Obstacles to LMS Adoption Among College Students: A Global Perspective

Cheng Haibao

Faculty of Education and Sports Studies, University Malaysia Sabah

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ABSTRACT

Learning Management Systems (LMS) have become pivotal in higher education worldwide, yet many college students underutilize these platforms. This conceptual literature-based review explores the obstacles hindering LMS adoption from a global perspective. Drawing on recent peer-reviewed studies (2020–2025), we examine key technology adoption theories – including the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and Expectation Confirmation Theory (ECT) – to frame the discussion. We then review common challenges students face with LMS adoption, such as the digital divide, low self-efficacy, system usability issues, insufficient motivation, and cultural or institutional barriers. The discussion synthesizes these insights, identifying recurring themes: technological infrastructure gaps, individual user readiness, and organizational support deficiencies. The conclusion highlights implications for universities and policymakers – recommending enhanced infrastructure, training, and supportive policies – and suggests avenues for future research to improve LMS uptake and continued use across diverse educational contexts. Key findings indicate that despite the ubiquity of LMS in higher education, strategic interventions are needed to address persistent barriers and ensure that these systems realize their full potential in enhancing student learning.

Keywords: Learning Management Systems (LMS); Student Adoption; Barriers/Obstacles; Higher Education (Global).

INTRODUCTION

Learning Management Systems have become integral to modern higher education, serving as centralized platforms for content delivery, collaboration, and assessment. In theory, LMS usage offers numerous benefits: it extends learning beyond classroom walls, enables flexible access to materials, and supports interactive pedagogies. In practice, however, many college students do not fully adopt or utilize LMS tools, undermining these potential benefits（Mamary, 2022). Even as universities worldwide accelerated LMS implementation – notably during the COVID-19 pandemic – evidence suggests that LMS platforms often remain underused or used only superficially by students and instructors（Ahmad et al.,2023; Ndou et al., 2023). This underutilization is a significant concern because an LMS that is only partially embraced cannot substantially enhance learning outcomes.

The importance of LMS in higher education cannot be overstated. Effective LMS adoption can improve student engagement, provide immediate feedback, and facilitate blended or fully online learning environments. Yet, the problem of low adoption persists globally, with high initial rejection rates and sporadic usage reported in various regions (Ndou et al., 2023). Many students encounter obstacles that limit their willingness or ability to use LMS regularly. These obstacles range from technical issues (like poor internet connectivity) to personal factors (such

as lack of confidence with technology) and contextual factors (like inadequate institutional support). For instance, a review of African higher education contexts noted enduring difficulties including lack of technological resources, digital illiteracy, and general unpreparedness or lack of awareness of LMS benefits among students (Ndou et al., 2023). Such barriers are not confined to one region; they manifest in different forms across both developing and developed countries. A global perspective is therefore crucial to understand the breadth of challenges and to identify common themes in LMS adoption struggles.

This article aims to explore these obstacles through a comprehensive literature review. The Introduction has outlined the importance of LMS and the paradox of underutilization. Next, the Literature Review will discuss theoretical models of technology adoption (TAM, UTAUT, and ECT) that help explain why students decide to (or not to) embrace LMS. We will then examine empirical findings on common LMS adoption challenges faced by students worldwide, including issues of access, skills, usability, motivation, and cultural/institutional contexts. The Discussion section will synthesize these insights, highlighting key themes and interactions among factors. Finally, the Conclusion will draw out implications for institutional stakeholders – such as university administrators, educators, and technology designers – and propose directions for future research to support broader and more effective LMS adoption.

LITERATURE REVIEW

Theoretical Frameworks for Technology Adoption

Research on educational technology adoption commonly draws on three models: the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and Expectation-Confirmation Theory (ECT)/ECM.

Davis (1989) posits that two beliefs—perceived usefulness (PU) and perceived ease of use (PEOU)—shape attitudes and intentions, which in turn predict system use. In higher education, TAM consistently explains student uptake of LMS: when platforms are clearly useful for learning and easy to navigate, intentions and actual use rise; when systems feel cumbersome or low-value, adoption stalls (Davis, 1989).

Venkatesh et al. (2003) integrate prior models to highlight four determinants of intention/behavior: performance expectancy, effort expectancy, social influence, and facilitating conditions. In LMS contexts, students ask: Will this help me perform? Is it easy? Do others expect me to use it? Do I have support and resources? Weakness on any dimension depresses adoption, while strong facilitating conditions (training, helpdesk, infrastructure) convert initial intentions into sustained use (Venkatesh et al., 2003).

Initial acceptance does not guarantee ongoing use. ECM (Bhattacherjee, 2001) explains continuance intention through confirmation (experience aligns with expectations), satisfaction, and updated perceived usefulness. In LMS terms: early, friction-light experiences that demonstrably aid course management and feedback loops raise satisfaction and continuance; glitches or low-value activities erode it (Bhattacherjee, 2001).

Students are more likely to adopt and keep using an LMS when it is useful, easy, socially endorsed, well supported, and when early experiences confirm expectations (Davis, 1989; Venkatesh et al., 2003; Bhattacherjee, 2001).

Common Challenges in Student LMS Adoption (Global Evidence)

1. Digital divide & infrastructure gaps. Unequal access to stable internet, suitable devices, or reliable power remains a first-order barrier, especially for rural and low-income students. Pandemic-era studies

consistently report that connectivity, affordability, and device constraints limited LMS engagement and deepened disparities (Ahmad et al., 2023; Ndou, Mashau, & Chigada, 2023).

2. Digital literacy & self-efficacy. Even with access, low ICT competence and weak computer self-efficacy suppress adoption and advanced feature use. Students unfamiliar with LMS navigation, submissions, or discussion norms often default to minimal use; structured onboarding and just-in-time support raise confidence and uptake (Ahmad et al., 2023).
3. Usability & design (effort expectancy). Interface complexity, login friction, browser/device incompatibilities, and intermittent glitches elevate perceived effort and reduce intentions to use. "Effective and easy-to-use" LMS design—mobile-first navigation, clear task flows, robust stability—lowers cognitive load and supports routine use (Ahmad et al., 2023).
4. Motivation & perceived value (performance expectancy). Students disengage when LMS sites function as static repositories. Where instructors embed assessments, timely feedback, discussion, and analytics-supported nudges, perceived usefulness rises and so does participation; superficial deployments dampen both (Ahmad et al., 2023).
5. Cultural & language fit; privacy concerns. Language misalignment and culturally distant materials can depress participation; some students also worry about data visibility/learning analytics. Institutions that provide multilingual support, localized examples, and transparent data-use policies mitigate these frictions (Ahmad et al., 2023).
6. Institutional support & policy (facilitating conditions). Underpowered helpdesks, limited orientation, and inconsistent course-level requirements weaken adoption signals. During COVID-19 many institutions accelerated LMS rollout but faced "adoption with challenges," including preparedness and resource gaps. Clear policies mandating LMS presence across courses, paired with training and responsive support, improve consistency and depth of use (Ndou, Mashau, & Chigada, 2023; Ahmad et al., 2023).

These barriers are interdependent: access gaps, low self-efficacy, usability issues, weak incentives, cultural/linguistic misfit, and thin institutional scaffolding compound one another. A 2023 decade review synthesizes these as technology, human, and organizational constraints that require coordinated, system-level remedies (Ahmad et al., 2023).

DISCUSSION

Several key themes emerge from the literature on obstacles to LMS adoption, revealing that the issue is not merely technological but also pedagogical and organizational. First, a recurring theme is the critical importance of technological infrastructure and support. No matter how willing or skilled students are, if they lack internet access or face constant technical problems, LMS adoption will stagnate. Many studies, especially from developing regions, stress that poor connectivity and outdated technology are fundamental hindrances to e-learning initiatives(Ahmad et al., 2023). Institutions must therefore view investment in ICT infrastructure as foundational. Alongside this, providing robust technical support (e.g., helpdesks, online tutorials, rapid troubleshooting) is necessary so that students encountering issues can have them resolved before frustration leads to dropout. The facilitating conditions component of UTAUT is clearly reflected here: without supportive conditions, the best-intended adoption efforts can falter. Encouragingly, some universities have recognized this and begun initiatives like loaning devices to students or expanding campus internet coverage, directly targeting the access gap.

Second, individual user readiness and attitudes form another core theme. The concepts of self-efficacy, digital competence, and user mindset repeatedly appear as determinants of LMS uptake. All the sophisticated features of an LMS are of little use if students do not feel capable of using them. Low self-efficacy acts as a psychological barrier: students with past negative experiences or anxieties around technology may shy away from fully

engaging with an LMS. This is where training and orientation programs can make a difference. By proactively teaching students (and faculty) how to navigate the LMS and by showcasing success stories, institutions can build greater user confidence. The literature suggests that many early barriers such as computer anxiety and fear of using online systems have been reduced over time, in part because the pandemic compelled users to gain experience(Ahmad et al., 2023). Nonetheless, ongoing support is needed to ensure all students, regardless of background, feel empowered to use LMS tools. Moreover, motivation and perception of usefulness tie into this theme: when students see positive outcomes from LMS usage (better organization, higher grades, more engagement), it reinforces their willingness to continue. On the flip side, if their experiences are underwhelming or the LMS appears irrelevant, their enthusiasm will wane. In TAM terms, institutions and educators need to bolster the perceived usefulness of LMS by tightly integrating it with learning outcomes, and enhance perceived ease of use by offering a smooth user experience and skill-building opportunities.

Third, and importantly, the institutional and cultural context must be conducive to LMS adoption. A pattern in the literature is that where leadership and policy actively promote e-learning, adoption rates improve. When universities establish clear expectations (for example, requiring that all course communications and materials flow through the LMS), students and faculty alike adapt to make the LMS a central hub. In contrast, if e-learning is treated as an afterthought or a stop-gap measure, users may not take it seriously. The discussion has highlighted that many obstacles (technical, personal, motivational) can be alleviated or exacerbated by institutional action. For instance, an institution that offers multilingual LMS support and localized content can overcome certain cultural barriers, while one that ignores those needs may alienate a segment of its student body. The global perspective reveals that one-size solutions may not fit all: strategies that work in one academic culture may need tailoring in another. Nonetheless, a common thread is the need for institutions to be proactive and strategic. The post-2020 era has shown that with urgent pressure (like a pandemic), universities can surmount many early adoption barriers by necessity(Ahmad et al., 2023). It would be prudent to not lose that momentum. Schools should institutionalize e-learning support, provide continuous professional development for instructors on LMS pedagogy, and seek student feedback to identify pain points. Culturally, fostering a norm of digital literacy and continuous learning will make LMS adoption a more natural process.

Synthesis of Theoretical and Empirical Insights: It is worth noting how the empirical obstacles align with the theoretical frameworks. TAM and UTAUT constructs surface throughout the challenges: effort expectancy is mirrored in usability issues; performance expectancy/usefulness is linked to motivation and perceived value; social influence connects to faculty and peer usage norms; and facilitating conditions correspond to infrastructure and support. These relationships reinforce that improving LMS adoption requires a balanced approach addressing all these dimensions. A key insight is that the factors are interdependent – improvements in one area can enhance others. For example, by increasing facilitating conditions (better tech support, training), an institution can indirectly boost students' performance expectancy (as they become more skilled and see better outcomes) and reduce effort expectancy (tasks feel easier). Similarly, building a positive social influence – such as having tech-savvy student ambassadors or enthusiastic faculty champions – can encourage hesitant students to give the LMS a try. The Expectation Confirmation Theory perspective adds that initial adoption must be converted into long-term usage by meeting users' expectations. Early positive experiences (e.g., a smoothly run online module, or a time-saving LMS feature that students find helpful) are crucial "moments of truth" that can determine whether students integrate the LMS into their regular study habits. If these expectations are confirmed or exceeded, students are likely to continue using the system (perhaps even in the absence of external mandates), whereas disappointment early on can cement resistance.

Key themes identified can be summarized as: (1) Technology and Access – ensuring equitable access and reliable, user-friendly systems; (2) User Preparedness and Attitudes – fostering digital skills, confidence, and demonstrating value to motivate users; and (3) Institutional Strategy and Culture – providing strong support,

alignment with pedagogy, and cultivating an environment that normalizes LMS use. These themes recur across studies from different continents, indicating their robustness. However, the relative prominence of each theme can vary by context. In some low-resource environments, access may be the dominant issue, whereas in a well-resourced university, the challenge might shift towards improving engagement and avoiding superficial use. A global viewpoint thus helps educators and administrators recognize which barriers are most salient in their context and learn from how others have addressed them.

In conclusion of this discussion, while LMS adoption obstacles are multidimensional, they are not insurmountable. The pandemic-driven experiment in online education showed that many barriers (like lack of awareness or reluctance) can be swiftly addressed when change is non-negotiable(Ahmad et al., 2023). Students and teachers alike can adapt rapidly when given support and necessity. The task now is to carry forward the lessons learned and intentionally tackle the remaining hurdles – such as persistent socio-economic gaps, varying digital competences, and the need for better integration of technology in pedagogy – to ensure that LMS platforms fulfill their promise as catalysts for educational innovation. The next section outlines practical implications for stakeholders and suggests directions for research that could further illuminate the path to widespread, effective LMS adoption.

CONCLUSION

Learning Management Systems hold great promise for enhancing higher education, but realizing this promise requires concerted effort to overcome the obstacles identified above. This review has highlighted that college students' adoption of LMS is impeded by a combination of technological, individual, and institutional factors. For institutional stakeholders – including university administrators, IT services, and faculty – several implications arise. First, investing in robust technological infrastructure is non-negotiable: universities should ensure campus-wide high-speed internet access, provide necessary hardware or device support to students in need, and keep the LMS software up to date. Such investments directly address the digital divide and signal institutional commitment to e-learning. Moreover, continuous technical support must be available. It has been observed that poor internet connectivity and limited IT support remain significant hindrances to LMS acceptance (Ahmad et al., 2023), so rectifying these issues is a primary step.

Second, institutions should implement comprehensive training and orientation programs. Digital literacy training for students (especially first-year and international students) can substantially raise their comfort level with the LMS interface and features. Workshops or online tutorials at the semester's start, and refresher sessions throughout the year, could cover how to navigate the LMS, submit assignments, engage in forums, and use advanced tools (like plagiarism checkers or progress trackers). Similarly, faculty development is crucial: instructors need guidance on how to effectively integrate LMS tools into their teaching and how to encourage student engagement online. When instructors model enthusiastic and consistent LMS use, students are more likely to follow suit. Institutional policy can reinforce this by, for example, mandating that every course have an active LMS presence and by recognizing or rewarding innovative uses of the platform in teaching.

Third, addressing content and cultural relevance is important for global inclusivity. Stakeholders should ensure that LMS content is accessible and relevant to diverse student bodies. This might involve offering the LMS interface and support materials in multiple languages, checking that course content is culturally inclusive, and allowing localization where appropriate. Additionally, fostering a supportive online learning culture – one that encourages questions, peer support, and experimentation within the LMS – can help students overcome hesitation. For example, universities might establish student LMS ambassador programs or peer mentoring, where experienced students help newcomers navigate online learning tools.

Suggestions for future research: While significant progress has been made in understanding LMS adoption, this review points to several areas where further inquiry is warranted. One area is the interplay between different adoption factors – for instance, how exactly do improvements in facilitating conditions (like better support) influence personal factors (like self-efficacy) over time? Recent work suggests that these interactions are complex and deserve more exploration（Feng et al., 2025). Longitudinal studies following students through their college years could reveal how initial attitudes and barriers evolve with increased exposure to LMS, identifying critical periods or interventions that yield lasting adoption. Another area for research is cross-cultural comparisons: given that much of the literature is context-specific, comparative studies can illuminate how cultural norms or educational policies lead to different outcomes in LMS usage. For example, why might students in one country use discussion forums avidly while those in another avoid them? Understanding these nuances can guide more tailored solutions. Additionally, motivational factors in LMS use remain a fertile ground – integrating theories from educational psychology (such as self-determination theory or gamification frameworks) could help design LMS environments that intrinsically motivate students. Research could experiment with features that increase student engagement and measure their impact on adoption and learning outcomes (e.g., do game-like reward systems or social learning elements in an LMS significantly boost usage rates?).

Finally, with the rapid advancement of technology, future LMS implementations may integrate AI, mobile learning, and personalization. Investigating how these new features affect adoption (do they lower barriers or introduce new ones?) will be important. The period 2020–2025 has already seen a surge of innovation and forced adoption; building on this knowledge, researchers should also examine post-pandemic trends – will the emergency adoption of LMS translate into permanent practice, and what factors determine its sustainability? Understanding the long-term impacts of the pandemic-driven digital shift could help in strategizing for resilience in education technology usage.

In conclusion, overcoming the obstacles to LMS adoption among college students is a multi-dimensional challenge that requires collaboration between technology designers, educators, and administrators. By addressing the technical barriers (ensuring access and usability), enhancing user readiness (through training and motivational strategies), and strengthening institutional support and policy, stakeholders can create an ecosystem in which LMS usage is not only mandated but genuinely embraced as a valuable part of the learning experience. The global perspective taken in this article shows that while contexts differ, the core principles of supporting students in technology adoption are universal. With ongoing research and responsive innovation, higher education can move toward a future where LMS platforms fulfill their promise to enrich learning for all students, leaving no one behind due to preventable obstacles.

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