The Level of Adoption and Use of Learning Management Systems among Teachers and Students in Higher Educational Institutions in Greater Noida

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ABSTRACT

This study investigated the adoption and use of Learning Management Systems (LMS) among teachers and students in private higher education institutions in Greater Noida, India. The study is significant as it highlights their role in enhancing teaching, learning, and digital competency. Using a Cross-Sectional Survey Design, data were collected from 182 participants (76 teachers and 106 students) across two universities. The researcher used Descriptive statistics, t-tests, ANOVA, and multiple regression analyses to examine LMS usage, adoption levels, and the influence of UTAUT constructs and demographics. Findings revealed that students' adoption is primarily driven by perceived usefulness and social influence, while teachers' adoption depends on perceived ease of use and facilitating conditions. Persistent challenges, including limited internet connectivity, outdated devices, and insufficient faculty training, constrain effective LMS utilization. Overall, LMS adoption is moderate to positive, but successful integration requires addressing these infrastructural and training gaps. Based on the findings, the study recommends enhancing technological infrastructure, providing continuous faculty training, establishing departmental LMS support, promoting peer mentoring, and implementing regular monitoring to optimize engagement and learning outcomes.

Keywords: Learning Management Systems (LMS), Higher Education, Technology Adoption, Digital Learning, Educational Technology

INTRODUCTION

Higher education has undergone significant transformation in recent years, fueled by rapid technological advancements and widespread internet access. These changes have reshaped teaching and learning, requiring educators to develop new skills to integrate technology effectively into their classrooms (Dobre, 2015; Fathema & Sutton, 2013). The COVID-19 pandemic further highlighted the importance of digital tools, as institutions were forced to transition rapidly to online and blended learning environments. In this context, Learning Management Systems (LMSs) have become essential for delivering curriculum, tracking student progress, and assessing performance (Al-Fraihat, Joy, & Sinclair, 2020; Almarashdeh, 2016).

Over time, LMSs have evolved from simple digital repositories into comprehensive platforms that support interactive learning, collaboration, and administrative management (Alias & Zainuddin, 2005). In India, which hosts one of the world's largest higher education systems, LMS adoption is increasingly important for enhancing teaching effectiveness, promoting collaborative learning, and equipping students with key skills particularly in regions like Uttar Pradesh (Maina & Nzuki, 2015; Liu & Geertshuis, 2021).

Despite these benefits, challenges persist. Many teachers face barriers such as limited technological knowledge, insufficient training, and inadequate institutional support (Alshammari, 2015; Alshalan, 2019). Additionally, disparities in access to technology shaped by socioeconomic status, geography, and gender have been further amplified during the pandemic, affecting both educators and students (Ngeze, 2016; Yakubu et al., 2020). Understanding the level of LMS adoption among teachers and students is therefore crucial for improving educational practices and ensuring effective technology integration in higher education.

Although LMS adoption has been widely studied globally, few studies have focused specifically on private higher education institutions in Greater Noida, a city emerging as a regional education hub. This study, titled *"The Level of Adoption and Use of Learning Management Systems among Teachers and Students of Higher Educational Institutions in Greater Noida,"* seeks to address this gap. Guided by the Unified Theory of Acceptance and Use of Technology (UTAUT), the research explores the factors influencing LMS adoption and provides insights to help policymakers, institutional leaders, and educators enhance the quality of higher education in the region (Alshehri, Rutter, & Smith, 2019; Fathema & Sutton, 2013).

LITERATURE REVIEW

The rapid growth of Information and Communication Technologies (ICTs) has brought significant changes to higher education, particularly in how institutions adopt and use Learning Management Systems (LMSs). LMSs provide flexibility in hardware, software, human resources, and finances, helping universities manage teaching, learning, and administrative tasks more effectively (Dobre, 2015). However, the decision to adopt and integrate LMSs depends on several factors, including the size of the institution, the variety of courses offered, budget constraints, and organizational policies (Dobre, 2015; Maina & Nzuki, 2016).

Factors Influencing LMS Adoption

Research consistently shows that system quality, perceived usefulness, ease of use, and self-efficacy play crucial roles in LMS adoption among both faculty and students. Fathema, Shannon, and Ross (2015) emphasized that external factors, such as facilitating conditions and system quality, strongly shape faculty attitudes toward LMSs. Similarly, Fındık-Coşkunçay et al. (2018) and Alharbi & Drew (2014) found that students' intentions to use LMSs largely depend on how useful and user-friendly they perceive the systems to be. Liu and Geertshuis (2021) further noted that professional identity influences faculty adoption, suggesting that teachers' perception of themselves as educators affects their willingness to engage with technology.

Institutional support also plays a critical role. Maina and Nzuki (2016) highlighted that leadership backing, supportive policies, and accessible training significantly impact LMS adoption. Likewise, Alshehri, Rutter, and Smith (2019) found that technical support was a key determinant of LMS acceptance in Saudi Arabian universities, while Muries and Masele (2017) reported that management support encouraged the continued use of e-learning systems in Tanzania. These studies collectively demonstrate that both individual capabilities and organizational environments shape how LMSs are adopted and sustained.

Faculty and Student Perspectives

Faculty and students approach LMS adoption differently, and generational differences also influence engagement. Alghamdi and Bayaga (2016) observed that older faculty members (above 40 years) tended to embrace LMSs more than younger peers, although overall usage remained limited. Sulun (2018) traced the evolution of LMSs from enterprise systems like WebCT and Blackboard to tools that enhance teaching strategies, student engagement, and academic management, reflecting varying adoption patterns among users. Meanwhile, Wichadee (2015) and Alias & Zainuddin (2005) reported mixed adoption among faculty, indicating that engagement levels differ widely.

Students' experiences often depend on access and infrastructure. Ngeze (2016) found that Tanzanian students preferred personal laptops and mobile devices over campus networks, highlighting the importance of reliable access, digital literacy, and stable connectivity. Generational differences, familiarity with systems, and infrastructure availability collectively influence students' willingness to use LMSs effectively.

Regional Studies and Challenges

Studies from different regions reveal both successes and obstacles in LMS adoption. Gamede, Ajani, and Afolabi (2022) documented effective Moodle use in South African universities during the COVID-19 lockdown, though widespread adoption still faced common institutional hurdles. In Saudi Arabia, Alshammari (2015) and Alshalan (2019) reported positive faculty attitudes, yet LMS integration remained limited due to organizational and

personal constraints. Rahrouh, Taleb, and Mohamed (2018) and Almarashdeh (2016) highlighted perceived utility and service quality as key predictors of instructor satisfaction. In Tanzania, challenges such as network instability, power outages, and limited system proficiency hindered adoption (Ngeze, 2016). Collectively, these studies suggest that successful LMS adoption requires both strong infrastructure and supportive human factors.

Theoretical Framework: UTAUT

The Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh et al. (2003), provide a comprehensive framework for understanding LMS adoption. UTAUT integrates insights from the Theory of Reasoned Action, Technology Acceptance Model, Motivation Model, and Theory of Planned Behavior. It identifies four key constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions that determine technology adoption. Moderating factors such as age, gender, experience, and voluntariness of use can influence the strength of these relationships.

Performance expectancy reflects the degree to which users believe technology will enhance their performance, while effort expectancy captures perceived ease of use. Social influence represents the impact of peers and important others on adoption and facilitating conditions refer to the availability of resources and organizational support. Numerous studies have applied UTAUT to e-learning, demonstrating its effectiveness in explaining how faculty and students adopt LMSs (Alshehri et al., 2019; Fathema et al., 2015).

Research Gaps

Despite extensive research on LMS adoption globally, few studies focus on private higher education institutions in India, especially in Greater Noida. Most research examines faculty perspectives, technical infrastructure, or student behavior in isolation. There is a clear need to explore the interaction between faculty and student attitudes, institutional support, and regional challenges to provide a more holistic understanding of LMS adoption in this specific context.

Research Objectives

This study aims to achieve the following objectives:

1 To identify LMS usage among Teachers and Students in Private Higher Education Institutions in Greater Noida.

2 To examine the Level of LMS Adoption by Teachers and Students in Private Higher Education Institutions in Greater Noida.

3 To determine the PE, EE, SI, FC, and behavioral intentions of higher education teachers and students toward the adoption of LMS in private institutions of higher education in Greater Noida with respect to gender, age, experience, and level of education

Hypothesis

The following null hypotheses are formulated for the study:

$H0_{1:}$ There is no significant difference in the usage of learning management systems (LMS) between teachers and students in higher-educational private institutions in Greater Noida.

$H0_{2:}$ There is no significant difference in the level of adoption of learning management systems (LMS) between teachers and students in private institutions of higher education in Greater Noida.

$H0_{3:}$ There are no significant relationships between the perceived ease of use (PE), perceived usefulness (PU), social influence (SI), facilitating conditions (FC), or behavioral intentions (BI) of higher education teachers and students toward the adoption of LMS in private institutions of higher education in Greater Noida.

$H0_4$: There is no significant variation in the perceived ease of use (PE), perceived usefulness (PU), social influence (SI), facilitating conditions (FC), or behavioral intentions (BI) toward LMS adoption with respect to gender, age, experience, or level of education among higher education teachers and students in private institutions in Greater Noida.

METHODOLOGY

This study adopted a Cross-Sectional Quantitative Research Design using a Survey Approach to investigate the adoption and use of Learning Management Systems (LMS) among teachers and students in private higher education institutions in Greater Noida. Data were gathered from two major universities: Sharda University and Galgotias University, representing diverse academic disciplines. A Stratified Random Sampling Technique ensured proportional representation of 76 teachers and 106 students.

Structured questionnaires included demographic questions, items measuring UTAUT constructs (Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Behavioral Intention), and self-reported LMS usage. Data were analyzed using SPSS (v.25), applying descriptive statistics, independent t-tests, one-way ANOVA, and multiple regression analysis. Ethical procedures were observed, including institutional approval, informed consent, confidentiality, and voluntary participation.

RESULTS

This study investigated the use and adoption of Learning Management Systems (LMS) among teachers and students in private higher education institutions in Greater Noida, guided by the Unified Theory of Acceptance and Use of Technology (UTAUT). The analysis addresses LMS usage, adoption levels, and the influence of UTAUT constructs and demographic factors on behavioral intention.

LMS Use among Teachers and Students

Both students and teachers actively engaged with LMS platforms such as Google Classroom, Moodle, and Blackboard. Students primarily used LMSs to access course materials, submit assignments, and participate in discussions, whereas teachers employed them for instructional delivery, assessment, and feedback. Descriptive statistics indicated moderately high usage: students ($M = 3.82$, $SD = 0.78$) and teachers ($M = 3.95$, $SD = 0.69$), reflecting substantial integration of LMSs into academic activities.

These findings align with Dobre (2015) and Reid (2019), who highlighted that LMSs enhance academic efficiency and interaction. The COVID-19 pandemic has accelerated adoption, consistent with Gamede, Ajani & Afolabi (2022), demonstrating LMSs' critical role during emergency remote teaching. However, variation in usage intensity suggests that pedagogical integration remains uneven, influenced by departmental policies, training, and institutional support.

Interpretation: Teachers and students are willing and able to use LMS, but institutional initiatives are needed to deepen pedagogical integration and ensure consistent engagement.

Level of LMS Adoption

Adoption was evaluated using five UTAUT constructs: Perceived Usefulness (PU), Perceived Ease of Use (PE), Social Influence (SI), Facilitating Conditions (FC), and Behavioral Intention (BI).

Construct	Students (M)	Teachers (M)	Interpretation
PU	3.88	3.97	LMS enhances efficiency and learning outcomes
PE	3.76	3.84	LMS is user-friendly and accessible
SI	3.41	3.48	Moderate peer and institutional encouragement

FC	3.57	3.63	Supportive but uneven infrastructure
BI	3.92	4.02	Strong intention to continue use

Both groups reported high PU and PE scores, reflecting positive perceptions of LMS utility and ease of use. BI

scores exceeded 3.9, indicating strong motivation to continue using LMSs. SI and FC were moderate, highlighting opportunities to strengthen peer support and institutional infrastructure. These patterns mirror findings by Maina & Nzuki (2016) and Salloum et al. (2019), suggesting that while individual readiness exists, institutional factors can constrain full adoption.

Influence of Demographic Variables

Independent t-tests and one-way ANOVA analyses revealed minimal influence of demographic variables. Among students, gender, age, and education level did not significantly affect adoption constructs ($p > .05$). Among teachers, professional experience positively influenced PU ($p = .04$) and FC ($p = .03$), while gender, age, and education level were non-significant.

This aligns with Alghamdi & Bayaga (2016) and Al-Emran et al. (2018), indicating that experience, rather than demographic traits, enhances digital competence and confidence in educational technology use.

Interpretation: In Greater Noida's private institutions, LMS adoption depends more on professional experience and institutional culture than on demographic characteristics. Training and organizational support can equalize adoption across diverse groups.

Predictors of Behavioral Intention

Multiple regression analyses examined the influence of PE, PU, SI, and FC on BI.

Students: The model was significant ($F(4,195) = 7.839$, $p < .001$, $R^2 = 0.243$). PU ($\beta = 0.216$, $p = .002$) and SI ($\beta = 0.255$, $p = .035$) were significant predictors, while PE ($\beta = 0.120$, $p = .092$) and FC ($\beta = 0.088$, $p = .126$) were not. This indicates that students' adoption is strongly influenced by perceived utility and social encouragement.

Teachers: The model was significant ($F(4,82) = 6.251$, $p < .001$, $R^2 = 0.298$). PE ($\beta = 0.238$, $p = .014$) and FC ($\beta = 0.301$, $p = .010$) significantly predicted BI, whereas PU ($\beta = 0.152$, $p = .077$) and SI ($\beta = 0.119$, $p = .118$) were not significant. This suggests that usability and institutional support are key drivers of teacher adoption.

Group	Significant Predictors	Non-Significant Predictors	R^2	Interpretation
Students	PU, SI	PE, FC	0.243	Adoption driven by performance and peer influence
Teachers	PE, FC	PU, SI	0.298	Adoption driven by usability and support systems

These findings support the dual-path model of Venkatesh & Bala (2008), where students' adoption is influenced by performance and social factors, while teachers prioritize system usability and institutional resources.

DISCUSSION

This study examined the level of adoption and use of Learning Management Systems (LMS) among teachers and students in private higher education institutions in Greater Noida, using the Unified Theory of Acceptance and Use of Technology (UTAUT) as its guiding framework. The findings indicate that both teachers and students

actively engage with LMS platforms such as Moodle, Google Classroom, and Blackboard, highlighting the growing normalization of technology-mediated learning in higher education settings.

For students, Perceived Usefulness (PU) and Social Influence (SI) emerged as significant predictors of behavioral intention to use LMS. This suggests that students' adoption decisions are primarily shaped by their perception of how LMS enhance learning outcomes and by the influence of peers and instructors who encourage system use. These findings align with previous studies by Fathema, Shannon, and Ross (2015) and Salloum et al. (2019), which emphasize that students' engagement with digital learning environments is often motivated by performance benefits and peer support.

Among teachers**,** Perceived Ease of Use (PE) and Facilitating Conditions (FC) were the strongest predictors of adoption. This underscores that usability and institutional support play critical roles in influencing educators' willingness to use LMS consistently. The results corroborate findings by Alshehri, Rutter, and Smith (2019) and Maina and Nzuki (2016), which highlight that educators' digital adoption is most successful when institutions provide adequate technical resources, training, and encouragement.

The analysis further revealed that demographic factors such as gender, age, and education level exerted minimal influence on LMS adoption. Only professional experience among teachers showed a significant positive relationship with perceived usefulness and facilitating conditions. These findings are consistent with Alghamdi and Bayaga (2016) and Al-Emran et al. (2018), suggesting that experience, rather than demographic characteristics, shapes users' digital confidence and competence. The moderate-to-high overall adoption levels demonstrate that while LMS are widely accepted, the depth and quality of integration vary across departments and disciplines, depending on institutional support and training availability.

Overall, these findings point to a dual-path adoption model: students' adoption is driven primarily by perceived performance benefits and peer influence, while teachers' adoption depends largely on system usability and institutional support. This distinction highlights the need for differentiated strategies that reflect the unique motivations and challenges of each group.

Despite the moderate to positive adoption of Learning Management Systems among teachers and students, the study reveals persistent technological infrastructure challenges. Unreliable internet connectivity and limited access to updated digital devices, particularly among students from non-urban backgrounds, constrain effective LMS utilization. These findings are consistent with prior studies that emphasize infrastructure as a critical determinant of successful LMS implementation.

Theoretical Implications

The study contributes to educational technology theory in several important ways:

1 It extends the UTAUT model by applying it simultaneously to teachers and students, demonstrating distinct yet complementary adoption pathways within the same institutional ecosystem.

2 It validates UTAUT in the Indian private higher education context, where rapid digitalization intersects with uneven infrastructure and institutional support.

3 It introduces the concept of institutional mediation, suggesting that organizational support moderates the relationships between perceived usefulness, ease of use, and behavioral intention, indicating a potential refinement to the UTAUT model for higher education contexts.

CONCLUSION

This study investigated the level of adoption and use of Learning Management Systems (LMS) among teachers and students in private higher education institutions in Greater Noida, guided by the Unified Theory of Acceptance and Use of Technology (UTAUT). The findings reveal that LMS adoption is moderate to positive among both teachers and students, with strong behavioral intentions to continue using these systems for teaching

and learning activities. Students' adoption is primarily driven by perceived usefulness and social influence, while teachers' use depends on system usability and facilitating conditions, including institutional support and experience. Despite these positive adoption trends, the study highlights persistent challenges. Technological infrastructure gaps, such as unreliable internet connectivity and limited access to updated devices, particularly among students from non-urban backgrounds, constrain effective LMS utilization. Additionally, faculty readiness remains uneven, as many educators lack comprehensive training to fully integrate LMS pedagogically beyond basic functions like uploading content. These limitations suggest that while LMS are increasingly normalized in Greater Noida's private institutions, adoption depth and quality varies across departments and disciplines.

Overall, the findings underscore that successful LMS adoption requires not only positive perceptions and willingness to use technology but also adequate infrastructure, targeted faculty training, and institutional support. Addressing these challenges is critical to optimize digital learning environments, ensure equitable access, and enhance teaching and learning outcomes across all student and faculty groups.

RECOMMENDATIONS

Based on the findings, the researcher recommends the following:

1 **Strengthen Technological Infrastructure:** Universities should invest in reliable internet connectivity, updated hardware, and access to mobile-compatible devices, ensuring all students, including those from non-urban areas, can engage consistently with LMS.

2 **Comprehensive Faculty Training:** Institutions should implement ongoing professional development programs for educators, focusing on pedagogical integration of LMS. Training should move beyond basic content uploading to designing interactive and engaging digital learning experiences.

3 **Institutional Support and Facilitation:** Departments should assign LMS coordinators and provide on-demand technical assistance to both faculty and students. Clear policies and support systems can help ensure equitable and efficient use of LMS across all disciplines.

4 **Peer-Led Mentoring Programs:** Encourage digitally skilled students to mentor peers in navigating LMS features. Similarly, faculty can collaborate in communities of practice to share best practices and improve LMS utilization.

5 **Continuous Monitoring and Feedback:** Universities should regularly assess LMS usage, identify gaps in adoption or training, and implement targeted interventions. Feedback mechanisms can help refine LMS implementation strategies to maximize engagement and learning outcomes.

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