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Evaluating the Impact of Learning Management System Usage on Student Satisfaction and Learning Outcomes at Universitas Islam Negeri (UIN) Maulana Malik Ibrahim During the COVID-19 Pandemic

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Abstract

Purpose – This study explores the impact of Learning Management System (LMS) usage on the online learning experience at Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang, Indonesia during the COVID-19 pandemic. It aims to evaluate student satisfaction and identify challenges faced during this transition, contributing to the broader discussion on optimizing LMS for enhancing student outcomes and satisfaction in higher education, particularly in times of crisis.

Methods/Design/Approach – A quantitative descriptive approach was employed, with data collected from 400 respondents through online surveys using Likert-scale questions. The sample included students and faculty members involved in online learning. The study used statistical analysis to assess satisfaction levels and identify key challenges in LMS adoption, particularly focusing on the use of the MOODLE platform.

Findings – The use of MOODLE LMS increased from 18.5% in the first semester of the pandemic to 51% in the second semester, reflecting greater platform acceptance. Students reported moderate satisfaction with an overall score of 3.8 out of 5. Challenges included limited internet access (63.5%), insufficient internet quota subsidies (63.3%), and low satisfaction with academic services (2.73) and online learning policy promotion (2.76).

Originality/Value – This study provides insights into LMS adoption in a specific educational and cultural context, highlighting both the potential and the challenges of digital learning platforms during a global crisis. It offers practical recommendations for improving LMS design and implementation in higher education.

Practical Implications – The findings suggest universities should enhance digital infrastructure and offer financial support to overcome technical barriers such as limited internet access. Improving academic services and promoting clearer online learning policies will further increase LMS effectiveness and student satisfaction.

Keywords LMS, MOODLE, student satisfaction, online learning, COVID-19 pandemic.

Paper type Research paper

1.   Introduction

The development of information and communication technology (ICT) and the internet has transformed the way educational services are delivered in higher education (Shaltoni et al., 2015). In line with these advancements, Learning Management Systems (LMS) have emerged as one of the most significant technological developments in the education sector, particularly in situations that demand a shift toward fully online and distance education. The COVID-19 pandemic in 2020 forced many educational institutions to transition to digital platforms to ensure the continuity of the learning process. In this context, LMS platforms, such as Moodle, became essential tools for supporting online learning by providing necessary access and interaction between instructors and students, even in the absence of face-to-face meetings (Dogoriti et al., 2014; Lisnani et al., 2020).

Previous studies have demonstrated the effectiveness of LMS in improving student learning outcomes and streamlining the teaching process. For instance, the use of free LMS in undergraduate operations management courses significantly enhanced students' understanding of process analysis materials without imposing additional costs on educational institutions (Strakos et al., 2023). This study highlights the potential of LMS to democratize education by providing free access to valuable resources both inside and outside the classroom.

Additionally, research by Cheng et al. examined the patterns of LMS acceptance among 1,180 high school students in Hong Kong, identifying three main patterns—Reluctant, Embracing, and Affirmative—shaped by school, family, and individual factors (Cheng et al., 2022). These patterns had a significant impact on continued use and satisfaction with LMS, indicating that user acceptance is a key factor in LMS effectiveness.

Further research expands the understanding of factors influencing satisfaction and use of LMS. Findings from a study on student satisfaction with the BrightSpace LMS at Indiana Aerospace University showed that the quality of system content, technology, and interaction significantly influenced perceived usefulness, which ultimately impacted overall student satisfaction (Toring et al., 2022). Moderating factors such as gender and year of study were also found to affect satisfaction levels.

Meanwhile, a novel approach that combines the Felder-Silverman learning style model and the cognitive trait model to estimate students' learning styles and cognitive characteristics through LMS usage demonstrated high accuracy in identifying student behavior, suggesting the potential for LMS to adapt to individual learning needs (Lwande et al., 2021).

Research in Saudi Arabia exploring students' intentions to use LMS by applying the technology acceptance model concluded that ease of use, perceived usefulness, as well as moderating effects of gender and year of study significantly influenced LMS usage intentions (Alfalah, 2023; Al-Ghurbani et al., 2022). These findings underscore the importance of designing user-friendly systems while also understanding the demographic factors that influence user engagement and satisfaction.

While these studies provide valuable insights into the effectiveness and acceptance of LMS, there are still some limitations. Many of the existing studies focus on specific populations, such as high school students or undergraduate students from particular institutions or regions, limiting the generalizability of their findings. Moreover, the rapidly evolving technological landscape and varying levels of digital literacy among students suggest that the factors influencing LMS satisfaction and usage may vary across contexts. Many studies also overlook the challenges students face when using LMS, such as technical difficulties, limited access to technology, or insufficient support from instructors.

Based on these gaps in the literature, this research aims to explore the impact of LMS usage on the online learning process during the COVID-19 pandemic at Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang, Indonesia. Specifically, this study will examine

student satisfaction levels and identify the challenges they encountered in using LMS during this period. By addressing these issues, this research seeks to provide a more comprehensive understanding of how LMS can be optimized to enhance student learning outcomes and satisfaction in the context of a global crisis.

Ultimately, this study will contribute to the broader discussion on online learning by offering insights into the specific factors that influence LMS effectiveness in higher education, particularly during times of disruption. Through this investigation, the study aims to fill methodological and population gaps in the existing literature and provide actionable recommendations to improve the design and implementation of LMS in various educational contexts.

2.   Literature Review

The development of Information and Communication Technology (ICT) and the internet has drastically transformed the delivery of educational services, particularly at the higher education level (Shaltoni et al., 2015). One of the most significant innovations in this field is the Learning Management System (LMS), which facilitates the management, monitoring, and distribution of educational content online (Dalsgaard, 2006). LMS became especially crucial during the COVID-19 pandemic when educational institutions worldwide were compelled to transition to fully online learning to ensure the continuity of teaching and learning processes (Dogoriti et al., 2014; Lisnani et al., 2020). In this context, platforms such as Moodle provided the necessary access and enabled interaction between lecturers and students without face-to-face meetings.

Several studies have demonstrated the effectiveness of LMS in enhancing student learning outcomes and facilitating the teaching process (Strakos et al., 2023). For example, a study showed that the use of a free LMS in an undergraduate operations management course significantly improved students' understanding of process analysis materials without increasing the financial burden on educational institutions. This study highlights the potential of LMS to democratize education by providing free access to valuable resources, both inside and outside the classroom (Strakos et al., 2023).

Beyond pedagogical benefits, research also shows that users' acceptance of technology plays a crucial role in the success of LMS (Balkaya & Akkucuk, 2021). Referring to the Technology Acceptance Model (TAM), research found that perceptions of the ease of use and usefulness of LMS significantly influence students' intentions to continue using the system. These findings align with those explored among 1,180 secondary school students in Hong Kong (Cheng et al., 2022). The study identified three acceptance patterns—Reluctant, Embracing, and Affirmative—shaped by school, family, and individual factors. These patterns had a significant impact on students' use of and satisfaction with LMS (Cheng et al., 2022).

Furthermore, research on user satisfaction shows that the overall quality of the LMS system, including content, technology, and interaction, significantly affects students' perceptions of LMS usefulness, ultimately impacting their satisfaction. For example, a study conducted at Indiana Aerospace University on the BrightSpace LMS demonstrated that student satisfaction was influenced by the quality of the content and technology provided by the LMS (Toring et al., 2022). Factors such as gender and year of study were also found to moderate levels of satisfaction.

In addition to technical aspects, more recent research highlights the importance of user experience (UX) in determining the success of LMS adoption. User experience encompasses how users perceive and interact with the system during online learning (Strakos et al., 2023). It is emphasized that beyond technical quality and ease of use, emotional and cognitive factors also play critical roles in determining the success of technology adoption (Hertzum & Hornbæk, 2023). Furthermore, UX not only includes the functionality of the LMS but also

the emotional perceptions experienced by users while using the system (Nakamura et al., 2023).

Several studies have also begun to explore the potential of LMS to adapt to individual learning styles. For instance, an approach combining the Felder-Silverman learning style model and the cognitive characteristics model has been used to estimate students' learning styles and cognitive characteristics based on their LMS usage. This research has shown high accuracy in identifying student behavior, indicating the potential of LMS to adapt to individual learning needs (Lwande et al., 2021).

Moreover, research in Saudi Arabia exploring students' intentions to use LMS found that the ease of use and usefulness of LMS, along with moderating factors such as gender and year of study, significantly influenced their intention to use LMS (Alfalah, 2023; Al-Ghurbani et al., 2022). These findings underscore the importance of designing user-friendly systems while taking into account demographic factors that affect user engagement and satisfaction.

3.   Methods

This study employed a descriptive quantitative method to explore the use of Learning Management Systems (LMS) and the satisfaction with online learning during the COVID-19 pandemic at Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang, Indonesia. This method was chosen as it allows researchers to describe existing conditions based on quantitative data collected from respondents through surveys (Creswell, 2014). The descriptive quantitative approach is suitable for depicting phenomena or characteristics within a research population through the collection of numerical data and statistical analysis (Creswell, 2014).

3.1   Data Collection and Sample

Respondents in this study were selected using purposive sampling (Palinkas et al., 2015; Strakos et al., 2023), where respondents were deliberately chosen based on specific criteria relevant to the research objectives. The criteria for respondents included lecturers, staff, and students involved in online learning at UIN Maulana Malik Ibrahim Malang. The final sample consisted of 400 respondents, representing 80% of the target population.

3.2   Instrumentation

Data were collected through an online questionnaire distributed via Google Forms. The questionnaire contained a combination of Likert scale questions (Likert, 1932) to measure the level of satisfaction and LMS usage, as well as multiple-choice questions to understand the challenges faced by respondents during online learning. This instrument was piloted to ensure clarity and validity of the questions before full distribution (Wright, 2005).

3.3   Data Analysis

Data were analyzed descriptively using appropriate statistical software, which may include programs such as SPSS or Microsoft Excel for basic analysis. The analysis presented the results in the form of tables and graphs (such as bar charts and spider webs) to depict the percentage of LMS platform usage, satisfaction levels, and the main challenges encountered. The importance of using descriptive statistics to provide an overview of the data distribution and averages obtained from respondents has been emphasized (Bickel & Doksum, 2015).

3.4   Ethical Consideration

This study adhered to ethical considerations by obtaining informed consent from all respondents before their participation in the survey. Additionally, the anonymity and confidentiality of their responses were maintained throughout the study, following the guidelines outlined (Buchanan & Hvizdak, 2009).

4.   Results

The study conducted at UIN Maulana Malik Ibrahim Malang, Indonesia revealed several interesting findings related to the transition from face-to-face to online instruction during the COVID-19 pandemic. To facilitate this transition, the university promoted the use of Learning Management Systems (LMS), albeit on a limited scale. In the first semester of the pandemic, only 18.5% of respondents used MOODLE LMS, while 64.5% utilized WhatsApp, 15% used Zoom meetings, and 2% relied on Google Classroom. However, by the second semester, the usage of MOODLE LMS surged to 51%, with the remaining respondents using platforms such as Zoom, Google Meet, and Google Classroom.

The instructional design implemented included both synchronous and asynchronous methods, where lecturers would first explain the material and then assign collaborative projects to students, culminating in presentations in the form of reports or academic papers.

In terms of satisfaction, students were moderately content with the LMS, achieving an average satisfaction score of 3.8 out of 5. Speed and accessibility of the LMS received a score of 3.77, while academic services were rated lower at 2.73. The promotion of online learning policies also scored low at 2.76. Students expressed particular dissatisfaction with services related to final assignments, which received a score of 2.6. Despite these challenges, communication between students and lecturers was rated fairly well, with a score of 3.18. Additionally, the academic system services (siakad) were deemed satisfactory in terms of ease of use and service speed, with scores of 3.56 and 3.67, respectively.

Several challenges were identified during the study. These included unfamiliarity with the LMS (12.1%), difficulties with internet access (63.5%), lack of internet quota subsidies (63.3%), and challenges during mentoring or obtaining approval from lecturers (7.5%).

The data highlight a significant transition in the online learning technologies used at the university, shifting from informal tools like WhatsApp and Zoom to more formal and specialized platforms like MOODLE LMS. The increase in MOODLE usage from 18.5% to 51% between the first and second semesters reflects the growing acceptance and adaptation to this platform.

Table 1. LMS Usage Comparison Between Semester 1 and Semester 2

| Platform	Semester 1 Usage (%)	Semester 2 Usage (%)
MOODLE	18.5	51
WhatsApp	64.5	0
Zoom	15	0
Google Classroom	2	0
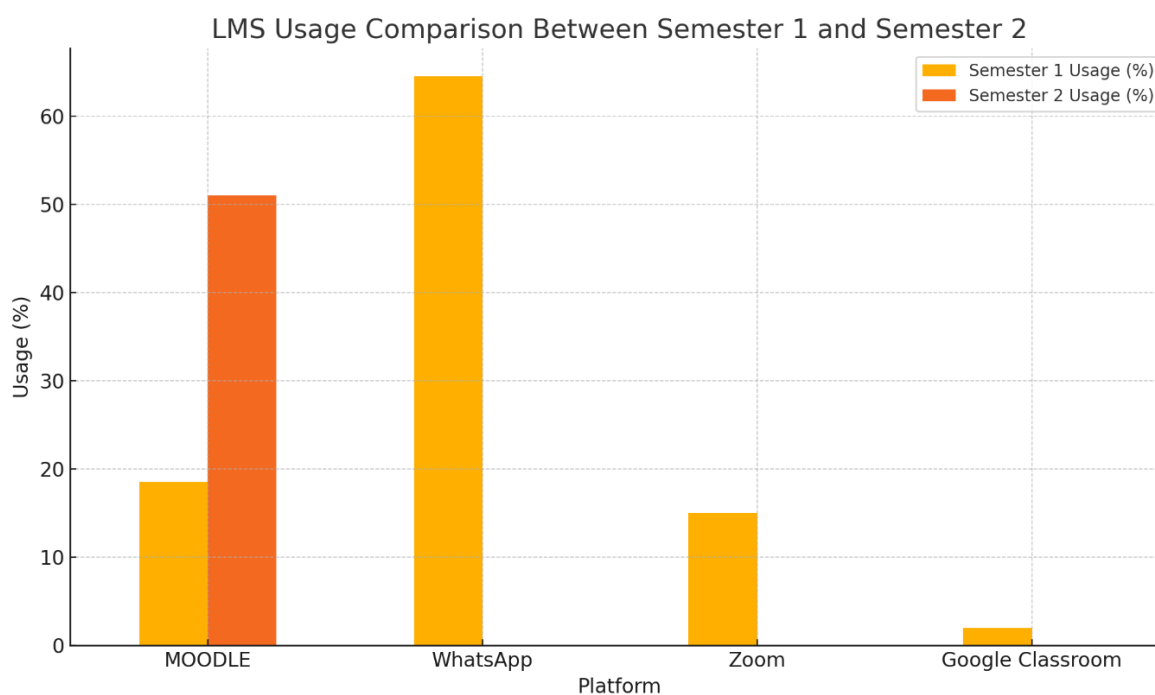
Figure 1. LMS Usage Comparison Between Semester 1 and Semester 2

The chart above illustrates the comparative usage of different platforms between the first and second semesters. As shown, the usage of MOODLE LMS increased significantly, while informal tools such as WhatsApp saw a reduction in usage.

**Table 2.** Student Satisfaction Scores Across Various Aspects

Aspect	Score (out of 5)
LMS Satisfaction	3.8
Speed and Accessibility	3.77
Academic Services	2.73
Promotion of Online Learning Policies	2.76
Final Assignment Services	2.6
Student-Lecturer Communication	3.18
SIAKAD Ease of Use	3.56
SIAKAD Service Speed	3.67
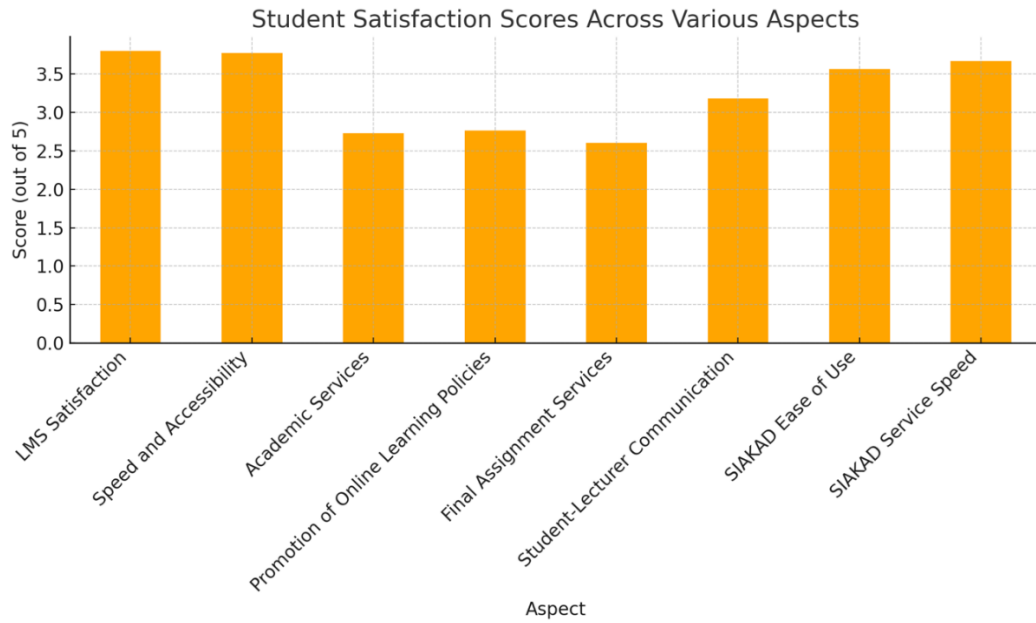
Figure 2. Student Satisfaction Across Various Aspects

The chart provides a breakdown of student satisfaction across various aspects of their online learning experience. Overall satisfaction was moderate, but specific areas such as academic services and promotion of online learning policies received lower ratings.
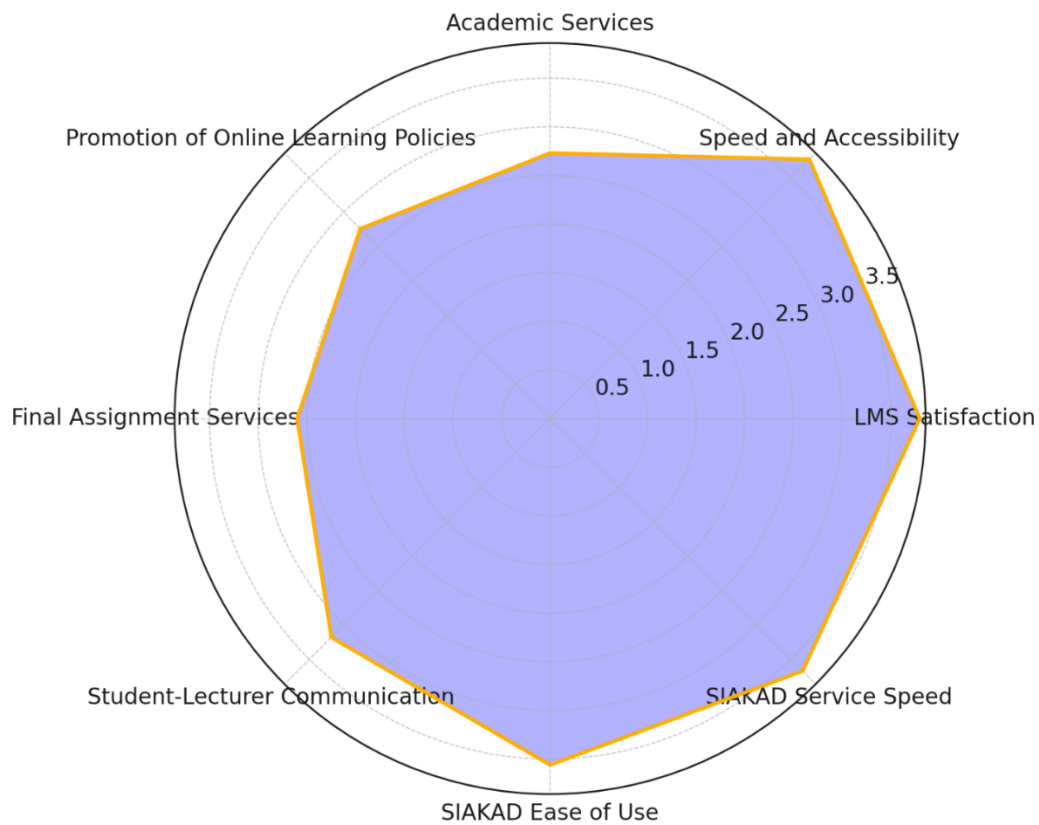
Figure 3. Spider Web Chart of Student Satisfaction

The spider web chart offers a visual representation of satisfaction levels in different categories, including LMS satisfaction, service speed, and communication with lecturers. These results show the progressive adaptation to the MOODLE LMS and highlight areas where improvement is needed to enhance the quality of online learning experiences at the university.

5.   Discussion

The findings from Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang, Indonesia provide valuable insights into the transition from traditional face-to-face learning to online education, particularly regarding the deployment of the Learning Management System (LMS), MOODLE. While the initial adoption of MOODLE was relatively low in the first semester, accounting for only 18.5%, the significant increase to 51% in the second semester demonstrates the growing acceptance of the platform as both students and faculty adapted to the new online environment.

This transition aligns with the global trends reported in the literature, where higher education institutions have increasingly integrated new technologies into their teaching practices (Al-Ghurbani et al., 2022). However, the reliance on informal tools such as WhatsApp and Zoom during the early phases of the pandemic highlights the challenges faced by institutions in fully transitioning to a formal LMS. This is consistent with previous studies that found informal communication tools often serve as a bridge in the early stages of digital transformation (Dogoriti et al., 2014).

Despite the increased adoption of MOODLE, the satisfaction scores reported by students suggest that several areas require improvement. The average satisfaction score of 3.8 out of 5 indicates moderate approval, particularly in terms of speed and accessibility. However, other areas, such as academic services (2.73) and the promotion of online learning policies (2.76), reflect a need for more robust institutional support. This is in line with previous research, which emphasizes the importance of not only implementing LMS platforms but also ensuring that these systems are supported by adequate policies and services that enhance the overall learning experience (Balkaya & Akkucuk, 2021; Mehrolia et al., 2021).

Challenges such as internet access difficulties (63.5%) and the lack of internet quota subsidies (63.3%) were prominent barriers to effective online learning. These issues are not unique to UIN Maulana Malik Ibrahim Malang but reflect broader challenges faced by educational institutions globally during the pandemic. Similar studies have reported the need for improved infrastructure and financial support to ensure equitable access to online learning platforms (Cheng et al., 2022; Strakos et al., 2023). Addressing these challenges should be a priority for the university to ensure that students are not disadvantaged by technical or financial barriers.

The findings also highlight the importance of effective communication between students and lecturers, with a satisfaction score of 3.18. This aligns with previous studies emphasizing the role of communication in maintaining student engagement in online learning environments (Toring et al., 2022). The academic system services (siakad) were found to be satisfactory in terms of ease of use and speed, scoring 3.56 and 3.67, respectively, demonstrating that the university's internal systems were functioning well in supporting students' administrative needs.

In conclusion, the transition to online learning during the COVID-19 pandemic has presented both opportunities and challenges. While the adoption of MOODLE LMS increased significantly, there remain areas for improvement, particularly in enhancing academic services, promoting online learning policies, and addressing technical and

financial challenges. Future research should focus on long-term strategies to optimize LMS usage, improve student satisfaction, and ensure that online learning is both accessible and effective for all students).

6.   Conclusion

This study has provided significant insights into the use of Learning Management Systems (LMS), particularly MOODLE, at Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang, Indonesia during the COVID-19 pandemic. The transition from traditional learning methods to online platforms revealed a notable shift, with the adoption of MOODLE increasing from 18.5% to 51% between semesters. This suggests growing acceptance and adaptation to the formal LMS platform as both students and faculty adjusted to remote learning.

Despite the increased usage, student satisfaction scores were moderate, with key areas such as academic services and the promotion of online learning policies scoring relatively low. Challenges such as limited internet access and the absence of sufficient internet quota subsidies further hindered students' online learning experiences. These issues highlight the need for institutions to not only implement digital learning platforms but also provide robust support systems that address infrastructure and financial barriers.

The findings also emphasize the importance of effective communication between students and lecturers, as well as the role of institutional services like SIAKAD, which received positive feedback. Addressing the gaps in academic support and improving access to necessary resources will be essential for enhancing the overall quality of online education.

In future research, it will be important to focus on strategies to improve LMS performance, support student engagement, and ensure that online education is accessible and equitable. The study's limitations, such as the specific population and context, suggest that broader research is needed to generalize these findings across different educational environments. Nonetheless, the results offer practical recommendations for optimizing LMS usage and enhancing the online learning experience in higher education.

Declarations

Author contribution statement
Abdul Malik Karim Amrullah: Conceptualization, Methodology, Investigation, Writing - Original Draft, Writing - Review & Editing, Project Administration. **Shahin Bayramov:** Writing - Original Draft, Writing - Review & Editing, Supervision, Funding Acquisition. **Abdul Aziz:** Formal Analysis, Resources, Data Curation, Writing - Review & Editing, Visualization. **Abd. Haris:** Data Curation, Methodology, Formal Analysis, Writing - Review & Editing, Validation.

Data availability statement
The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declaration of interest statement

No potential conflict of interest was reported by the authors.

Additional information

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