic devices and stable internet access. This presents a particular challenge for students living in areas with limited technological infrastructure. Not all students have smartphones, laptops, or sufficient internet data to participate in continuous online learning. This situation can lead to unequal access to education between students with complete facilities and those with economic limitations. [18] Furthermore, technical disruptions such as slow internet connections, server errors, or problematic applications can also hinder the learning process. This situation can reduce the effectiveness of LMS-based Islamic learning.
3. **Potential for Technology Abuse**

The use of LMS is not without the risk of misuse of technology by students. When using digital devices, students can be distracted by social media, online games, and other entertainment content unrelated to learning. Furthermore, online learning also opens up opportunities for academic violations such as plagiarism and dishonesty during online exams. However, Islamic education strongly emphasizes the values of honesty, trustworthiness, and responsibility in all aspects of life. [19] Without proper supervision, the use of LMS can actually reduce students' focus on learning and negatively impact their character development.

4. Limitations of Educators' Digital Competence

Not all Islamic education teachers have adequate technological skills to operate an LMS. Some educators still experience difficulties in creating digital learning media, managing online classes, and maximizing the use of LMS features. This lack of digital skills can make the learning process less engaging and monotonous. The material presented may consist solely of text without interactive supporting media, thus making students less motivated to learn. (Uno, 2016) Therefore, training and mentoring are needed for educators to be able to integrate technology effectively into Islamic learning.

5. Lack of Supervision of Character Formation

Islamic education aims not only to impart knowledge, but also to shape the morals and personalities of students. In LMS-based learning, teachers have difficulty directly monitoring student behavior. Teachers cannot ensure whether students are truly taking the learning seriously, understanding the material well, or applying Islamic values in their daily lives. Monitoring of student discipline and attitudes is more limited than in face-to-face learning. (Tafsir, 2014) As a result, the process of developing students' character and spirituality is less than optimal if learning relies solely on LMS without the support of direct interaction.

The implementation of a Learning Management System (LMS) in learning is part of a digital-based educational transformation that aims to create a more flexible, effective, and structured learning process. LMS allows educators and students to connect with each other in a single learning system that can be accessed anytime and anywhere, so that learning is no longer limited by space and time. (Pendidikan et al., 2018) In its implementation, LMS plays an important role in assisting the online learning process, especially in delivering materials, collecting assignments, and communication between educators and students. LMS also supports the concept of independent learning because students can access materials repeatedly according to their individual learning needs.

In addition, LMS implementation has been proven to increase the effectiveness of learning management, such as task management, evaluation, and monitoring of student learning activities. This has an impact on improving academic outcomes, student engagement, and independence in learning. (Studi et al., 2020) One widely used form of LMS is Moodle. Moodle provides various features such as discussion forums, online quizzes, assignment submission, and structured digital classroom management so that the learning process is more interactive and easier for educators to monitor. (Indriasari et al., 2026)

Besides Moodle, there is also the Pentabyte LMS which supports digital learning transformation in educational institutions. This LMS enables a more modern, flexible technology-based learning process, and supports digital literacy for educators and students. (Akademik & Mahasiswa, 2025) In the context of its use, the LMS has also been proven to increase student learning engagement, especially in terms of access to materials, discussions, and independent learning. Managing assignments through the LMS also makes students more disciplined and focused in completing academic obligations. Overall, the implementation of the LMS has a positive impact on the quality of learning, both in terms of effectiveness,

student involvement, and improved learning outcomes. However, this effectiveness is very dependent on optimal utilization of the LMS features by users. (Rizkyawan, n.d.)

Disadvantages of Learning Management System (LMS) Implementation

Although LMS offers many benefits, there are several drawbacks to its implementation. One of the main obstacles is limited internet access and technological devices, which means that not all students can participate optimally in learning. (Studi et al., 2020) In addition, there are still differences in user abilities in operating LMS. Some educators and students are not yet fully able to utilize LMS features to their full potential, so that LMS use is often limited to collecting assignments without in-depth learning interactions. (Indriasari et al., 2026)

Another drawback is the low level of student participation in online discussion forums, which results in suboptimal academic communication. Furthermore, LMS-based learning can potentially lead to boredom if it is not designed interactively and focuses solely on assignments. (Studi et al., 2020) Therefore, LMS implementation still requires support from facilities, mentoring, and increased user competency to ensure it runs more effectively and optimally. (Pendidikan et al., 2018)

CONCLUSION

The use of Learning Management Systems (LMS) in education has significantly contributed to improving the quality of online learning. LMSs provide flexible access, effective material management, and support independent learning, aligned with the demands of the digital era and Islamic educational values. However, their implementation still faces challenges such as limited infrastructure, educators' digital competency, and reduced emotional interaction between teachers and students. Therefore, LMSs are not a single solution; they need to be integrated with other learning strategies to optimally achieve educational goals, both academic and character-building.

Future research is recommended to further examine LMS integration strategies with face-to-face learning to balance the cognitive and affective aspects of students. Furthermore, ongoing training is needed for educators to maximize LMS features and produce engaging learning content. The government and educational institutions are also expected to strengthen technological infrastructure support and policies that support equitable access. These steps can ensure more effective, inclusive, and sustainable LMS implementation in supporting educational transformation in the digital age.

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