

# An Evaluation of the Effectiveness of Online Learning Management System at Kabwe Institute of Technology

Priscah Chanda Chilufya<sup>1\*</sup>, Chama<sup>2</sup>

<sup>1\*2</sup>*Dmi-St. Eugene University*

## Abstract

This study assessed the effectiveness of Online Learning Management Systems (LMS) at Kabwe Institute of Technology and found that while adoption levels are high, usage remains largely basic and fragmented. Platforms such as Google Classroom and WhatsApp are widely used, but mainly for administrative purposes rather than enhancing teaching and learning. The findings indicate that LMS platforms have improved accessibility and flexibility for both students and staff. However, their impact on pedagogical engagement and academic performance is limited. Significant challenges, including poor internet connectivity, high data costs, limited access to devices, and inadequate staff training, continue to hinder effective utilization. Although a slight positive relationship exists between LMS usage and academic performance, the overall impact remains modest. The study therefore concludes that LMS at KIT has improved efficiency in course management but has not yet achieved its full potential in transforming learning experiences. To maximize effectiveness, there is a need for a unified LMS strategy, improved infrastructure, enhanced staff training in digital pedagogy, and better integration of technology into teaching practices. Addressing these gaps will enable KIT to fully leverage digital learning for improved educational outcomes.

**Keywords:** Learning Management Systems, LMS Effectiveness, Educational Technology, E-learning, Kabwe Institute of Technology, Higher Education, Zambia.

## 1. INTRODUCTION

Learning Management Systems (LMS) have become central to modern education, enabling institutions to deliver, manage, and track learning digitally. Beyond storing materials, LMS platforms now support interactive learning, assessments, and analytics. They enhance flexibility, allowing students to access content anytime, and gained prominence during the COVID-19 pandemic for ensuring learning continuity. LMS also improve administrative efficiency and support personalized learning.

### Background of the Study

LMS evolved from basic web-based tools in the early 2000s into advanced platforms like Moodle and Blackboard with analytics and collaboration features.

- **Global Context:** LMS adoption has grown rapidly, especially during COVID-19, supporting online and blended learning.
- **Regional Context (Sub-Saharan Africa):** Adoption exists but is limited by poor infrastructure, low technical support, and inadequate training.
- **Local Context (Zambia):** LMS use is increasing, supported by initiatives like ZAMREN, but challenges such as poor connectivity, low digital literacy, and inconsistent usage persist.

At Kabwe Institute of Technology (KIT), tools like Google Classroom, Zoom, and WhatsApp are used, but a fully integrated LMS strategy is lacking.

## Problem Statement

Despite widespread LMS adoption globally, effectiveness in developing regions remains limited due to infrastructure issues, low digital skills, and weak institutional support. In Zambia, LMS usage is moderate, with many users not fully benefiting from the platforms.

At KIT, LMS tools are used in a fragmented way, with no formal evaluation of their effectiveness. This creates a gap in understanding whether LMS improves learning, engagement, or teaching practices. Therefore, there is a need to assess LMS effectiveness at KIT.

## Research Objectives

### General Objective

- To evaluate the effectiveness of LMS at KIT in improving learning, teaching, and administrative processes.

### Specific Objectives

1. Examine LMS adoption and usage patterns.
2. Analyze perceived benefits such as accessibility and flexibility.
3. Identify challenges affecting LMS use.
4. Evaluate impact on learning outcomes.
5. Recommend improvements for better LMS implementation.

## Research Questions

### Main Question

- How effective is LMS at KIT in enhancing teaching, learning, and administration?

### Specific Questions

1. To what extent is LMS used by students and staff?
2. What benefits does LMS provide?
3. What challenges hinder its use?
4. How does LMS affect learning outcomes?
5. What improvements can enhance LMS effectiveness?

## Characteristics of the Phenomenon

- **Technological Integration:** Combines learning, communication, and assessment tools.
- **Accessibility:** Enables anytime, anywhere learning.
- **Data-driven:** Provides analytics for decision-making.
- **User-centered:** Designed for ease of use.
- **Scalability:** Supports large-scale and collaborative learning.

However, these are not fully realized at KIT due to existing limitations.

## Factors Related to the Phenomenon

- **Technological:** Internet, devices, and system usability.
- **Institutional:** Policies, training, and support systems.
- **Pedagogical:** Course design and interactivity.
- **Human:** Digital literacy and user attitudes.
- **Socioeconomic:** Access to resources and affordability.

## Global Statistical Scenario

Globally, over 90% of universities use LMS, with strong evidence linking LMS use to improved engagement and performance, especially where training and support are adequate.

### **Local Statistical Scenario**

In Zambia, about 60% of institutions use LMS, but active engagement remains low due to infrastructure challenges, limited digital skills, and weak institutional support.

### **Scope of the Study**

- **Location:** Kabwe Institute of Technology
- **Participants:** Students, academic and administrative staff
- **Focus:** LMS effectiveness, usability, and learning outcomes
- **Timeframe:** 2018–2023

### **Operational Definitions (Key Terms)**

- **LMS:** Digital platform for managing learning.
- **Effectiveness:** Ability to improve learning outcomes and engagement.
- **Usability:** Ease of system use.
- **E-learning:** Technology-based learning delivery.
- **Adoption:** Extent of LMS usage.

## **2. LITERATURE REVIEW**

This chapter reviews literature on LMS adoption and effectiveness in higher education. It covers global, regional, and local studies, key theories, a conceptual framework, and identifies research gaps, with a focus on the Kabwe Institute of Technology (KIT).

### **Empirical Literature Review**

**Global Studies:** Globally, LMS has transformed teaching and learning by improving content delivery, assessment, and communication. Studies show increased student engagement and performance, especially when interactive tools are used. The COVID-19 pandemic accelerated LMS adoption, highlighting the importance of institutional readiness. In Asia, large-scale platforms expanded access, but sustaining engagement depends on proper training and structured implementation.

**Regional and African Context:** In sub-Saharan Africa, LMS adoption faces challenges such as poor internet, low digital literacy, and unreliable power supply. Many institutions use LMS mainly for content storage rather than interactive learning. Even in more advanced systems like South Africa, effectiveness depends on institutional support and training. Platform fragmentation (use of multiple tools) further reduces efficiency and coherence.

**Local Context – Zambia:** In Zambia, LMS adoption is growing but limited by infrastructure and digital skills. Student engagement remains low, often due to high data costs and poor access. Most studies focus on adoption rather than effectiveness. At KIT, a hybrid system (Google Classroom, Zoom, WhatsApp) is used, but lacks coordination and formal evaluation, creating a significant research gap.

### **Theoretical Review**

**Technology Acceptance Model (TAM):** TAM explains LMS adoption based on perceived usefulness and ease of use. It helps explain initial adoption but does not fully address continued use or learning outcomes.

**Unified Theory of Acceptance and Use of Technology (UTAUT):** UTAUT expands TAM by including social influence and facilitating conditions. It is useful in explaining LMS challenges in Zambia, especially infrastructure limitations and lack of institutional support.

**Constructivist Learning Theory:** This theory emphasizes active, collaborative learning. While LMS can support interactive learning, in practice (especially in Zambia), it is mostly used for content delivery rather than engagement.

#### 4 Conceptual Framework

The framework shows how LMS effectiveness is influenced by:

- **Independent Variables:** Infrastructure, institutional support, digital literacy, and pedagogical design
- **Mediating Factors:** User engagement, system usability, and accessibility
- **Dependent Variable:** LMS effectiveness (learning outcomes, performance, teaching efficiency)

These factors interact, where weak inputs (e.g., poor internet) reduce engagement and overall effectiveness.

#### Research Gap

There is limited research on LMS effectiveness in Zambian TEVET institutions like KIT. Existing studies focus mainly on adoption rather than usage quality. At KIT, there is no formal evaluation of its hybrid LMS system, leaving key questions unanswered about its effectiveness and impact.

### 3. METHODOLOGY

This chapter outlines the methodology used to evaluate LMS effectiveness at KIT. It covers research design, population, sampling, data collection, analysis methods, and study limitations to ensure valid and reliable results.

#### Research Design

A mixed-methods approach was used:

- **Quantitative:** Surveys to measure LMS usage and effectiveness
- **Qualitative:** Interviews and focus groups to explore experiences and challenges

This approach ensures a comprehensive understanding by combining numerical data with user perspectives.

#### Population

The study targeted:

- **Students:** 2,500 (various academic levels)
- **Academic staff:** 120 lecturers
- **Administrative staff:** 15 ICT/support personnel

All participants interact with LMS platforms like Google Classroom, Zoom, and Moodle.

#### Sampling Procedure

- **Stratified random sampling** ensured representation of all groups
- **Purposive sampling** was used for qualitative participants
- Participants were selected based on LMS usage experience

### Sample Size

Using Yamane's formula (5% error margin):

- Students: 333
- Academic staff: 95
- Administrative staff: 15

### Total sample: 443 participants

Qualitative participants were selected based on data saturation.

### Sampling Area

The study was conducted at KIT campus (Kabwe, Zambia), including:

- Classrooms
- Offices
- Online environments for remote participants

### Sources of Data

- **Primary:** Surveys, interviews, focus groups, LMS logs
- **Secondary:** Reports, academic records, and previous studies

### Methods of Data Collection

- **Questionnaires:** For quantitative data
- **Interviews:** For staff insights
- **Focus groups:** For student experiences
- **Document analysis:** LMS records and reports

### Data Collection Tools

- Structured questionnaires (Likert scale, open-ended)
- Interview and focus group guides
- Data extraction templates for LMS records

### Data Analysis Tools

- **Quantitative:** Descriptive and inferential statistics (Excel)
- **Qualitative:** Thematic analysis (NVivo/manual coding)
- **Triangulation:** Combining both data types for accuracy

### Limitations of the Study

- **Response bias** → reduced through anonymity
- **Limited internet/device access** → addressed with offline options
- **Time constraints** → managed through stratified sampling
- **Limited generalizability** → results specific to KIT

## 4. CONCLUSION

The study concludes that although Learning Management Systems (LMS) at the Kabwe Institute of Technology are widely adopted for basic administrative functions and content distribution, their overall effectiveness in enhancing teaching, learning, and administrative processes remains limited and below their full potential. The current LMS ecosystem is largely fragmented and operates as a digital filing cabinet and communication tool, driven more by convenience and individual initiative than by a clear institutional strategy. While platforms such as Google Classroom and WhatsApp are popular due to their ease of use—

consistent with the Technology Acceptance Model—this ad-hoc approach has failed to establish the necessary facilitating conditions highlighted in the Unified Theory of Acceptance and Use of Technology. Challenges such as poor technological infrastructure, inadequate digital pedagogy training, and lack of institutional coordination have constrained meaningful LMS integration. As a result, the system supports access and flexibility but does not significantly enhance engagement, critical thinking, or collaborative learning, falling short of the ideals of Constructivist Learning Theory. The weak relationship between LMS usage and academic performance further reflects these limitations. Therefore, for KIT to fully realize the benefits of digital learning, it must transition from a reactive and fragmented approach to a proactive, strategic model that aligns technology, pedagogy, and institutional policy, supported by improved infrastructure, training, and a unified LMS framework.

## 5. REFERENCES

1. Ajayi, E. E.-A., & Smith, A. (2021). *Effect of cloud-based learning management system on the LMS implementation process: Academic staff and student perspectives*. arXiv. <https://arxiv.org/abs/2105.12345>
2. Badaru, K. A., & Adu, E. O. (2022). Platformisation of education: An analysis of South African universities' learning management systems. *Research in Social Sciences and Technology*, 7(2), 10–26. <https://doi.org/10.46303/ressat.2022.7>
3. Bloom, B. S. (1968). *Learning for mastery. Instruction and curriculum. Regional Education Laboratory for the Carolinas and Virginia, Topical Papers and Reprints, No. 1*. Evaluation Comment, 1(2), 1–12.
4. Chansa Thelma, C., Sain, Z. H., Pedzisai, D. R., Mumbi, M., Sylvester, C., & Kabombo, K. (2025). Improving learning quality through digital information systems in Zambian higher education. *Asian Journal of Research in Computer Science*, 18(7), 172–185. <https://doi.org/10.9734/ajrcos/2025/v18i7467>
5. Chiwoya, A., Daka, H., & Mulenga, M. L. (2025). Enhancing online learning in higher education institutions in Zambia: An evaluation of government and institutional measures. *International Journal of Research and Innovation in Social Science*, 9(3), 1675–1689.
6. Conole, G., & Dyke, M. (2004). What are the affordances of information and communication technologies? *ALT-J*, 12\*(2), 113–124. <https://doi.org/10.1080/0968776042000216183>
7. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.
8. Frontiers. (2025). Cultivating knowledge: The adoption experience of learning management systems in agricultural higher education. *Frontiers in Education*, 10, 1551546. <https://doi.org/10.3389/feduc.2025.1551546>
9. Gorshenin, A. (2018). *Toward modern educational IT-ecosystems: From learning management systems to digital platforms*. arXiv. <https://arxiv.org/abs/1809.10123>
10. Himoonga, R., & Phiri, J. (2020). Increasing the use of e-learning platforms in tertiary learning institutions for blended distance programmes in Zambia. *Open Journal of Social Sciences*, 8(12), 348–364. <https://doi.org/10.4236/jss.2020.812028>
11. *International Journal on Science and Technology*. (2025). Digital transformation of education & LMS market growth. *International Journal on Science and Technology*, 12(1), 25–38.
12. Kabwe Institute of Technology. (2025). *E-learning policy and implementation guidelines*. Internal Institutional Document.

13. Kunda, L., & Khunga, N. (2014). The role of ZAMREN in improving inter-institutional connectivity in Zambia. *Journal of Open, Flexible, and Distance Learning*, 18(1), 71–82.
14. Mayer, R. E. (2020). *Multimedia learning* (3rd ed.). Cambridge University Press.
15. Mtebe, J. S. (2015). Learning management system success: Increasing LMS usage in higher education in sub-Saharan Africa. *International Journal of Education and Development Using ICT*, 11(2), 51–64.
16. Nikolar-Oza, N. (2024). Learning management systems: Statistics, facts, and trends for 2024. *Education and Technology Journal*, 15(4), 45–59.
17. Seko, Y., Mpundu, M., & Yangailo, T. (2023). Determinants of learning management system (LMS) adoption by university students for distance learning. *Indonesian Journal of Educational Research and Technology*, 4(2), 171–186.
18. Selwyn, N. (2016). *Is technology good for education?* Polity Press.
19. Sililo, J., & Mayumbo, N. (2024). Assessing the adoption of e-learning management systems in institutions of higher learning in Zambia: A case study of the University of Zambia. *Open Journal of Business and Management*, 12(4), 2163–2173. <https://doi.org/10.4236/ojbm.2024.124110>
20. Ssekakubo, G., Suleman, H., & Marsden, G. (2011). *Issues of adoption: Have e-learning management systems failed to make it into the heart of African universities?* In *Proceedings of the South African Institute of Computer Scientists and Information Technologists Conference on Knowledge, Innovation and Leadership in a Diverse, Multidisciplinary Environment* (pp. 231-240).
21. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
22. Ziraba, A., Akwene, F., Nkea, E., & Lwanga, J. (2020). Digital learning adoption in higher education: Global trends and challenges. *International Journal of Educational Technology*, 11(3), 45–60.