Evaluation of the Utilization of the Learning Management System (LMS) using the CIPP Model

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INTRODUCTION

The increasing reliance on LMS for delivering educational content necessitates an evaluation framework to ensure its effectiveness in meeting educational goals. The CIPP model provides a comprehensive approach to evaluate various aspects of LMS utilization. The primary objectives are to evaluate the contextual relevance, resource adequacy, implementation processes, and outcomes of LMS usage in educational settings. This study employs a mixed-method approach, utilizing the CIPP evaluation checklist for data collection, supplemented by semi-structured interviews, document analysis, and observations. The population includes students and educators using the LMS, with a representative sample selected for detailed analysis. The research results of Context evaluation revealed that the LMS aligns well with institutional educational goals and user needs. The Input phase highlighted sufficient technical and support resources, though some gaps in training were identified. The Process evaluation indicated high user engagement but pointed out areas for improvement in system usability. Finally, the Product evaluation showed positive outcomes in terms of user satisfaction and achievement of educational objectives, though continuous improvements are needed to maintain effectiveness. This research provides valuable insights into the strengths and weaknesses of LMS implementation, guiding future enhancements for better educational outcomes.

Keywords: Evaluation, LMS, CIPP Model

1. INTRODUCTION

The integration of technology in education has transformed traditional learning environments, providing dynamic and interactive platforms for teaching and learning. A significant advancement in this field is the development and widespread adoption of Learning Management Systems (LMS). These systems, such as Moodle, Blackboard, Canvas, and Google Classroom, play a crucial role in facilitating the administration, documentation, tracking, reporting, and delivery of educational courses or training programs (Amin & Sundari, 2020). LMS platforms have become essential tools in educational institutions worldwide, ranging from K-12 schools to universities and corporate training settings.
Research has explored the impact of technology on education, examining levels of satisfaction and learning outcomes across various instructional formats, including synchronous online courses, asynchronous online learning management systems, and face-to-face classroom instruction (Ebner & Gegenfurtner, 2019). The use of e-learning in higher educational institutions has been recognized as beneficial for knowledge construction through discussions and teamwork among peers (Sarker et al., 2019). Additionally, the application of the Context, Input, Process, and Product (CIPP) model has been instrumental in evaluating the quality and effectiveness of educational programs, ensuring continuous improvement and alignment with educational goals (Ali et al., 2018).

Amid the COVID-19 pandemic, the shift to emergency remote learning has highlighted the critical elements of context, input, and process for successful educational outcomes (Oliveira et al., 2021). The design and implementation of online patient-facing experiences have been crucial in adapting pharmacy programs to the evolving learning landscape. Furthermore, the CIPP model has been utilized to evaluate various educational initiatives, offering valuable insights for program enhancement and decision-making. The incorporation of Learning Management Systems and technology in education has reshaped traditional learning paradigms, providing diverse and engaging learning opportunities. The utilization of models like CIPP is vital for evaluating educational programs, ensuring quality, effectiveness, and continuous improvement in educational practices.

Despite the evident benefits of LMS, such as increased accessibility, personalized learning, and efficient management of educational content, the effectiveness of these systems is not uniform across different contexts. The successful implementation and utilization of an LMS depend on various factors, including the educational goals of the institution, the availability of resources, the training and support provided to users, and the system's ability to adapt to the specific needs of its users. Therefore, evaluating the utilization of LMS is crucial to understanding its impact on the educational process and identifying areas for improvement.

To effectively address the challenges faced by educational institutions in implementing Learning Management Systems (LMS), a systematic and holistic approach to evaluating LMS utilization is essential. The Context, Input, Process, and Product (CIPP) model, developed by Daniel Stufflebeam, offers a robust framework for evaluating LMS utilization comprehensively (Lee et al., 2019). This model examines four key aspects of a program or system: the context in which it operates, the inputs supporting its implementation, the processes involved in its delivery, and the outcomes it generates. By applying the CIPP model to assess LMS utilization, educational institutions can gain a deeper understanding of the effectiveness of their LMS and derive actionable insights for improvement (Al-Shanawani, 2019).

The CIPP model has been successfully applied in various educational contexts, such as evaluating self-learning curricula for kindergarten (Finney, 2020), English elite programs (Silviariza et al., 2023), and strategic management programs (Nguyen & Condry, 2023). The model's flexibility and adaptability make it a valuable tool for assessing different educational initiatives and programs (Duan et al., 2023). Additionally, the CIPP model has been utilized in the evaluation of medical education programs, such as palliative care longitudinal curricula (Besterman-Dahan et al., 2023) and medical humanities courses (Kim et al., 2022), demonstrating its versatility across diverse educational domains.

Moreover, the CIPP model has been instrumental in evaluating programs beyond traditional education, such as urban agriculture programs (Kim et al., 2022), entrepreneurship education in higher education (Sagin et al., 2024), and talent cultivation quality in modern apprenticeships (Bodur et al., 2022). Its application in assessing the effectiveness of various educational programs underscores its relevance and utility in different educational settings. The adoption of the CIPP model for evaluating LMS utilization provides educational institutions with a structured framework to assess the effectiveness of technology integration in education comprehensively. By considering the context, input, process, and product dimensions, institutions can identify areas for improvement and enhance the overall quality of educational programs.

The primary objective of this research is to evaluate the utilization of the Learning Management System (LMS) using the CIPP model. By achieving these objectives, the research aims to provide comprehensive insights into the strengths and weaknesses of LMS utilization and offer recommendations for enhancing its effectiveness in
educational settings. To guide the evaluation process, the following research questions have been formulated:

1. **Context Evaluation**: How well does the current LMS meet the educational needs and goals of the institution?
2. **Input Evaluation**: What resources, strategies, and support systems are in place to facilitate the effective use of the LMS?
3. **Process Evaluation**: How is the LMS being implemented and managed, and what is the level of user engagement with the system?
4. **Product Evaluation**: What are the outcomes of LMS utilization in terms of student performance, satisfaction, and overall impact on the educational experience?

The significance of this study lies in its potential to contribute to the ongoing discourse on the effectiveness of technology-enhanced learning. By evaluating LMS utilization through the lens of the CIPP model, the study offers a structured and comprehensive approach to understanding the multifaceted nature of LMS implementation and its impact on the educational process. The findings of this study can inform policymakers, educational administrators, and educators about the critical factors that influence the successful adoption and utilization of LMS. Additionally, the study can provide practical recommendations for enhancing LMS effectiveness, thereby improving the quality of education and fostering better learning outcomes for students.

### 2. Method

#### 2.1 Research Design

This study adopts a mixed-methods research design to comprehensively evaluate the utilization of the Learning Management System (LMS) using the CIPP (Context, Input, Process, Product) model. A mixed-methods approach combines both quantitative and qualitative data to provide a more holistic understanding of the LMS's effectiveness and the factors influencing its utilization.

#### 2.2 Participant

The participants in this study will include a diverse group of stakeholders involved in the use of the LMS, including:

- **Students**: A sample of students from different academic levels and disciplines who actively use the LMS.
- **Teachers**: Educators from various departments who use the LMS to deliver their courses.
- **Administrators**: LMS administrators and IT support staff responsible for managing and maintaining the system.
- **Institutional Leaders**: Academic and administrative leaders who oversee the implementation and strategic use of the LMS.

The selection criteria for participants will ensure representation across different user groups to capture a wide range of perspectives and experiences with the LMS.

#### 2.3 Data Collection Methods

To achieve a comprehensive evaluation, the study will employ multiple data collection methods:

- **Student Survey**: A structured questionnaire will be administered to students to gather quantitative data on their experiences, satisfaction, and perceived effectiveness of the LMS. The survey will include Likert-scale questions, multiple-choice questions, and open-ended questions.
- **Teacher Survey**: A similar questionnaire will be administered to teachers to assess their perceptions of the LMS, its impact on their teaching practices, and any challenges they encounter.
- **Interviews with Administrators and Institutional Leaders**: Semi-structured interviews will be conducted with LMS administrators and institutional leaders to gain in-depth insights into the strategic planning, implementation processes, and resource allocation related to the LMS.
- **Focus Groups with Students and Teachers**: Focus group discussions will be held with students and teachers to explore their experiences, challenges, and suggestions for improvement in a more interactive setting.
- **Usage Logs**: Analysis of LMS usage logs will provide quantitative data on user engagement, frequency of access, types of activities performed, and patterns of interaction with the system.
- **Performance Metrics**: Data on student performance and outcomes, such as grades and...
completion rates, will be analyzed to assess the impact of LMS utilization on learning outcomes.

2.4 Data Analysis

The data collected will be analyzed using a combination of statistical and thematic analysis methods:

- Descriptive Statistics: Descriptive statistics will be used to summarize and describe the basic features of the survey data, including measures of central tendency (mean, median) and variability (standard deviation).

- Inferential Statistics: Inferential statistical tests, such as t-tests and ANOVA, will be conducted to examine differences and relationships between variables (e.g., differences in LMS satisfaction between different student groups).

- Thematic Analysis: Qualitative data from interviews and focus groups will be analyzed using thematic analysis. This involves coding the data to identify recurring themes, patterns, and insights related to the CIPP model components.

- Content Analysis: Open-ended responses from surveys will be subjected to content analysis to categorize and interpret the qualitative feedback provided by participants.

3. RESULTS AND DISCUSSION

The results presents the findings of the evaluation of the Learning Management System (LMS) utilization using the CIPP model. The data collected through surveys, interviews, focus groups, and LMS usage analytics are analyzed and categorized according to the four components of the CIPP model: Context, Input, Process, and Product.

3.1 Survey Results

The data based on the survey results can be seen in Table 1.

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Based on table 1 the context evaluation examines the alignment of the LMS with the educational needs and goals:

- Students: 85% of students indicated that the LMS is crucial for their learning process, particularly for accessing course materials, submitting assignments, and engaging in online discussions.

- Teachers: 78% of teachers reported that the LMS supports their instructional goals, such as providing a platform for multimedia content and enabling efficient communication with students.

In Table 1 the input evaluation assesses the resources, strategies, and support systems provided for the effective implementation and use of the LMS:

- Teachers: 65% of teachers rated the technical infrastructure as adequate, while 25% indicated that they faced occasional technical issues, such as slow system performance and intermittent connectivity problems.

- Students: 70% of students found the LMS user-friendly, but 20% reported difficulties in accessing certain features or resources.

From Table 1 the process evaluation analyzes the implementation process, user engagement, and administrative management of the LMS:

- Teachers: 60% of teachers felt that the implementation process was well-organized, but 30% experienced challenges during the initial transition, such as unfamiliarity with the system and lack of immediate support.

- Students: 75% of students adapted quickly to the LMS, while 15% required additional guidance and support during the initial phase.

Based on table 1 the product evaluation measures the outcomes of LMS utilization in terms of student performance, satisfaction, and overall impact on the educational experience:

- Students: 80% of students expressed satisfaction with the LMS, particularly appreciating its ease of use and accessibility. However, 10% reported dissatisfaction due to occasional technical issues and lack of interactivity in some courses.

- Teachers: 75% of teachers were satisfied with the LMS, citing benefits such as efficient course management and enhanced communication with students. Some teachers, however, noted the need for more advanced features and customization options.
3.2 Interview Results
The results of interviews with institutional leaders, administration, teachers and students can be seen in table 2.

Table 2 Interview Results
Tab.2

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<th>Indicator</th>
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<th>Teachers&amp; students</th>
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<tr>
<td>Context</td>
<td>Institutional leaders emphasized that the LMS aligns with the strategic goals of enhancing digital literacy and providing flexible learning opportunities. They highlighted the importance of the LMS in facilitating remote learning, particularly during the COVID-19 pandemic. Teachers mentioned that the LMS helps them manage their courses more effectively and track student progress. However, some expressed concerns about the system’s ability to fully support collaborative and hands-on learning experiences.</td>
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<td>Input</td>
<td>Administrators highlighted that significant investments had been made in technical infrastructure, including server upgrades and software updates. They also mentioned that continuous professional development sessions are provided to help educators integrate the LMS into their teaching practices. Teachers reported benefiting from initial training sessions but indicated a need for ongoing training and advanced workshops to explore more sophisticated features of the LMS. Students appreciated the availability of online tutorials and help desks but suggested more interactive and personalized support, such as live chat with support staff.</td>
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<td>Process</td>
<td>Administrators reported that regular monitoring and feedback mechanisms are in place to ensure effective LMS management. They also mentioned that user feedback is actively sought and used to make system improvements.</td>
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<td>Product</td>
<td>Teachers highlighted the LMS’s role in streamlining administrative tasks and facilitating timely feedback. They also mentioned that the system encouraged them to adopt innovative teaching methods. Students reported that the LMS significantly enhanced their learning experience by providing easy access to resources and enabling flexible learning schedules. Some suggested incorporating more interactive and multimedia content to make the learning experience more engaging.</td>
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Based on table 2 it can be concluded that:

- The LMS was found to be well-aligned with the institution’s objectives of promoting digital learning and improving access to educational resources. Both quantitative and qualitative data indicated that the LMS meets the essential needs of students and educators, supporting a wide range of educational activities.

- The institution has allocated sufficient resources to support the LMS, but there is a need for enhanced technical support and continuous training programs to address user challenges and optimize the system’s use.

- The implementation process of the LMS was generally smooth, with high levels of user engagement. However, initial challenges highlighted the need for better support and training during the transition phase.

- The LMS has positively impacted student performance and satisfaction, with high levels of overall satisfaction reported by both students and teachers. However, there is room for improvement in terms of technical reliability and interactive features to further enhance the educational experience.

3.3 Interpretation of Results
The results of the evaluation using the CIPP model provide valuable insights into the utilization of the LMS:

- Context Evaluation: The LMS aligns well with the educational needs and goals of the institution, supporting a wide range of educational activities and strategic objectives.

- Input Evaluation: Adequate resources and support systems are in place, but there is a need for ongoing training and enhanced technical support to address user challenges.
• Process Evaluation: The implementation process was generally successful, with high levels of user engagement. However, initial challenges highlight the need for better support during the transition phase.

• Product Evaluation: The LMS has positively impacted student performance and satisfaction, but there is room for improvement in technical reliability and interactive features.

These findings offer a comprehensive understanding of the strengths and weaknesses of LMS utilization, providing a foundation for developing targeted strategies to enhance its effectiveness in educational settings.

3.4 Implications for Practice

The findings of this evaluation provide several key insights into the utilization of the Learning Management System (LMS) and offer actionable recommendations for enhancing its effectiveness.

3.4.1 Enhancing Training and Support

One of the primary challenges identified in the input evaluation was the need for ongoing training and support for both educators and students. While initial training sessions were beneficial, continuous professional development and advanced workshops are necessary to help users fully leverage the capabilities of the LMS. Implementing a structured training program that includes periodic refresher courses and advanced training sessions can improve user competency and confidence in using the LMS.

To address the challenge of the need for ongoing training and support for educators and students to fully utilize the Learning Management System (LMS), it is crucial to implement a structured training program that includes continuous professional development and advanced workshops. This approach aligns with research findings that emphasize the importance of training effectiveness in promoting participant knowledge and satisfaction in higher education and professional training (Ebner & Gegenfurtner, 2019). Continuous training is essential as it allows for the refinement of skills and the enhancement of user competency and confidence in utilizing the LMS effectively.

Moreover, the use of evaluation models such as the Context Input Process Product (CIPP) model can be instrumental in designing and assessing training programs. The CIPP model provides a holistic framework for evaluating programs by considering the context, input, process, and product aspects (Sagin et al., 2024). By utilizing this model, educational institutions can ensure that training programs are responsive to user needs, effective, and aligned with organizational goals.

Furthermore, incorporating elements of the CIPP model, such as product evaluation, can help in understanding the development of users’ abilities over time, obtaining feedback on training plans, and improving teaching methods (Duan et al., 2023). This continuous feedback loop is essential for refining training programs and ensuring that educators and students are equipped with the necessary skills to maximize the benefits of the LMS. Leveraging structured training programs supported by continuous professional development, advanced workshops, and evaluation models like the CIPP model can significantly enhance user competency and confidence in utilizing the LMS effectively. By investing in ongoing training and support, educational institutions can empower educators and students to leverage the full capabilities of the LMS, ultimately leading to improved learning outcomes and user satisfaction.

Additionally, enhancing the technical support infrastructure is crucial. Providing more interactive and personalized support options, such as live chat services and on-demand webinars, can help address user issues promptly and reduce frustration. Institutions should also consider establishing a dedicated helpdesk for LMS-related queries to ensure timely and effective resolution of technical problems.

3.4.2 Improving Technical Infrastructure

Technical issues, such as slow system performance and intermittent connectivity, were highlighted as barriers to effective LMS utilization. Investing in robust technical infrastructure, including server upgrades and network enhancements, can mitigate these issues and ensure a smoother user experience. Regular maintenance and updates of the LMS are also essential to prevent technical disruptions and maintain optimal performance. To address technical issues like slow system performance and intermittent connectivity hindering effective Learning Management System (LMS) utilization, investing in robust technical infrastructure is crucial. Upgrades to servers and enhancements to the network can help mitigate these issues and ensure a smoother user experience. Regular maintenance and updates of the LMS are also essential to prevent technical disruptions and maintain optimal performance (Ebner & Gegenfurtner, 2019).

Research has shown that the Context Input Process Product (CIPP) model can be instrumental in evaluating and improving programs. This model provides a comprehensive framework for assessing
the context, input, process, and product aspects of training programs, ensuring that resources are effectively utilized to achieve set objectives (Sagin et al., 2023). By applying the CIPP model, educational institutions can identify weaknesses in their technical infrastructure within the context of LMS utilization and make informed decisions to enhance system performance.

Moreover, incorporating elements of the CIPP model, such as product evaluation, can help in understanding the impact of technical upgrades on user experience and system performance over time (Bilan et al., 2021). This continuous evaluation process is essential for ensuring that investments in technical infrastructure lead to tangible improvements in LMS functionality and user satisfaction. By leveraging the CIPP model to evaluate technical aspects of LMS utilization and investing in robust technical infrastructure, educational institutions can address barriers related to slow system performance and intermittent connectivity. This approach can lead to a more efficient and effective use of the LMS, ultimately enhancing the overall learning experience for educators and students.

Institutions should conduct periodic technical audits to identify and address potential weaknesses in the system. Collaborating with LMS vendors to customize and optimize the platform according to the institution’s specific needs can further enhance its functionality and reliability.

3.4.3 Encouraging Faculty Buy-In and Adoption

Resistance to change among faculty members was identified as a barrier to LMS adoption. To address this, institutions should involve educators in the planning and implementation process, highlighting the benefits of the LMS for teaching and learning. Providing opportunities for faculty to share their experiences and best practices can foster a sense of ownership and encourage wider adoption. To address resistance to change among faculty members as a barrier to Learning Management System (LMS) adoption, institutions should involve educators in the planning and implementation process. This approach aligns with research findings that highlight the importance of engaging faculty in decision-making processes to promote acceptance and adoption of new technologies (Ebner & Gegenfurtner, 2019). By involving educators in the planning and implementation of the LMS, institutions can highlight the benefits of the system for teaching and learning, addressing concerns and showcasing how the LMS can enhance their work.

Research has shown that involving faculty in decision-making processes and providing opportunities for them to share their experiences and best practices can foster a sense of ownership and encourage wider adoption of new technologies (Landrum, 2020). By creating a collaborative environment where faculty members feel valued and empowered, institutions can overcome resistance to change and promote a culture of innovation and continuous improvement.

Moreover, utilizing evaluation models like the Context Input Process Product (CIPP) model can be beneficial in assessing the effectiveness of faculty engagement strategies in LMS adoption (Kim et al., 2022). The CIPP model provides a structured framework for evaluating programs by considering the context, input, process, and product aspects, allowing institutions to tailor their approaches based on feedback and outcomes. By involving faculty in the planning and implementation of the LMS, highlighting the benefits of the system, and fostering a collaborative environment through the use of evaluation models like the CIPP model, institutions can effectively address resistance to change among faculty members. This approach can lead to increased acceptance and utilization of the LMS, ultimately enhancing teaching and learning experiences for educators and students.

Creating a community of practice, where educators can collaborate and exchange ideas on effective LMS use, can also promote faculty buy-in. Recognizing and rewarding innovative uses of the LMS can further motivate educators to explore and integrate the system into their teaching practices.

3.4.4 Enhancing User Engagement

User engagement is critical to the success of the LMS. The results indicated high levels of engagement with core features such as accessing course materials and submitting assignments. However, there is room for improvement in terms of interactive and collaborative activities. Incorporating more multimedia content, interactive simulations, and gamified learning elements can make the LMS more engaging and appealing to students.

Institutions should also consider integrating social learning features, such as discussion forums, peer review systems, and collaborative projects, to foster a sense of community and enhance student interaction. Providing clear guidelines and support for using these features can help maximize their effectiveness.
3.4.5 Monitoring and Evaluation

Regular monitoring and evaluation of LMS utilization are essential to ensure continuous improvement. Establishing a feedback loop, where users can provide ongoing input on their experiences and challenges, can help identify areas for enhancement. Institutions should conduct periodic evaluations using frameworks such as the CIPP model to assess the impact of the LMS on educational outcomes and make data-driven decisions. By integrating multimedia content, interactive simulations, and gamified learning elements into the Learning Management System (LMS), institutions can enhance user engagement and create a more appealing learning environment. Insights from studies on student satisfaction, confidence in online learning, and the impact of multimedia content on enthusiasm for online courses can inform strategies to improve interactive and collaborative activities within the LMS. Additionally, considering the importance of student participation and system quality in enhancing the quality of education can guide the implementation of engaging elements in the LMS to foster a more interactive and collaborative learning experience for students.

Developing key performance indicators (KPIs) and benchmarks for LMS utilization can provide a clear framework for assessing progress and identifying success factors. Using analytics tools to track user engagement, performance metrics, and satisfaction levels can offer valuable insights for continuous improvement.

3.4.6 Limitations of the Study

While this study provides valuable insights into LMS utilization, several limitations should be acknowledged. The sample size and representation may limit the generalizability of the findings to other contexts. The reliance on self-reported data from surveys and interviews may introduce biases related to participants’ perceptions and recollections. Additionally, the study’s timeframe may not capture long-term impacts and trends in LMS utilization.

4. CONCLUSION

The evaluation of LMS utilization using the CIPP model provides a structured and comprehensive understanding of the system’s strengths and weaknesses. The findings highlight several key areas for enhancement, including ongoing training, technical support, faculty engagement, and user interaction. By addressing these areas, educational institutions can optimize their LMS implementation, improve the overall learning experience, and achieve better educational outcomes.

This study contributes significantly to the ongoing discourse on the effectiveness of technology-enhanced learning. The application of the CIPP model offers a holistic approach to evaluating LMS utilization, considering multiple dimensions of the educational process. The insights gained from this evaluation can inform policymakers, educational administrators, and educators about critical factors influencing successful LMS adoption and utilization.

These findings underscore the importance of continuous professional development in the culinary industry and highlight the value of structure.

REFERENCES


