Barriers to Learning Management System Usage in Higher Education: A Mixed-Methods Study in Malaysia

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ABSTRACT

Learning Management Systems (LMS) have become integral to higher education worldwide, yet their effective use is often hindered by various barriers. This mixed-methods study examines the key barriers to LMS usage in a Malaysian higher education context, integrating quantitative survey data with qualitative insights from interviews. The research identifies multiple impediments including limited digital literacy and confidence among users, inadequate training and technical support, infrastructure weaknesses (such as unreliable internet connectivity and insufficient access to devices), and a misalignment of LMS with existing pedagogical practices. Quantitative results indicate that a majority of instructors and students face challenges in these areas, while qualitative findings provide depth, revealing issues like resistance to change and preference for traditional teaching methods. The findings align with broader international literature and underscore that technical adoption alone does not guarantee effective LMS integration. This study highlights the need for comprehensive strategies – from improving user training and institutional support to upgrading infrastructure and encouraging pedagogical innovation – in order to overcome barriers and fully realize the potential of LMS in higher education.

Keywords: Learning Management System; higher education; barriers; mixed-methods; digital literacy; Malaysia; digital pedagogy

INTRODUCTION

The rapid expansion of digital learning has made Learning Management Systems (LMS) a cornerstone of modern higher education. LMS platforms (e.g., Moodle, Blackboard, Canvas) enable content delivery, assessment, and collaboration, and their importance was magnified during the COVID-19 pandemic when institutions worldwide shifted to remote instruction (Sobhani et al., 2025). In Malaysia and other Southeast Asian countries, universities have invested substantially in LMS technology to enhance teaching and learning flexibility. Despite widespread adoption, many institutions report that LMS usage remains suboptimal and inconsistent. Technical implementation alone does not ensure active utilization; in both high-income and developing contexts, issues such as underutilization by faculty, lack of support, and low student engagement are commonly observed (Mbewe, 2025). This suggests that various human and organizational factors continue to hinder effective LMS integration.

While LMS are available in most higher education institutions, there is a persistent gap between the availability of these systems and their effective usage in daily teaching and learning. The problem is particularly pronounced in contexts where users face skill deficits, insufficient support, or infrastructural limitations. In Malaysia, anecdotal evidence and initial studies have indicated that lecturers and students encounter numerous challenges

in fully utilizing LMS for pedagogy (e.g., connectivity issues in rural areas, lack of training in e-learning design). These barriers not only limit the return on educational technology investments but also impede progress toward interactive and student-centered digital learning environments.

To address this problem, the study is guided by the following questions: (1) What are the main barriers that inhibit effective LMS usage in higher education, as perceived by academic staff and students? (2) How do these barriers affect users' engagement with the LMS and the integration of the LMS into teaching and learning practices? (3) What underlying factors contribute to these barriers, and what improvements do users suggest to enhance LMS utilization?

By combining quantitative breadth with qualitative depth, this research provides a comprehensive examination of the challenges limiting LMS use. It fills a gap in the literature on Malaysian and regional contexts, where few studies have employed a mixed-methods approach to understand LMS adoption barriers. The findings are expected to inform university administrators, educators, and policymakers seeking to promote effective digital learning infrastructures.

LITERATURE REVIEW

LMS adoption is widespread, yet an implementation gap persists: platforms are present but use is often shallow due to training and support deficits, time pressures, infrastructural limits, and pedagogical resistance (e.g., Radif, 2016; Ahmad et al., 2023; Yao et al., 2022). Findings diverge by context: in resource-constrained settings, connectivity, devices, and data cost dominate (e.g., Amporful, 2023; Riyath & Rijah, 2022), whereas in better-resourced environments, human and organizational factors—self-efficacy, incentives, and norms—explain under-utilization (e.g., Alenezi, 2018). In Malaysia, most studies remain single-method or single-stakeholder and are largely descriptive; few triangulate lecturers' and students' experiences while explicitly mapping first-order (infrastructure/support) and second-order (skills/attitudes/incentives) barriers to explanatory models such as TAM and UTAUT. This study addresses that gap through a mixed-methods, concurrent design that quantifies barrier prevalence, explains underlying mechanisms, and interprets results through TAM/UTAUT to identify actionable levers for meaningful LMS use.

Barriers to LMS Adoption

Scope and Patterns. Over the past decade, LMS have become ubiquitous in higher education, supporting flexible learning and communication. However, the literature cautions that simply providing an LMS does not guarantee effective use – pedagogical potential often remains underrealized as usage can be shallow or sporadic (Sobhani et al., 2025). A wide range of studies has therefore investigated what hinders meaningful LMS integration. Reviews consistently group the barriers into several thematic categories – technological, individual (user-related), institutional, and pedagogical – which often interact and vary by context (Mbewe, 2025). In other words, effective LMS use is influenced by a combination of technical factors, user capabilities and attitudes, organizational support, and alignment with teaching practices. This multifaceted view is echoed across diverse higher education settings, indicating that no single factor is solely responsible for suboptimal LMS utilization.

User Skills, Training, and Confidence. One prominent barrier is the limited digital literacy and low self-efficacy of some instructors and students. Especially among less tech-savvy faculty, a lack of ICT skills undermines the willingness to use advanced LMS features (Radif, 2016; Ahmad et al., 2023). Anxiety or fear of change can accompany these skill gaps, further discouraging adoption of new e-learning tools (Ahmad et al., 2023). Closely related is the inadequacy of training and professional development. Many educators report insufficient ongoing training opportunities and a lack of time to learn new LMS tools (Ahmad et al., 2023).

Training budgets are often modest (e.g., only ~5–15% of IT expenditures), perpetuating skill gaps and leaving faculty to rely on self-teaching. Without pedagogically oriented training, instructors tend to remain at a "basic use" level—using the LMS only for rudimentary tasks. Malaysian contexts are no exception; for example, distance educators in Malaysia have been found to lack structured guidance in e-learning, leading to superficial use of LMS features (Yacob et al., 2020). When formal support is thin, users become frustrated and disengaged – a point illustrated by the importance of robust helpdesks and instructional technology support (Amporful, 2023). In sum, inadequate training and support, coupled with limited user know-how, form a major barrier cluster that keeps many faculty and students from fully exploiting LMS capabilities.

Technological Infrastructure and Access. Another critical set of barriers is technological: unreliable infrastructure and access limitations. Unstable internet connectivity and limited bandwidth directly impair the LMS experience. In some developing and rural settings, this is the top-cited obstacle – for instance, in Sri Lanka, poor internet reliability was among the most significant barriers to LMS adoption (Riyath & Rijah, 2022). Within Malaysia, disparities in network coverage (e.g. rural vs. urban) and device access (many students relying only on smartphones) constrain participation (Yacob et al., 2020). High data costs can further depress LMS usage, as reported in cases where students must spend their own money on internet access (Amporful, 2023). Even in better-resourced institutions, technical hiccups like system slowdowns or downtime during peak usage periods create frustration and hinder trust in the platform. Essentially, when the underlying technology is unreliable or inconvenient, users are less likely to invest effort in using the LMS regularly. This underscores the importance of strong facilitating conditions (in Unified Theory of Acceptance and Use of Technology terms) – without a stable technological environment, other efforts to increase LMS adoption may falter (Venkatesh, Morris, Davis, & Davis, 2003) .

usability and design problems. If the LMS interface is confusing to navigate, not optimized for mobile devices, or sluggish in performance, users may perceive it as more trouble than it's worth. Students, in particular, are quick to compare the LMS with modern user-friendly apps; when the LMS is seen as clunky or when course content is poorly organized online, their engagement drops (Kyei-Blankson et al., 2016; Chung & Noor, 2020). Although many technical shortcomings could be addressed through platform updates or better instructional design, these fixes are not always forthcoming. As a result, technical barriers – whether due to infrastructure or software design – remain a persistent challenge in realizing the full benefits of LMS technology.

Institutional Support and Policy Factors. Organizational context plays a significant role in LMS uptake. Weak leadership signals or unclear institutional strategies can hinder adoption by creating an atmosphere where quality LMS use is not expected or rewarded (Sobhani et al., 2025). In contrast, universities that set clear policies, provide incentives for innovative teaching, and invest in necessary infrastructure and content development tend to see more enthusiastic LMS use (Alenezi, 2018; Al-Nuaimi & Al-Emran, 2021; Ahmad et al., 2023). Where institutional e-learning initiatives are under-resourced or only nominal, faculty may reasonably conclude that integrating LMS into their teaching is not a priority. For example, if there is no allocated time or recognition for instructors to develop online materials, many will default to traditional methods due to competing demands on their time. Strategic institutional planning – including phased LMS rollouts, pilot programs, and sustained maintenance and support – has been noted as a decisive factor in successful LMS implementations. Conversely, without top-down commitment, even tech-savvy educators can feel unsupported, and the LMS may languish as an unused system. Thus, institutional barriers such as lack of administrative support, insufficient funding for e-learning, and misalignment of policies with practice can significantly inhibit LMS utilization at scale.

Pedagogical Alignment and Attitudinal Barriers. Finally, there are crucial pedagogical and cultural factors. An LMS affords student-centered, interactive pedagogies (quizzes, forums, collaborative tools, etc.), but realizing this potential often requires instructors to redesign their teaching approaches. If educators remain

comfortable with lecture-centric routines, they may view many LMS features as non-essential. Reluctance to change established practices, skepticism about the pedagogical value of online activities, and concerns about maintaining academic rigor in an online format all limit deeper LMS use (Radif, 2016; Mbewe, 2025). Studies have found that some instructors use the LMS in a minimal way – essentially as a file repository for lecture notes – rather than as an interactive learning environment. When instructors underutilize the interactive features, students naturally perceive the LMS as a static dumping ground, which dampens their engagement (Kyei-Blankson et al., 2016; Chung & Noor, 2020). This creates a vicious cycle: low instructor enthusiasm leads to low student interest, reinforcing beliefs that the LMS "doesn't add much" to learning. In contrast, when instructors have aligned their course design with LMS capabilities (for example, incorporating weekly online quizzes or discussion forums), students report higher engagement and satisfaction. Such cases illustrate that many pedagogical barriers are surmountable with changes in attitude and practice – if faculty can be shown effective models and given support to adapt, their perceptions of the LMS's usefulness can shift positively.

Notably, even within a single context, different studies sometimes emphasize different primary barriers. In high-bandwidth, well-resourced universities, technical infrastructure might be taken for granted, and the sticking points tend to be human factors like motivation and pedagogical fit. In resource-constrained settings, the basic technological issues can dominate. Yet across the literature, a common thread is the interplay of factors: technical availability alone is insufficient for success. Indeed, even institutions with modern LMS technology have reported underutilization when users are not adequately trained, supported, or convinced of the LMS's value (Mbewe, 2025). This observation aligns with technology acceptance frameworks.

The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which are among the most frequently applied models in LMS adoption research (Al-Nuaimi & Al-Emran, 2021), posit that both users' perceptions and environmental conditions drive technology usage. TAM highlights perceived usefulness and perceived ease of use as key determinants of adoption, while UTAUT adds factors such as facilitating conditions and social influence. The barriers identified in LMS usage can be mapped onto these constructs: for example, low digital literacy and poor LMS design reduce the perceived ease of use, and a lack of training or reliable infrastructure means weak facilitating conditions, thereby lowering adoption likelihood. Likewise, if instructors do not believe that using the LMS will enhance their teaching effectiveness (i.e., low perceived usefulness), their behavioral intention to fully utilize it will remain low (Davis, 1989) .

Most prior studies employing TAM or UTAUT to examine LMS have done so via quantitative surveys, which capture the prevalence of such factors (Al-Nuaimi & Al-Emran, 2021). However, there is a noted gap in qualitatively exploring how these issues manifest in everyday academic life and in specific cultural contexts. This study addresses that gap by integrating quantitative and qualitative approaches in the Malaysian higher education setting. In doing so, it contributes new insights into how known barrier factors (skills, infrastructure, attitudes, etc.) play out on the ground and how they might be overcome.

The gap this study addresses. In Malaysia, evidence on LMS barriers is growing, but few studies integrate breadth (prevalence) with depth (lived mechanisms) and explicitly map first-order (infrastructure/support) and second-order (skills/attitudes/incentives) barriers onto TAM/UTAUT constructs. This mixed-methods study contributes that triangulated picture and a theory-linked, multi-lever roadmap for improving quality-of-use.

METHODOLOGY

We employed a mixed-methods, concurrent triangulation design to examine barriers to LMS use in Malaysian higher education. Quantitative survey data provided breadth on prevalence and patterns, while qualitative interviews supplied explanatory depth on underlying reasons and contexts (Radif, 2016). The study was

conducted at a large Malaysian public university with input from a partner institution. For the survey, we targeted academic staff and undergraduates in faculties actively using a Moodle-based LMS (eLearn): lecturers were sampled stratified by department/seniority, and students via convenience sampling through course groups, yielding N = 120 lecturers (~48% of faculty) and N = 300 students across programs/years. From survey volunteers, we then purposively selected a diverse subset for 15 semi-structured interviews (10 lecturers; 5 students), balancing age and ICT proficiency for lecturers and prioritizing students with substantial LMS exposure (mostly Years 3–4).

Survey instrument: Items were derived from the literature and a preliminary needs scan: (1) demographics; (2) ~20 Likert-scale items spanning skills, support, infrastructure, policy, and attitudes (e.g., training adequacy, connectivity, pedagogical fit, troubleshooting confidence), adapted from prior instruments (Radif, 2016); and (3) open-ended prompts on the "biggest challenge" and suggested improvements regarding LMS use. Two e-learning experts reviewed the instrument, and a pilot test (5 lecturers, 10 students) prompted minor wording refinements. Reliability was high for the scale items (lecturers' $\alpha = 0.88$, students' $\alpha = 0.85$). The survey ran online (Google Forms) for three weeks in late 2024. **Interviews** probed typical LMS use, difficulties encountered, training/support experiences, and ideas for improvement; student prompts focused on feature use, access barriers, and perceptions of lecturers' LMS practices. Sessions (conducted in English with occasional Malay) lasted 30–45 minutes on Google Meet, were recorded with consent, and subsequently transcribed and anonymized.

Analysis and integration: Quantitatively, we used SPSS 26 to compute descriptive statistics (means; % agreeing/strongly agreeing on Likert items), independent-samples t-tests (comparing lecturers vs. students on analogous items), and exploratory correlations (e.g., between lecturers' ICT skill level and their LMS confidence; $r \approx -0.45$, $p < .01$). An exploratory factor analysis indicated good sampling adequacy (KMO = .82) and suggested three underlying factors aligned with our conceptual framework: (1) Skills & Confidence, (2) Infrastructure & Support, and (3) Pedagogy & Usage. Qualitatively, we conducted a thematic analysis following Braun & Clarke (2006). Two coders independently reviewed the transcripts and inductively coded recurring ideas (e.g., "no formal training," "connectivity drops," "prefers traditional methods"). They then collaboratively grouped codes into consolidated themes and subthemes. A third researcher audited the coding decisions; discrepancies were resolved through discussion, and representative quotations were identified to illustrate each theme. Finally, we integrated the quantitative and qualitative results: we compared findings for convergence or divergence (e.g., survey data indicating "lack of time" as a barrier vs. interview narratives about workload), and we used the qualitative insights to elaborate on or help explain the quantitative patterns. Ethical approval was obtained from the university review board. Participation was voluntary with the right to withdraw at any time, and all data were kept confidential and used solely for research purposes.

FINDINGS AND DISCUSSION

We interpret results through the Technology Acceptance Model (TAM; Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003). For each barrier, we report survey prevalence, follow immediately with an anchoring quotation, and indicate the implicated constructs (perceived usefulness/ease of use; performance/effort expectancy; facilitating conditions; social influence).

Inadequate Training and Support

A clear majority of lecturers reported training gaps: 72% agreed they had not received adequate professional development to use LMS features; many also indicated a lack of ongoing, pedagogical support. Students corroborated this indirectly—several noted lecturers "seemed unprepared" to use advanced tools. Lecturers described learning-by-doing with little sustained guidance: "No one really trained us—it's trial and error." Most

used only basics (uploads/announcements), unaware of analytics, quiz banks, or rubric tools. Time pressure amplified the gap: “Between classes and admin, I barely have time to learn new features.” Helpdesks were viewed as hardware-oriented rather than instructional: “If I ask about quiz design, the advice is just to reboot.” Thin training depresses perceived ease of use (TAM) and weakens facilitating conditions (UTAUT), explaining repository-only behaviors despite LMS availability. Targeted, hands-on PD and “just-in-time” instructional support should therefore be prioritized to lift PEOU/self-efficacy and normalize deeper feature use.see Figure 1

Figure 1. Barrier–theme joint display: integrated survey–interview evidence and theory links (TAM/UTAUT).

Barrier category	Survey highlights	Interview insights	Theory linkage
Training & Support	72% lecturers: insufficient training/suppor	“No one trained us—it’s trial and error.”	TAM: ease of use; UTAUT: facilitating conditi
Infrastructure & Access	68%: unreliable internet / technical glitche	“I upload at 1–2am when Wi-Fi is stable.”	UTAUT: facilitating conditions; effort expecti
Time & Workload	~60% lecturers: lack time to learn/integra	“I barely have time to upload notes.”	External constraints reduce adoption despit
Attitudes & Pedagogy	Low use of interactive tools; ‘repository-o	“I upload because it’s required; nothing b	TAM: usefulness beliefs; UTAUT: social influe

Technical Infrastructure and Access

68% of respondents (lecturers + students) agreed unstable internet and platform glitches hindered LMS use. Students were especially affected (slow/unstable off-campus access; data costs), while staff reported exam-period slowdowns and intermittent timeouts. The human toll was evident: “My quiz froze when the internet dropped—I was panicking.” Some students waited past midnight for stable uploads; a branch-campus lecturer drove to town to find a stronger signal. Phone-only access and data costs compounded inequities: “Doing a whole course on a phone eats my data.” Fragile connectivity elevates effort expectancy and erodes facilitating conditions (UTAUT), undermining trust and continuity of use. Foundational responses—bandwidth upgrades, peak-load testing, subsidized data, device-loan schemes, and robust caching/offline options—are prerequisites for meaningful adoption.

Time Constraints and Workload

Approximately 60% of lecturers lacked time to learn, design, and implement LMS activities; “lack of time” also surfaced prominently in open responses. Students observed downstream effects (e.g., static LMS pages mid-semester). Heavy workload drove minimalist use: “I barely have time to upload notes, let alone try new tools.” Instructors framed course redesign as a high opportunity cost: “Dozens of hours—something else would suffer.” A few “positive deviants” reported that investing early in quiz banks later repaid time via automated marking. Workload is an external constraint that indirectly lowers PEOU and behavioral intention (TAM/UTAUT). Protected PD time, ready-to-use templates, and recognition/workload credit for redesign help flip time from barrier to enabler.

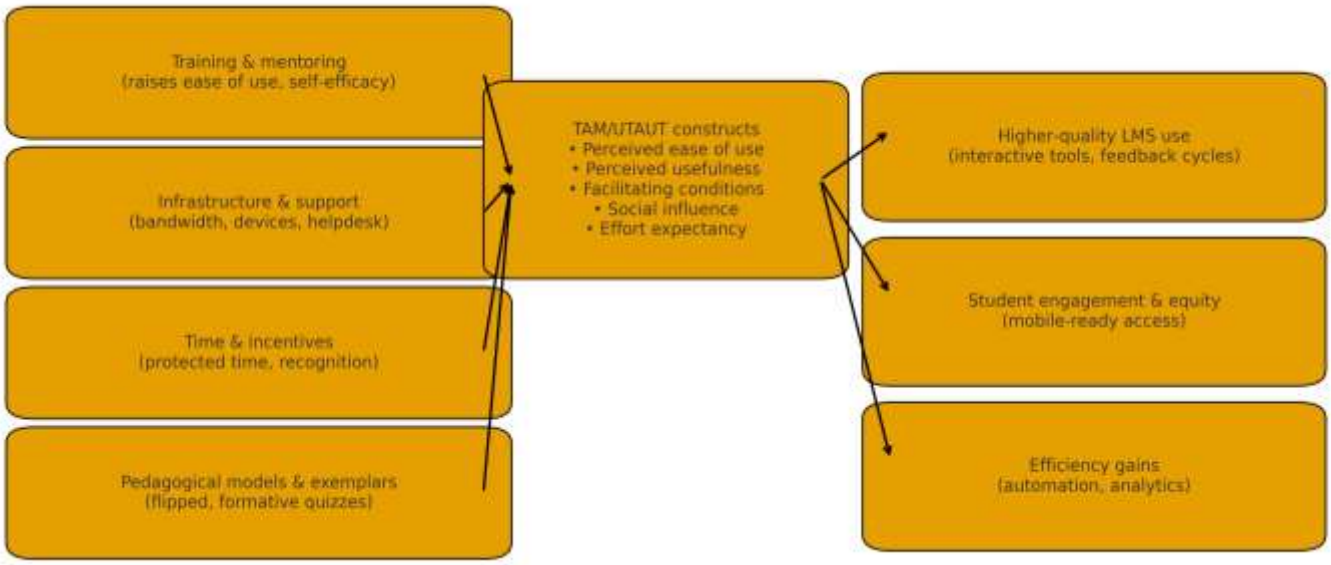
Pedagogical Misalignment and Resistance

Usage data and comments indicate repository-only practice is common; some lecturers openly prefer traditional methods. Students echoed: several courses used LMS only to “dump files,” with few adopting quizzes, forums, or structured feedback. “I upload because it’s required; I don’t go beyond that,” a senior professor admitted. Early disappointments (silent forums) prompted reversion to face-to-face routines. Conversely, where design matched LMS affordances—e.g., weekly formative quizzes and short forum prompts—engagement rose: “After seeing students engage online, I’m convinced it adds value.” Low perceived usefulness (TAM) and weak social influence (UTAUT) sustain shallow usage. Communities of practice, peer exemplars, and quality-of-use indicators (e.g., feedback latency, formative assessment frequency) can shift norms beyond “shell exists” compliance.

Cross-Theme Synthesis and Theoretical Reflection

Barriers co-occur and reinforce one another: scarce PD → low confidence → repository-only practice; recurrent glitches → eroded trust → avoidance; workload → no practice time → persistent novice status. Hence single-point fixes (only bandwidth or only workshops) rarely stick. Aligning first-order enablers (infrastructure, access, responsive support, protected time) with second-order factors (skills, beliefs, incentives, peer norms) raises PEOU/PU and strengthens facilitating conditions/social influence, moving institutions from availability to meaningful use.

Figure 2. Theory-linked logic model from enablers to classroom outcomes (TAM/UTAUT aligned).



CONCLUSION

This mixed-methods study shows that under-utilization of LMS in Malaysian higher education stems from intertwined barriers: gaps in training and just-in-time support, uneven infrastructure and access, workload/time constraints, and pedagogical resistance that keeps use superficial. Integrating survey trends with interview testimony—and interpreting them through TAM/UTAUT—clarifies why single-point fixes rarely endure: beliefs, skills, incentives, and technical conditions co-determine real classroom use.

Looking ahead, we recommend tracking three pragmatic indicators institution-wide and reviewing them each term to drive continuous improvement: (1) feedback latency (median time from student submission to instructor response; target ≤72 hours), (2) formative-assessment frequency (at least one low-stakes quiz/check-in per week in ≥80% of courses), and (3) activity-completion rates in the LMS (≥85% on-time completion of required weekly activities). Coupled with protected staff time for course redesign and an instructional-support helpdesk, these KPIs translate policy into practice, align incentives with learning quality, and provide a transparent basis for iterative course improvement.

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