

**KNOWLEDGE, ATTITUDE AND WILLINGNESS TO USE LEARNING
MANAGEMENT SYSTEM AMONG MEDICAL STUDENTS IN
UNIVERSITY OF BENIN**

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**BEING A ONE YEAR PROJECT PRESENTED TO
THE DEPARTMENT OF PUBLIC HEALTH AND COMMUNITY
MEDICINE IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR
THE AWARD OF BACHELOR OF MEDICINE AND BACHELOR OF
SURGERY (MBBS) DEGREE**

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DEDICATION

This project is dedicated to the Almighty God, whose unfailing mercies and abundant strength enabled us to successfully complete this work.

We extend this dedication to our supervisors, Dr. (Mrs) O. E. Obarisiagbon and Dr. N. Mokogwu for their guidance and support throughout this project. Also to our lovely families and friends.

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We are deeply grateful to Almighty God for His unfailing grace and strength, which sustained us throughout the course of this project and made its completion possible. Our sincere appreciation goes to our supervisors, Dr. (Mrs) O. E. Obarisiagbon and Dr. N. Mokogwu, for their patient guidance, dedicated support, and invaluable contributions at every stage of this work. We extend our heartfelt gratitude to our parents, whose unwavering love, encouragement, and sacrifices, spiritually, morally, emotionally, and financially have been a constant source of strength.

We also thank the Department of Public Health and Community Medicine, University of Benin, for the training and opportunity to undertake this research. To our study participants, we owe a special debt of gratitude for their cooperation and willingness, without which this project would not have been possible.

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ADEKUNLE THEOPHILUS AYODEJI

My deepest appreciation goes to my wonderful parents, Mr. Julius and Mrs. Beauty Abumere, for their steadfast love and support throughout my journey in medical school. To my beloved siblings Obehi, Ighodalo and Wilson, thank you for constantly cheering me on and for all your love. To my dear uncle, Mr. Lawrence Ohiowele, thank you for the constant support and love, I am truly grateful. To my project partner, Adekunle Theophilus, thank you for your support and I could not have wished for a better companion through this. I am equally grateful to my dear friends and to everyone who supported and participated in this project, prayed for, or encouraged me in any way, I say a heartfelt thank you. May God bless you all abundantly.

EKIOMO EWOMAZINO ABUMERE

DECLARATION

I hereby declare that this research project titled "KNOWLEDGE, ATTITUDE/PERCEPTION AND WILLINGNESS TO USE LEARNING MANAGEMENT SYSTEMS AMONG MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN" will be conducted under supervision and has not been submitted in part or in full for any purpose.

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CERTIFICATION

This is to certify that this research study titled " **KNOWLEDGE, ATTITUDE AND WILLINGNESS TO USE LEARNING MANAGEMENT SYSTEMS AMONG MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN**" will be conducted by **ABUMERE EKIOMO EWOMAZINO** with matriculation number **MED1708995** and **ADEKUNLE THEOPHILUS AYODEJI** with matriculation number **MED1706161** under the supervision of **Dr O.E Obarisiagbon**, and **Dr. N. Mokogwu** in the department of Public Health and Community Medicine, College of Medical Sciences, University of Benin, as part of the requirements for the award of Bachelor of Medicine, Bachelor of Surgery (MBBS) degree.

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LIST OF ABBREVIATIONS

AI: Artificial Intelligence

E-Learning: Electronic Learning

IT: Information Technology

LMS - Learning Management system

UNIBEN - University of Benin

DEFINITION OF TERMS

Learning: the activity or process of gaining knowledge or skill by studying, practicing, being taught, or experiencing something.

E-Learning: the delivery of learning and training through digital resources.

Learning Management System: a software application for the administration, documentation, tracking, reporting, automation, and delivery of educational courses, training programs, materials or learning and development programs.

ABSTRACT

Background: Learning Management Systems (LMS) have become vital tools for enhancing teaching, learning, and communication. Their importance in medical education is particularly significant, as they provide structured, flexible, and interactive platforms for managing the vast knowledge medical students must acquire. However, in Nigeria, challenges such as limited infrastructure, low digital literacy, and poor internet access have hindered widespread LMS adoption. Understanding medical students' knowledge, perception, and willingness to use LMS is vital to improving integration into medical training.

Objective: This study assessed the knowledge, perception, and willingness to use Learning Management Systems among medical students at the University of Benin, Edo State, Nigeria.

Methods: A descriptive cross-sectional study was conducted among 410 medical students across levels 200-600, selected through stratified sampling. Data were collected using a structured, self-administered questionnaire with sections on socio-demographics, knowledge, perception, willingness, and determinants of LMS acceptance. Data were analyzed using SPSS version 27. Univariate analysis was performed for socio-demographics, bivariate analysis using chi-square tested associations between independent variables and outcomes, and logistic regression identified predictors of knowledge, perception, and willingness. Statistical significance was set at $p < 0.05$, with results presented in prose, tables, and charts.

Results: Of the 410 respondents, 345 (84.1%) were aware of LMS, with Google Classroom (75.8%) and YouTube (58.4%) being the most commonly used platforms. Two-thirds of respondents demonstrated good knowledge, which was significantly associated with academic level ($p < 0.001$). Attitudes were largely positive, with 82.4% agreeing that LMS improves academic performance and 75.1% stating that LMS creates a more interactive learning environment. Overall, 72.5% expressed willingness to adopt LMS for academic activities. Barriers identified included poor internet access (61.3%), inadequate training (48.9%), and high data costs (42.4%).

Conclusion: Medical students at the University of Benin demonstrated high awareness, positive perceptions, and strong willingness to use LMS, though infrastructural and training challenges persist. Institutional support, improved internet access, and structured integration of LMS into the medical curriculum are recommended to optimize its role in medical education.

Keywords: Learning Management System; Knowledge; Perception; Willingness; Medical Students; University of Benin; Nigeria

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

The concept of the Learning Management System (LMS) evolved directly from the broader framework of e-Learning, as educational institutions and organizations sought structured mechanisms to deliver, manage, and monitor online learning experiences¹. Today, LMSs constitute the largest and most rapidly expanding segment of the global learning systems market, valued at over 24 billion dollars, showing its major role in education and training industries². The initial emergence of LMSs in the late 1990s coincided with a significant shift in educational patterns, as traditional classroom-based experiences were increasingly adapted for digital delivery and circulated through the internet in response to new technological advancements³.

In subsequent years, the adoption and utilization of LMSs have accelerated markedly, particularly during the COVID-19 pandemic, which required a transition to remote learning and deeply reshaped educational methods, emphasizing the importance of digital platforms in maintaining continuity of education, leading to widespread acceptance of LMSs across academic and professional sectors⁴.

The integration of technology into education has transformed traditional learning methods, with LMSs emerging as major platforms that facilitate the delivery, management, and assessment of educational content, reinforcing the learning process through dynamic online environments that improve collaboration, professional development, discussions, and communication among users^{4,5}.

LMS platforms have been widely adopted across diverse sectors, including academic institutions, corporate organizations, and professional certification programs. In academia, LMSs streamline course delivery, enhance communication between students and instructors, and offer flexible, personalized learning pathways, and in corporate environments, LMSs facilitate onboarding, compliance training, and continuous professional development, ensuring scalable and consistent delivery of training modules^{6,7}. Furthermore, LMSs are instrumental in professional certification programs, providing self-paced learning opportunities, real-time progress tracking, and performance assessments, as their ability to incorporate analytical tools, multimedia content, and other features enhances learning and operational efficiency^{8,9}.

Among the most prominent LMS platforms are Moodle, an open-source system grounded in constructivist learning principles; Canvas, Blackboard, a comprehensive environment widely adopted in higher education; and Google Classroom, a free, cloud-based platform integrated with Google's productivity tools, as well as Schoology, TalentLMS, Edmodo, SAP Litmos, and Adobe Captivate.¹⁰⁻¹²

A major function of LMSs lies in creating proper communication between learners and instructors. Beyond content delivery and progress tracking, modern LMSs support communication features, facilitate the delivery of learning objectives and enable the automation of assessments^{8,11}. Through integrated analytics and customizable assessments, LMSs allow real-time monitoring of student progress, providing immediate feedback to learners and valuable insights for instructors to refine pedagogical strategies⁵. Such systems are particularly advantageous for reaching marginalized groups, offering flexibility and personalized support to diverse learner populations.

Effective utilization of LMSs among students, however, requires several foundational components: reliable internet access, compatible digital devices, and sufficient digital literacy skills, and institutions must also provide accessible technical support, user-friendly platforms, clear operational guidelines and data privacy integrated within academic curricula to maximize the systems' educational impact¹³.

The significance of LMS platforms in medical education, in particular, cannot be overstated. Medical curricula demand that students assimilate large amounts of knowledge while developing critical clinical skills. LMSs address these demands by offering structured, self-paced learning pathways, supporting continuous learning beyond traditional classrooms, and improving self-directed study habits essential for professional growth^{1,14}. Nonetheless, the successful integration of LMSs into medical education extends beyond technological considerations to encompass the perceptions, attitudes, and willingness of students to engage with these platforms. Understanding students' experiences with LMSs is necessary for optimizing value of LMS investments in the training of future healthcare professionals.

1.2 STATEMENT OF PROBLEM

The adoption and utilization of Learning Management Systems (LMS) among undergraduate students present a complex global challenge marked by significant disparities between developed and developing regions. While institutions in North America and Europe have achieved near-universal LMS integration, the situation differs markedly across Africa and parts of Asia where adoption rates remain critically low^{15,16}. Current data reveals that only 30 – 70% of African higher education institutions have implemented functional LMS solutions, creating a major gap in global education accessibility¹⁷.

The barriers to effective LMS implementation in developing regions, particularly across Africa, are numerous and related infrastructural limitations. Internet penetration across the continent remains at a mere 40% compared to over 90% in developed nations, while frequent power outages in countries like Nigeria, further disrupt digital learning initiatives^{3,18–20}. Financial constraints worsen these challenges, with the annual licensing costs of premium LMS platforms proving too expensive for most African institutions, leading to the majority of universities in the

region relying on open-source alternatives like Moodle, which, while cost-effective, often lack the advanced features and support available in commercial systems^{21,22}.

Beyond access and infrastructure, the human aspect of LMS adoption presents equally pressing concerns. The situation is particularly serious in clinical and practical disciplines, where only few medical schools have incorporated LMS into their training programs compared to majority in developed countries, limiting the potential for virtual simulations and remote practical training²³.

1.3 JUSTIFICATION

The integration of technology into medical education in Nigeria presents a compelling avenue for research. A study focused on the utilization of Learning Management Systems (LMS) among medical students offers several justifications. Learning Management Systems can significantly enhance medical education by providing personalized learning experiences, flexible access to learning materials, and interactive learning opportunities. Furthermore, LMS can address several challenges in Nigerian medical education, such as the teacher-student ratio, infrastructure constraints, and outdated curricula.

Despite the growing importance of technology in education, there is a dearth of research specifically examining the adoption and impact of LMS in Nigerian medical schools. This research will therefore help to bridge the gaps in research literature regarding this subject

By undertaking this research, we hope to provide evidence that will contribute to the improvement of medical education in Nigeria, empowering future healthcare professionals to meet the evolving demands of the 21st century.

Findings from this study can inform managers and policy makers in education about the challenges students face regarding learning. This information can contribute to the development of curricular changes, and interventions that address incorporation of E-learning and technology into the scheme. While there is a growing awareness of LMS, research specific to undergraduates in Nigeria are limited. Conducting such a study would contribute valuable insights to the existing literature and provide a context-specific understanding of the issue. This study will help address gaps in the literature and has the potential to inform interventions and policies that support undergraduates in achieving better learning experience and also will help proffer possible solution to improve learning among undergraduates of university of Benin.

1.4 RESEARCH QUESTIONS

1. What is the level of knowledge and understanding of Learning Management Systems among medical students at the University of Benin?
2. What are the attitudes of medical students at the University of Benin towards Learning Management Systems for their learning needs?

3. Are medical students at the University of Benin willing to accept academic Learning Management Systems for various learning activities?
4. What are the factors influencing the acceptance of Learning Management Systems for academic purposes among medical students at the University of Benin?
5. Which Learning Management Systems are currently being used by medical students at the University of Benin?

1.5 AIMS AND OBJECTIVES

1.5.1 GENERAL OBJECTIVE

To assess and ascertain the knowledge, perception and attitude towards Academic Learning Management Systems among Medical Students in University of Benin with a view to

1.5.2 SPECIFIC OBJECTIVES

1. To assess the knowledge of Academic Learning Management systems among medical students of University of Benin.
2. To ascertain the attitude of medical students of University of Benin towards the Academic Learning Management systems.
3. To determine the willingness of medical students of University of Benin to accept Academic Learning Management systems
4. To identify factors that will determine the acceptance of Academic Learning Management systems among Medical Students in UNIBEN.

CHAPTER TWO

LITERATURE REVIEW

2.1 Knowledge of Academic Learning Management Systems Among Medical Students

A descriptive cross-sectional study was conducted in Bayambang, Philippines in 2019 among 280 undergraduate students to assess their level of awareness towards e-learning technologies²⁴, utilizing a stratified random sampling technique across departments and levels, with data being collected using a questionnaire developed specifically for the study, as well as secondary sources. The findings revealed that 52.50% of students were familiar with e-learning concepts, though this familiarity varied significantly. Only a small proportion, approximately 20%, demonstrated a deep understanding of the comprehensive features and functionalities of LMS, such as Massive Open Online Courses, (MOOCs) and Blended Learning. A majority of the students, about 65%, were aware of basic e-learning tools like PowerPoint presentations and simple online discussions, but their knowledge did not extend to more advanced applications of LMS. Only 30% of students could effectively navigate and utilize advanced features of LMS, such as assignment submission, online quizzes, and discussion forums. The study effectively highlights varying levels of awareness and utilization of e-learning technologies among undergraduate students, but its reliance on a questionnaire developed specifically for the study may limit validity due to potential lack of standardization, and it was done among students of non-medical specialties as well; future research could benefit from incorporating validated tools and exploring qualitative insights to better understand the reasons behind the limited familiarity with advanced LMS features.

A descriptive cross-sectional study was conducted in 2020 in Lusaka, Zambia among 194 freshmen Physics students, to assess e-learning among undergraduate students during the COVID-19 epidemic²⁵. A purposive sampling method was used, and questionnaires were administered online. Regarding, knowledge of E-learning, 190 students (97.9%) indicated that they had an idea about e-learning, while 4 students (2.1%) did not. Among those knowledgeable, 133 students (70.0%) rated their knowledge as medium, 29 (15.3%) as low, and 28 (14.7%) as

high. Prior to the COVID-19 pandemic, only 4 students (2.1%) had used an e-learning platform, while 190 students (97.9%) had not. Of the students who had not used e-learning before the pandemic, 149 (78.4%) became aware of it through training by the institution, 14 (7.4%) via the internet, 11 (5.7%) through friends, and 6 (3.2%) by other means, while 10 students (5.3%) did not specify a source. Institutional training on e-learning was received by 182 students (93.8%), while 12 (6.2%) did not receive such training. Among those trained, 114 students (62.6%) rated the training as good, 33 (18.1%) as poor, 21 (11.6%) as very good, and 14 (7.7%) as very poor.. This study effectively demonstrates the role of institutional training and internet usage in raising awareness of e-learning during the COVID-19 pandemic, but its reliance on purposive sampling limits generalizability; moreover, the study participants were Physics undergraduate students, rather than medical students,

A descriptive cross-sectional study was conducted in Ghana 2017, to assess 297 undergraduates to assess the awareness and use of electronic learning platforms, with a cluster sampling method used to select the institution, and simple random sampling to select the participants ²⁶ . Key factors considered in this study included demographics, computer skills, e-learning perception, e-learning training, e-learning accessibility, e-learning adoption, and the duration of patronage of e-learning platforms. Regarding computer skills, 77.0% of respondents were computer literate prior to joining their current institution, while 23.0% had no skills in computer usage. Only 29.8% (89 out of 299) had practical knowledge of e-learning platforms, with the remaining 70.2% (210 out of 299) lacking hands-on experience. The study's design, though effective in capturing awareness levels, its reliance on reported data may affect the accuracy of the findings. Future studies could use scoring systems to assess the knowledge comprehensively.

A descriptive cross-sectional study was done in Ibadan, in 2022, to assess awareness of learning management system for English learning among 150 undergraduates, using stratified random sampling to select 50 students each across 100, 200 and 300 levels respectively ²⁷ . The questionnaire used was adapted from the Students Awareness of the Learning Management System questionnaire, and Questionnaire on Students' Attitude to the Learning Management System. The results showed a high level of awareness, with a weighted mean of 3.31, surpassing the threshold of 2.50. Key findings indicated that most students were aware of LMS's benefits, such as promoting active participation (mean = 3.50) and aiding in vocabulary acquisition (mean = 3.60). The study effectively highlights high undergraduate awareness of Learning Management Systems, but it lacks clarity on the threshold value, and could benefit from a deeper analysis of lower awareness scores and response biases, particularly as it was not conducted among medical students.

A descriptive cross-sectional study was carried out in Nsukka, Nigeria, in 2023. The study explored 62 Vocational and Technical Education students' knowledge of e-learning platforms at the University of Nigeria, Nsukka, using a simple random sampling technique., and a self-created instrument called the "Utilization of E-learning Technologies among Vocational and Technical Education Students of the University of Nigeria, Nsukka (AUELTVTESUNN).",

which was pre-tested, giving a Cronbach's alpha score of 0.70.²⁸ Findings reveal that 65.2% of students were unaware of the Moodle Learning Management System, and 73.1% were unaware of the Canvas platform, indicating limited knowledge of these tools. Conversely, a significant majority of students were knowledgeable about other e-learning tools: 84.8% knew about the e-learning website, 75.6% were aware of Google Classroom, 80.6% knew about SMART Boards, and 83.6% were familiar with video conferencing. The study provides valuable insights into VTE students' awareness of e-learning platforms, but it would benefit from a standardized questionnaire to ensure generalizability of findings. Future efforts should include the use of more standardized tools.

2.2 Attitude Towards Learning Management Systems

In 2021, a descriptive cross-sectional study was conducted in Vietnam among 299 undergraduates. The undergraduates were selected using stratified random sampling, selecting 60 students from 100-500 level each across several departments, giving 300 questionnaires, of which one was excluded as it was improperly filled²⁹. The study examined students' attitudes towards the use of Learning Management Systems (LMS), revealing generally positive views. A majority of students, 80.4%, expressed satisfaction with LMS, noting its flexibility, ease of use, and ability to improve learning outcomes. Specifically, 84.5% of students appreciated the system's ability to provide easy access to learning materials, 76.2% reported that it helped track progress, and 78.1% found online discussions facilitated by LMS beneficial. More than 75% of students reported that LMS increased their motivation and improved their academic performance, especially in subjects like mathematics and English. Furthermore, 78.6% of students perceived LMS as beneficial in enhancing communication and collaboration, allowing them to interact effectively with peers and instructors. However, 18.5% of students experienced difficulties, particularly with navigating the system and technical issues. Despite these challenges, the overall perception was overwhelmingly positive, with 84.2% of students agreeing that LMS contributed significantly to their learning experience. The study benefits from a well distributed sample taken over many study years, making findings more robust, but was not done strictly among medical students.

A descriptive cross-sectional study was conducted using an online survey in 2020 in Pakistan among 1207 undergraduate students to assess their attitudes towards the effectiveness of learning management systems³⁰. The survey revealed a generally negative attitude towards LMS among the students. A significant number of participants expressed dissatisfaction with the institutional LMS and the quality of the learning resources provided. The average rating for the overall quality of the LMS and the resources was 3.01 on a five-point Likert scale, suggesting that students were not particularly satisfied with the current systems in place. This sentiment was further reflected in their perception of online classes, where students rated the informativeness of online sessions poorly, with an average rating of 3.83. They did not find online classes to be as informative as in-person learning, and there was a clear reluctance to continue online learning once in-person classes resumed, as indicated by an average rating of 3.78. The disparity in

attitudes was also evident when comparing public and private sector students. Public sector students were notably less satisfied with their LMS experiences, including aspects such as the assistance they received, their ability to interact with teachers, and the adequacy of teacher training for online teaching. These factors contributed to a lower overall perception of the effectiveness and utility of LMS in public institutions, and geographical differences also influenced students' perceptions of LMS, as students from provinces like Sindh, KPK, and Balochistan reported lower satisfaction levels with the quality of LMS and online resources compared to those from Punjab. The study benefits from a large sample size and geographic distribution, but reasons for these variations could have been explored deeper.

A descriptive cross-sectional study was conducted in South Korea in 2021 among 216 students to assess the attitudes of students towards Learning Management Systems (LMS) in higher education using an online google form survey developed by the researchers, with several aspects adapted from similar studies and the Technology Acceptance Model (TAM)³¹. The analysis revealed that self-efficacy significantly influenced perceived ease of use in both groups ($p < 0.01$). Enjoyment also played a significant role, with those who enjoyed using the LMS perceiving it as more user-friendly ($p < 0.01$). Computer anxiety had a notable impact on perceived ease of use in both groups ($p < 0.01$), though it did not affect perceived usefulness ($p = 0.693$). Subjective norms only influenced faculty members' perceptions of ease of use ($p < 0.05$). Positive attitudes towards the LMS were associated with its perceived ease of use and usefulness, which in turn increased the intention to use it ($p < 0.01$). Self-efficacy had a stronger impact on perceived ease of use among students ($p = 0.011$), while computer anxiety had a stronger effect on faculty members' perceptions of ease of use ($p = 0.067$). Overall, factors like ease of use, usefulness, and attitude towards LMS influenced both groups similarly. The study effectively outlined the role of acceptance and comfort with technology in attitude towards LMS. However, the study was not conducted among medical students.

A descriptive cross-sectional study was conducted in 2022 among 1000 nursing students of the University of Cairo, Egypt, to assess their attitude and satisfaction towards the Blackboard learning management systems, with sampling being done using stratified random sampling³². The questionnaire was adapted from aspects of the TAM model and from similar literature. A substantial 73.9% of students reported a positive attitude towards Blackboard, while only 1.1% expressed a negative attitude, indicating that negative perceptions were rare. Regarding satisfaction, 48.2% of students had neutral satisfaction scores, suggesting that nearly half were neither particularly satisfied nor dissatisfied with Blackboard. In contrast, only 6.4% of students reported high satisfaction, emphasizing that a smaller segment found the platform particularly satisfactory. The correlation analysis revealed notable patterns. There was a highly significant negative correlation between academic level and total attitude scores ($p < 0.01$), suggesting that as students' progress in their studies, their attitudes towards Blackboard tend to be less favorable. On the other hand, a highly significant positive correlation was observed between students' experience with Blackboard and their total attitude scores ($p < 0.01$), indicating that increased

familiarity with the system was associated with more positive attitudes. The study benefits from a large sample size and a detailed breakdown of attitude and satisfaction, but reasons for the findings documented could have been better explored.

A descriptive cross-sectional study was conducted in 2021 among 1193 undergraduates in Nigeria, to evaluate the attitude towards learning management systems among distance learners using a questionnaire adapted from similar studies³³. The highest rating was for the statement that LMS improves academic achievement, with a mean score of 3.26 (SD = 0.68). This was followed by perceptions that LMS gives more control over learning (mean = 3.15, SD = 0.68) and that the LMS calendar is useful for tracking events (mean = 3.14, SD = 0.67). On the other hand, the LMS was less favored for communication with teachers and classmates, with a mean score of 2.87 (SD = 0.86), for making learning more meaningful (mean = 3.06, SD = 0.73), and for discussing study topics (mean = 3.07, SD = 0.78). The grand mean score for the perceived usefulness of LMS was 3.12 (SD = 0.47), indicating an overall positive view among learners. In terms of perceived ease of use, the highest mean score was for the ease of downloading course materials, which received a mean of 3.15 (SD = 0.73). Learners also found it relatively easy to become skillful in ICT with LMS (mean = 3.14, SD = 0.76) and to understand the LMS process (mean = 3.13, SD = 0.73). However, lower ratings were given for handling LMS problems (mean = 2.95, SD = 0.80), not requiring assistance (mean = 2.89, SD = 0.83), and the convenience of communication with lecturers (mean = 2.77, SD = 0.87). The grand mean score for perceived ease of use was 3.01 (SD = 0.49), reflecting a generally positive view but with some areas highlighted for improvement. The study provides valuable insights into the generally positive perception of Learning Management Systems among distance learners in Nigeria, but it lacks detailed exploration of the factors contributing to both positive and negative aspects, and a deeper analysis of variability and contextual barriers to adoption.

2.3 Willingness of Students to Accept Academic Learning Management Systems

A descriptive cross-sectional study was conducted in 2019 among 244 staff and students, (176 staff and 68 post graduate students) to assess their willingness to accept LMS, using a modified version of the Unified Theory of Acceptance and Use of Technology (UTUAT) questionnaire³⁴. The analysis of LMS adoption revealed three distinct clusters among university teaching staff. The first cluster, "Early Adopters" (44.55%), demonstrated high scores across all scales, including perceived ease of use (5.73) and behavioral intention (4.51). This group felt confident using the LMS and showed low anxiety (1.94), indicating a strong willingness to innovate with the system. The second cluster, "Early Majority" (40.93%), had moderate scores, with perceived ease of use at 4.66 and behavioral intention at 3.41. They found the LMS somewhat useful (perceived usefulness at 3.76) and experienced moderate anxiety (2.53), suggesting some reservations despite finding the system relatively easy to use. The third cluster, "Late Majority" (14.50%), scored lowest on most measures, including perceived ease of use (2.62) and

behavioral intention (3.35). This group reported high anxiety (3.10) and found the LMS less useful (perceived usefulness at 3.03) and less well-supported (facilitating conditions at 3.23). Their low scores reflect significant reluctance and challenges in adopting the LMS. The study provides valuable insights into LMS adoption among university staff and students but could benefit from a larger sample of students, as that would contribute more to our topic.

A descriptive cross-sectional study was conducted in the Philippines in 2024 among 408 students to examine their acceptance of LMS for online learning during the COVID-19 pandemic³⁵. The students generally perceived the LMS to be moderately easy to use, with a mean score of 5.34 (SD = 1.49) for Perceived Ease of Use (PEU). However, a slight agreement was expressed regarding their limited experience with LMS platforms, with 9.55% of students admitting to a lack of experience, which slightly affected the assessment of its usability. Despite this, the LMS was largely viewed as a useful tool for academic tasks, with a mean score of 5.30 (SD = 1.39) for Perceived Usefulness (PU). Students appreciated its ability to help them track assignments, access materials, and communicate with peers and instructors. Students particularly valued features that allowed them to study at their own pace and easily review course materials. Responses such as "I was able to maximize my learning through the LMS" suggest that the LMS had a positive impact on students' learning habits. In terms of Behavioral Intention to Use (BI), students exhibited a strong intention to continue using the LMS in future courses, with a mean score of 5.80 (SD = 1.21). This demonstrates that students viewed the system as a valuable component of their academic experience. However, there was some variability in responses regarding its impact on academic performance, with students moderately agreeing that the LMS helped them improve course productivity (mean = 5.30; SD = 1.39). System characteristics such as accessibility, usability, and reliability were also positively rated, with a mean score of 5.32 (SD = 1.24), but students expressed a desire for more customization options to better meet their learning needs. The collaboration and communication features of the LMS were highly valued, as students appreciated being able to communicate with their instructors and peers (mean for social presence = 3.69; SD = 0.92). Overall, the study indicates that university students demonstrate a generally positive willingness to accept and use the LMS, with significant agreement across the four dimensions of TAM. The students' behavioral intention to use the system was strong, as evidenced by the high mean score for Behavioral Intention to Use (5.80; SD = 1.21). The study benefits from its large sample size and assessment of factors affecting attitude, but is limited as it was not conducted among medical students.

A cross-sectional empirical study was conducted among undergraduates in 2023, Indonesia, to assess the usage of e-learning management systems³⁶. The sample included 200 students of Negeri Makassar university, selected through simple random sampling, 57.5% of whom were female and 42.5% male. Most participants (62%) were under 20 years old, and the largest group was from the Visual Communication Design program (37%). The results showed that Perceived Ease of Use ($p > 0.05$) and Perceived Usefulness ($p > 0.05$) did not significantly affect Attitude Towards Usage. Similarly, Attitude Towards Usage did not significantly impact Behavioral

Intention ($p < 0.01$), while Behavioral Intention significantly influenced Actual Usage ($p < 0.01$). These findings suggest that while Perceived Ease of Use and Perceived Usefulness do not directly influence Behavioral Intention, Attitudes and Intentions are vital for Actual Usage.

A descriptive cross-sectional study was conducted in 2023, using a convenience sampling technique among 260 undergraduates across 12 universities in Bandung, Indonesia, to ascertain intention to use e-LMS³⁷. Regarding the duration of e-learning usage, 22 respondents (8.46%) had used e-learning for less than a year, 32 respondents (12.31%) for one year, 174 respondents (66.92%) for two years, and 32 respondents (12.31%) for over two years. The predominant usage duration was two years, indicating that private universities in Bandung rapidly transitioned to e-learning following the Covid-19 pandemic. In terms of e-learning application activities, 29 respondents (11.15%) engaged with only one type of activity, 10 respondents (3.85%) with two types, 7 respondents (2.69%) with three types, and 214 respondents (82.31%) with all four types (materials/modules, forums/discussions, quizzes, and assignments). Most respondents utilized all available e-learning activities, reflecting the comprehensive adoption of e-learning platforms by universities in Bandung post-pandemic. For application issues, 26 respondents (10.00%) reported never experiencing problems, 188 respondents (72.31%) encountered issues occasionally, 39 respondents (15.00%) frequently faced problems, and 7 respondents (2.69%) experienced issues very frequently. The majority reported occasional problems, suggesting that e-learning applications faced minimal issues overall. Respondents rated the e-learning system positively across several variables. The average score for Perceived Usefulness was 3.55 (71%), Perceived Ease of Use was 3.87 (77%), and Intention to Use was 3.89 (77.80%). The overall average score was 3.77 (73.4%), indicating good acceptance of the e-learning system. The study provides a useful snapshot of e-LMS usage and acceptance among undergraduates in Bandung, but its reliance on convenience sampling and limited geographical scope may impact the generalizability of the findings to other regions or populations.

A descriptive cross-sectional study using simple random sampling was conducted in Ogun, Nigeria in 2017, among 472 undergraduates to assess the adoption of e-LMS, using the UTUAT survey questionnaire³⁸. The study analyzed data from 472 respondents about their use and perceptions of e-learning management systems. The preferred e-learning system was Moodle, used by 378 respondents (80%). When asked about the duration of use, 109 (23%) had used an e-learning system for one semester, and 74 (15.6%) had used it for six semesters. Regarding the willingness to adopt e-learning management systems, the study found that Performance Expectancy had a significant positive effect on Student Grades. Other positive influences included Attitude on Behavioural Intention and Social Influence on Behavioural Intention. Behavioural Intention also positively affected Student Grades. However, Performance Expectancy and Power did not significantly influence Behavioural Intention. The study provides valuable insights into the adoption of e-LMS among undergraduates, but its reliance on convenience sampling and the lack of a deeper analysis of external factors affecting e-LMS adoption in different contexts may limit the generalizability and depth of its findings.

2.4 Factors That Determine the Acceptance of Academic Learning Management Systems

A descriptive cross-sectional study was conducted in 2021, in Saudi Arabia, among 260 undergraduates to assess factors affecting the uptake of Blackboard e-LMS among students³⁹. Several factors influenced the acceptance of Learning Management Systems (LMS) among users, with technological, personal, and institutional elements playing key roles. Studies have shown that the perceived ease of use and perceived usefulness are significant determinants of LMS adoption. Perceived ease of use was particularly impactful, with research indicating that users who found the system easy to navigate were 35% more likely to adopt LMS for their learning activities. Similarly, the perceived usefulness, defined as the belief that the LMS would enhance academic performance, was associated with a higher likelihood of acceptance. A significant 40% of users reported that the system's ability to improve access to course materials and facilitate communication with instructors made it a valuable tool. User attitudes towards technology, shaped by prior experiences and familiarity with similar systems, also affected LMS acceptance. Individuals with more experience using digital tools were 45% more likely to have a positive attitude towards adopting LMS, especially when compared to those with limited technological exposure. This was consistent across both students and faculty, as those familiar with online learning platforms demonstrated greater comfort in transitioning to an LMS-based environment. Institutional support further influenced LMS adoption. Faculty members who received adequate training and support were 30% more likely to integrate the LMS into their teaching practices effectively. Additionally, the role of technical support was crucial, with 38% of users indicating that responsive technical assistance improved their confidence in using the system. Moreover, external factors such as internet connectivity and access to necessary devices were found to be significant barriers to LMS acceptance. Finally, organizational culture played a role in determining the extent to which the LMS was accepted. In institutions with a culture that embraced innovation and digital learning, LMS adoption rates were higher. The text effectively covers a wide range of factors affecting LMS acceptance, providing a thorough overview.. To enhance the analysis, incorporating qualitative findings would make the results more informative.

A descriptive cross-sectional study was conducted in Ghana in 2016, to ascertain determinants of adoption of e-learning and its management systems, among 417 undergraduates⁴⁰. IT infrastructure had a significant positive effect ($p < 0.001$), indicating that improvements in IT infrastructure are associated with a higher likelihood of e-learning adoption. Perceived ease of use also emerged as a significant predictor, ($p = 0.004$). In contrast, organizational compatibility was found to negatively impact e-learning adoption, ($p < 0.001$), showing that more complex or misaligned organizational structures can hinder the adoption of e-learning. Expected benefits had a strong positive impact on adoption ($p < 0.001$). Similarly, competitive pressure and support from educational partners were positively associated with e-learning adoption, with significance levels of < 0.0001 for both. Conversely, the content of the course was negatively associated with adoption ($p < 0.001$), implying that issues related to course content can negatively affect adoption. However, the e-learning curriculum had a positive impact. The study provides a comprehensive analysis of the determinants of e-learning adoption, effectively highlighting key factors such as

IT infrastructure, perceived ease of use, and organizational compatibility. However, it lacks in-depth examples or specific data to further substantiate the relationships between these variables, which could enhance the robustness of the argument.

A descriptive cross-sectional study was conducted in Uganda and Nigeria in 2022 using a self-administered structured online questionnaire, among 240 undergraduates to assess barriers and determinants to e-learning⁴¹. A significant majority of respondents (82.1%) identified the cost of the internet as a major barrier, followed by internet inaccessibility (68.8%), lack of institutional support (47.1%), and lack of training (40.8%). Regarding ICT and e-learning characteristics, most respondents use the internet daily (83.3%) and primarily access it via smartphones (98.8%), with laptops used by 30.0%. WhatsApp is the most frequently used e-learning platform (63.7%), followed by Zoom (45.6%) and email (42.1%). Fewer than half (42.5%) have received training on e-learning, two-thirds (66.3%) have had LMS classes, and just over half (53.3%) had LMS classes within the month preceding the survey. There is a significant association between age and being taught online ($p < 0.001$), with 82.4% of respondents aged 16–20 years reporting online teaching experience. There is also a notable gender difference, with a higher proportion of females (63.1%) having been taught online, a result that is statistically significant ($p = 0.026$). However, no significant association was found between student status and being taught online ($p = 0.217$), though proportionally more Master's students (76.5%) reported online teaching experience. The study effectively highlights key barriers to e-learning adoption and demographic factors influencing online learning experiences, but it could benefit from the inclusion of qualitative insights to strengthen the findings.

A descriptive cross-sectional study was conducted in Zaria, Nigeria in 2024, among 801 lecturers and students to assess the factors associated with the usage of Zoom e-LMS⁴². The study revealed several key factors affecting the use of the Zoom Management System. Respondents widely acknowledged the platform's features as beneficial, with high mean ratings for its functionalities. For example, the capability to host unlimited one-on-one meetings and its integration with other tools were notably valued, achieving mean scores of 2.82 and 2.80, respectively. The relevance of Zoom was also emphasized, with mean scores ranging from 2.66 to 3.31, and respondents particularly appreciated how Zoom saved time and facilitated remote learning, reflected in mean scores of 3.18 and 3.21. Despite its advantages, several challenges affected the platform's use. High data and subscription costs were significant barriers, with mean scores of 3.28 and 3.11. Poor internet connectivity and technophobia among students also posed challenges, with mean scores of 2.97 and 2.65. These issues, which ranged from 2.44 to 3.28, reflected a high extent of concern among respondents. The study effectively identifies key advantages and challenges associated with Zoom e-LMS, providing valuable insights into its usage, but the lack of detailed demographic breakdowns and specific statistical analysis makes it difficult to fully assess the impact of individual factors on usage patterns.

CHAPTER THREE

METHODOLOGY

3.1 Study Area

The study was conducted at the University of Benin, (UNIBEN) which is located in the Ovia North-East Local Government Area in Benin City, Edo State, Nigeria. Edo State is one of the 36 states in Nigeria and belongs to the South-South geopolitical zone. It covers a land area of approximately 17,802 square miles and is bordered by Kogi State to the northeast, Anambra to the east, Delta to the southeast and Ondo to the west and northwest. 35 Benin City, the state capital and largest urban centre, is situated between latitudes 6°20' and 6°31'N and longitudes 5°32' and 5°41'E, and has a landmass of 112.5 square kilometres⁴⁴. 36

The University of Benin (UNIBEN) is a government-owned tertiary institution established on November 23, 1970. Initially founded as the Midwest Institute of Technology, it attained full university status in 1971 and became a federal government-owned university in 1975. The university boasts an estimated student population of 60,000 across its two campuses at Ugbowo and Ekehuan. With a motto 'knowledge for service', the university is accredited by the National University Commission (NUC) of Nigeria and comprises 15 faculties, 1 college, and 3 institutes.³⁷⁴⁷

The College of Medical Sciences at the University of Benin was established at the university's inception in 1970. The School of Medicine is the oldest and largest of the schools within the College and has seventeen departments. The MBBS program enrolls approximately 1,265 medical students spanning six levels (levels 100 to 600). The first three levels (100–300) are the 'preclinical classes', students study basic sciences such as physics, chemistry, zoology, and botany, along with foundational medical sciences like anatomy, physiology, and biochemistry, academic activities take place at Medical Complex, School of Basic Medical Sciences. The higher levels (400-600), 'clinical classes' is the clinical training. The University's clinical training is done at the University of Benin Teaching Hospital.⁴⁸³⁸

3.2 Study Design

The study employed a descriptive cross-sectional design.

3.3 Study Duration

The study was conducted over a 12-month period between 2024 and 2025 with the following activities:

Standardization of Questionnaire (2 months):

A draft questionnaire was developed based on validated models of technology acceptance and reviewed by academic experts to ensure content validity and clarity.

Pre-testing (1 month):

The instrument was pilot-tested on a small group of students from faculties not included in the main study. Feedback was used to refine items and improve reliability.

Data Collection (4 months):

The final questionnaire was administered to selected students using both online and offline methods. A stratified sampling technique ensured adequate representation across faculties and academic levels.

Data Entry and Cleaning (2 months):

Collected responses were coded, entered into SPSS, and cleaned to address missing data, inconsistencies, and entry errors.

Data Analysis (2 months):

Descriptive and inferential statistics was used to explore patterns of LMS usage and acceptance. Statistical significance was set at $p < 0.05$.

Report Writing (1 month):

The findings were compiled into a comprehensive report suitable for academic submission and dissemination.

3.4 Study Population

The study was conducted among medical students of the University of Benin in Benin City, Edo State.

3.5 Selection Criteria

3.5.1 Inclusion Criteria

- i. Medical students who give consent to participate in the study.

3.5.2 Exclusion Criteria

- i. Students in their first year of university as such students may still be new to the school and may not have enough exposure.

3.6 Sample Size Determination

The minimum sample size for the study was determined using Cochran's formula for single proportions in descriptive studies.⁵⁰

$$n = \frac{Z^2 pq}{e^2}$$

$$d^2$$

Where:

n = Sample size.

z = Standard normal deviation, 1.96 (at 95% confidence interval).

p = Population proportion with characteristic of interest = Proportion of the target population that is aware of LMS amongst 150 English students of the University of Ibadan, Oyo State, South West Nigeria = (80% = 0.80) ²⁷

$$q = 1 - p = 1 - 0.80 = 0.20$$

d = Margin of Error (0.05)

Thus;

$$n = \frac{1.96^2 \times 0.80 \times 0.20}{0.05^2}$$

$$n = 245$$

To account for non-response, 10% non-response rate was added to the minimum sample size, utilizing the formula for non-response rate.

$$n_f = \frac{n}{1 - n_r}$$

Where:

n = Minimum sample size (245).

n_r = Non-response rate (10% = 0.10).

n_f = Final minimum sample size.

$$n_f = 245 / 1 - 0.10$$

$$n_f = 272$$

A design effect of 1.5 was used.

$$= 272 \times 1.5 = 408$$

Thus, the final minimum sample size for this study was 408.

The final sample used was 410.

3.7 Sampling Technique

Respondents were selected using stratified sampling as follows:

STEP 1: Computation of sampling fraction.

Where: $f = nf/N$

= Sampling fraction.

nf = Final minimum sample size.

N = Total population size.

Thus:

$$f = 410/1078$$

$$f = 0.38$$

STEP 2: Computation of sample size for each level.

200 level with a population of 155 would have a sample size of 59

300 level with a population of 154 would have a sample size of 59

400 level with a population of 335 would have a sample size of 127

500 level with a population of 165 would have a sample size of 63

600 level with a population of 269 would have a sample size of 102.

STEP 3: Selection of participants.

A stratified sampling technique was employed to ensure proportionate representation of students across levels (200-600 level). First, the number of respondents required from each academic level has been determined using a sample fraction. Then, systematic sampling was used to select individual respondents. The first respondent in each level was chosen by simple random sampling through balloting, and subsequent respondents were selected at regular intervals determined by the formula

$$k = N/n$$

where N is the total number of students in the level and n is the number of students to be selected.

3.8 Tools and Methods Of Data Collection

Data was obtained with the aid of a structured, self-administered questionnaire with close-ended and open-ended questions that seek to answer the study objectives. The questionnaire was adapted from two previous studies conducted in Nigeria: a descriptive study at Ambrose Alli University, Ekpoma, Edo State, which assessed undergraduate attitudes toward learning management systems (LMS)⁵¹ and a 2023 cross-sectional study at the University of Ibadan, which explored awareness and attitudes toward LMS amongst undergraduates.²⁷ To ensure contextual relevance, the questionnaire was reviewed and modified to reflect the specific academic and technological environment of the University of Benin.

The original instruments from which this was adapted reported reliability coefficients of $r = 0.76$ and $r = 0.80$, respectively.

A modified version of the questionnaire was tailored to suit the current research setting and consisted of five sections:

Section A (Biodata): This section gathered key demographic data such as age, sex, ethnic group, department, level of study, religion, marital status, and average monthly allowance or income.

Section B (Knowledge of LMS): This section included questions that assess students' knowledge of the Learning Management System (LMS). Each correct response scored 1 point; incorrect or blank responses scored 0, with total scores converted to percentage values for interpretation.

Section C (Attitude): This section consisted of questions using a 5-point Likert scale (Strongly Disagree to Strongly Agree), scored 1 to 5 to assess students' attitude towards the use of LMS

Section D (Willingness to Use): Questions to assess students' willingness to use LMS platforms. These items were measured on a 4-point Likert scale (Strongly Disagree to Strongly Agree), scored from 1 to 4.

Section E (Factors Affecting Use): This section included questions to assess various barriers and enabling factors. Respondents were able to tick all that apply based on their perceived experience.

Method of Data Collection

Data was collected via a self-administered physical questionnaire. A brief description of the study and instructions on how to complete the questionnaire was included at the beginning of the

questionnaire. To enhance response rates, reminders were sent periodically to participants who had not completed the questionnaire.

Pre-testing of the Questionnaire

To ensure the clarity, validity, sensitivity, and reliability of the questionnaire, it was pretested among medical students at Igbinedion University in Okada, Edo State, with a sample comprising 10% (41 students) of the minimum required sample size for the study. The pretest identified any ambiguous or unclear questions, allowing for adjustments to be made before the actual data collection.

3.9 Data Management

Scoring and Interpretation of Variables:

Socio-demographic Data: Variables such as department, and level were presented as univariate tables, with frequency and percentages.

Knowledge of LMS: A total of 26 questions were used to score knowledge, a score of 1 was given to every correct response while a score of zero was given to incorrect responses. Total scores for knowledge were computed and converted to percentages. A score of 70% and above was considered as good knowledge:

0–69.9% = Poor knowledge

70–100% = Good knowledge

Attitude toward LMS: A total of 14 questions were used to score attitude, a score of 1 was given to every correct response while a score of zero was given to incorrect responses. Total scores for attitude were computed and converted to percentages. A score of 60% and above was considered as good attitude.

0–59.9% = Negative attitude

60–100% = Positive attitude

Willingness to Use LMS: Likert scale response was used to assess respondents willingness to use the LMS where 1 = strongly disagree, 2=disagree 3= neither agree nor disagree 4= agree and 5= strongly agree. Total scores for agree were computed. A score of over 60% was considered as willing while a score <60% was considered unwilling. The primary outcomes for the study were willing or unwilling.

0–59.9% = Unwilling

60–100% = Willing

Factors Affecting Use: Descriptive statistics (frequencies and percentages) was used to present responses. Items was summarized in tables and charts.

3.10 Data Analysis

Data was entered and analyzed using IBM SPSS version 27. Univariate analysis was done in which categorical data like sex, occupation etc. were presented as frequencies and proportions. While numeric variables such as age, etc. that is normally distributed were summarized as means and standard deviation.

Bivariate analyses was conducted to examine associations between independent and outcome variables. Chi square test was used to determine relationships between categorical variables such sociodemographic characteristics (level, sex, age group etc.) and outcomes such as knowledge, attitude and willingness to use LMS. Fishers exact test was used in situations where more than 20% of the cells have an expected count less than 5. Binary logistic regression was modelled to identify significant predictors of the primary outcome (knowledge, attitude and willingness to use LMS). $P < 0.05$ and the absence of the null value (1) from the confidence interval of the odds ratio.

The results were presented in prose, tables, graphs, and charts in line with the specific objectives of the study.

3.11 Ethical Consideration

Ethical approval to carry out the study was obtained from the Health Research Ethics Committee of the University of Benin Teaching Hospital (UBTH). Permission was obtained from the school management. Informed verbal consent was obtained from all participants. Confidentiality and anonymity was assured to all participants and none were induced with money. Participants were given a brief description about the study and its objectives, and were informed of their freedom to withdraw at any point.

3.12 Study Limitations

This study draws upon data provided by respondents, which may be subject to errors due to social desirability bias. Reliance on self-reported data may lead to under or over reporting of medical students' knowledge, attitudes and willingness to utilize learning management systems.

CHAPTER FOUR

RESULTS

A total of 410 respondents participated in the study and the response rate was 100%. The results are presented in the following sections in line with the specific objectives.

SECTION A: Sociodemographic characteristics of respondents

SECTION B: Knowledge of Learning Management Systems

SECTION C: Attitudes towards the use of Learning Management Systems

SECTION D: Willingness to utilize Learning Management Systems for learning activities

SECTION E: Factors influencing adoption of Learning Management Systems for academics

SECTION A

SOCIODEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Table 1: Sociodemographic characteristics of respondents

Variables	Frequency (n = 410)	Percent
Age Group (years)		
≤ 18	28	6.8
19 – 24	298	72.7
25 – 29	75	18.3
30 – 34	9	2.2
Mean ± SD Age (years)	22 ± 3.6	
Sex		
Female	210	51.2
Male	200	48.8
Religion		
Christianity	396	96.6
Islam	14	3.4
Ethnicity		
Benin	126	30.7
Esan	67	16.3
Yoruba	66	16.1
Urhobo/Isoko/Itsekiri/Ijaw	50	12.2
Igbo	47	11.5
Afemai	21	5.1
Hausa	9	2.2
Ika/Ukwuani	9	2.2
Efik	5	1.2
Eggon	1	0.2
Jukun	1	0.2
Ogoni	1	0.2
Idoma	1	0.2
Benin Others*	5	1.2

**Others: Higgi, Iguede, Okpemeiri, Tiv, Zuru.*

Table 1: Sociodemographic characteristics of respondents continued

Variables	Frequency (n = 410)	Percent
Marital status		
Single	385	93.9
Married	14	3.4
Cohabiting	11	2.7
Level of study		
200	59	14.4
300	59	14.4
400	127	31.0
500	63	15.4
600	102	24.9
Source of funding*		
Parents	363	71.3
Self	94	18.5
Scholarship	44	8.6
Others**	8	1.6

**Multiple response question; **Others: friends, guardian, relatives, and siblings.*

The mean age of respondents was 22 ± 3.6 years, with the majority aged 19–24 years 298 (72.7%). Females 210 (51.2%) slightly outnumbered males 200 (48.8%). Most respondents were Christians 396 (96.6%), while only 14 (3.4%) were Muslims.

Benin ethnic group was the largest 126 (30.7%), followed by Esan 67 (16.3%), Yoruba 66 (16.1%), and Urhobo/Isoko/Itsekiri/Ijaw 50 (12.2%), with other groups accounting for smaller proportions.

Most respondents were single 385 (93.9%), with few married 14 (3.4%) or cohabiting 11 (2.7%). By level of study, the largest group was 400 level students 127 (31.0%), followed by 600 level 102 (24.9%).

Parents were the primary source of funding for 363 (71.3%) respondents, while others relied on self-funding 94 (18.5%), scholarships 44 (8.6%), or other means 8 (1.6%).

SECTION B

KNOWLEDGE OF LEARNING MANAGEMENT SYSTEMS

Table 2: Knowledge of Learning Management Systems

Variables	Frequency (n = 410)	Percent
Awareness of LMS		
Yes	345	84.1
No	65	15.9
Sources of information on LMS (n = 345)*		
Online sources	179	52.8
Social media	116	34.2
Colleagues	82	24.2
Lectures	75	22.1
Television	23	6.8
Special trainings	20	5.9
Radio	13	3.8
Definition of LMS (n = 345)		
Software platform for delivering, tracking, and managing courses	311	90.1
Social media platform for students	28	8.1
Tool for hospital patient management	4	1.2
None	2	0.6
Commonly identified features of an LMS (n = 345)*		
Student progress tracking	283	35.3
Online quizzes and assessments	249	31.0
Course content delivery	228	28.4
Financial accounting	42	5.2
Commonly identified LMS functionalities (n = 345)*		
Communication between instructors and students	291	37.6
Automated grading of assessments	214	27.7
Generating reports on learner performance	189	24.5
Real-time patient monitoring	79	10.2
Types of content that can be uploaded to an LMS (n=345)*		
Text documents and PDFs	280	35.6
Videos and presentations	271	34.4
Interactive modules and quizzes	236	30.0
Adaptability of LMS to learner's skill level or position (n = 345)*		
Yes	301	73.4
No	44	10.7
Perceived benefits of LMS (n = 345)*		
Reinforcing knowledge and testing learning	310	73.8
Replacing all face-to-face clinical training	57	13.6
Entertaining without educational purpose	41	9.8
None of the above	12	2.9

**Multiple response question*

Variables	Frequency (n = 345)	Percent
Primary purposes of tracking student progress in LMS*		
Monitoring and supporting learning and performance	317	77.5
Reducing instructor workload by eliminating feedback	56	13.7
Sharing student data publicly	31	7.6
None of the above	5	1.2
Accessibility of LMS across multiple devices		
Yes	329	80.2
No	16	3.9
LMS platforms commonly used in medical education*		
Google Classroom	244	43.8
YouTube	188	33.8
Blackboard	58	10.4
Moodle	56	10.1
Others**	11	2.0

Table 2: Knowledge of Learning Management Systems continued

**Multiple response question; **Others: anki, udemy, zoom, whiteboard, khan academy, google meet.*

Out of the 410 respondents, 345 (84.1%) were aware of LMS. Among these, the most common sources of information were online sources 179 (52.8%), followed by social media 116 (34.2%), colleagues 82 (24.2%), and lectures 75 (22.1%). Fewer respondents mentioned special training 20 (5.9%), television 23 (6.8%), or radio 13 (3.8%) as their source.

A majority, 311 (75.9%) correctly defined LMS as a software platform for delivering, tracking, and managing courses, while 28 (6.8%) thought it was a social media platform for students, 4 (1.0%) believed it was a tool for hospital patient management, and 2 (0.5%) could not provide a definition.

Commonly identified features included student progress tracking 283 (83.2%), online quizzes and assessments 249 (73.2%), and course content delivery 228 (67.1%). Some 42 (12.4%) mentioned financial accounting as a feature.

The most frequently cited functionalities were automated grading of assessments 214 (63.1%) and generating learner performance reports 189 (55.8%). A smaller proportion 79 (23.3%) incorrectly identified real-time patient monitoring as a functionality.

When asked about content that could be uploaded to LMS, 280 (81.9%) indicated text documents/PDFs, 271 (79.2%) mentioned videos/presentations, and 236 (69.0%) identified interactive modules/quizzes. Most respondents 301 (73.4%) recognised that LMS could adapt to a learner's skill level or position.

Regarding perceived benefits, reinforcing knowledge and testing learning was the most common response 310 (91.4%), followed by replacing all face-to-face clinical training 57 (16.8%), and providing entertainment without educational purpose 41 (12.1%).

On the purpose of tracking progress, 317 (93.0%) reported monitoring and supporting learning and performance, while 56 (16.4%) mentioned reducing instructor workload and 31 (9.1%) cited sharing student data publicly. Most respondents 329 (80.2%) indicated that LMS could be accessed across multiple devices.

The most common LMS platforms used in medical education were Google Classroom 244 (75.8%) followed by Blackboard 58 (18.0%) and Moodle 56 (17.4%). 188 (58.4%) wrongly picked YouTube

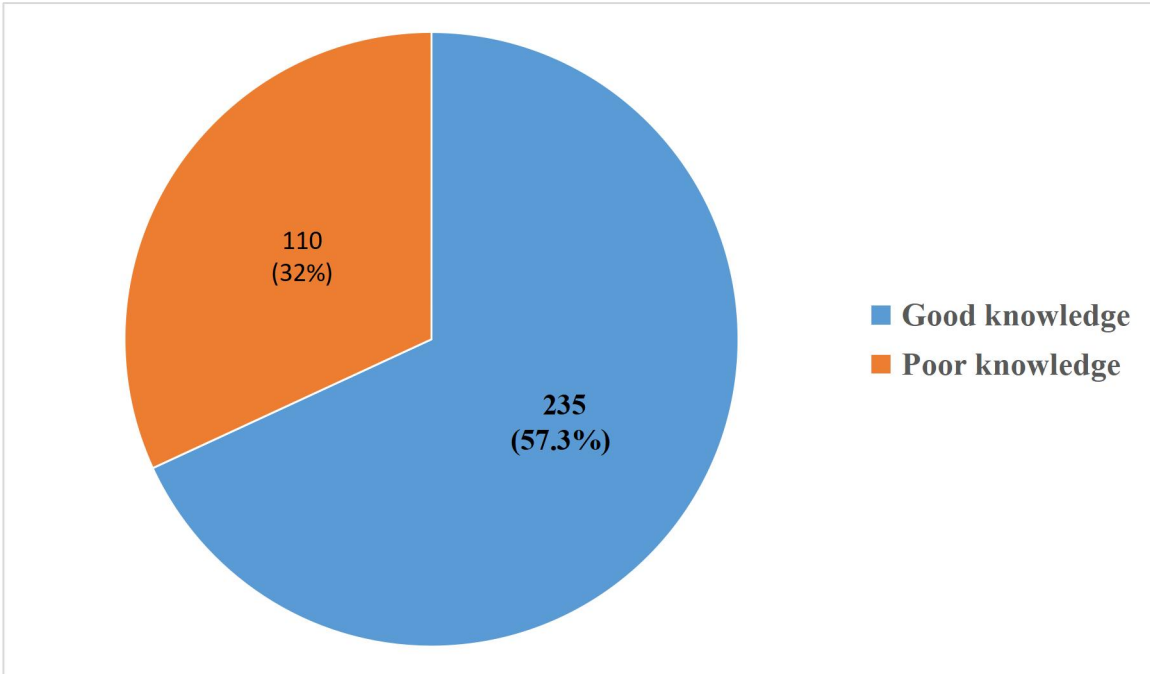


Figure 1: Knowledge of respondents on Learning Management Systems.

The pie chart shows the distribution of knowledge levels among respondents. A little over half, 235 respondents (57.3%), demonstrated good knowledge, while 110 respondents (32.0%) had poor knowledge.

Table 3: Sociodemographic characteristics and knowledge of LMS

Variables	Knowledge of LMS		Test statistic (χ^2)	p-value
	Good (n=235) Freq. (%)	Poor (n=110) Freq. (%)		
Age Group (years)				
≤ 18	14 (58.3)	10 (41.7)	$\chi^2 = 8.749$	0.031*
19 – 24	165 (66.5)	83 (33.5)		
25 - 29	52 (81.3)	12 (18.8)		
30 – 34	4 (44.4)	5 (55.6)		
Sex				
Female	114 (67.1)	56 (32.9)	$\chi^2 = 0.172$	0.729
Male	121 (69.1)	54 (30.9)		
Religion				
Christianity	230 (68.7)	105 (31.3)	$\chi^2 = 1.556$	0.300
Islam	5 (50.0)	5 (50.0)		
Ethnicity				
Edo-indigenes	124 (67.8)	59 (32.2)	$\chi^2 = 0.023$	0.908
Non-Edo indigenes	111 (68.5)	51 (31.5)		
Marital status				
Ever married	7 (77.8)	2 (22.2)	0.397+	0.724
Never married	228 (67.9)	108 (32.1)		
Level of study				
200 level	23 (41.1)	33 (58.9)	$\chi^2 = 24.901$	<0.001*
300 level	35 (71.4)	14 (28.6)		
400 level	66 (69.5)	39 (30.5)		
500 level	44 (81.5)	10 (18.5)		
600 level	67 (73.6)	24 (26.4)		

+ Fisher Exact Test; * $p < 0.05$

The bivariate analysis showed that age group was significantly associated with knowledge of LMS ($p = 0.031$). Higher proportions of good knowledge were observed among respondents aged 25–29 years 52 (81.3%) compared to those below 18 years 14 (58.3%) and 30–34 years 4 (44.4%).

Similarly, level of study was significantly associated with knowledge of LMS ($p < 0.001$). Students in 500 level 44 (81.5%) and 600 level 67 (73.6%) demonstrated higher proportions of good knowledge compared to those in 200 level 23 (41.1%).

No statistically significant associations were found between knowledge of LMS and sex, religion, ethnicity, or marital status ($p > 0.05$).

Table 4: Predictors of knowledge of Learning Management Systems

Variables	β (regression coefficient)	p-value	Odds ratio	95% C.I. for Odds ratio	
				Lower	Upper
Age in years	0.075	0.311	1.078	0.933	1.245
Sex					
Male*			1		
Female	-0.066	0.794	0.936	0.572	1.533
Marital status					
Ever married*			1		
Never married	-0.099	0.909	0.906	0.167	4.915
Religion					
Islam*			1		
Christianity	0.775	0.252	2.171	0.576	8.178
Level of study					
200 level*			1		
300 level	1.274	0.003**	3.574	1.564	8.164
400 level	1.019	0.008**	2.769	1.308	5.863
500 level	1.558	0.003**	4.749	1.707	13.211
600 level	0.868	0.145	2.382	0.742	7.647
200 level	1.019	0.008**	2.769	1.308	5.863
300 level	1.274	0.003**	3.574	1.564	8.164
400 level	1.019	0.008**	2.769	1.308	5.863
500 level	1.558	0.003**	4.749	1.707	13.211
Access to reliable internet service					
Yes*			1		
No	0.051	0.857	1.052	0.605	1.830

β : Coefficient of regression; OR: Odds ratio; CI: Confidence interval; * Reference category; ** $p < 0.05$; $R^2 = 7.4 - 10.3\%$.

The multivariate logistic regression analysis revealed that level of study was a significant predictor of the outcome. Compared to students in 200 level, those in 300 level (OR = 3.57, 95% CI: 1.56–8.16, $p = 0.003$), 400 level (OR = 2.77, 95% CI: 1.31–5.86, $p = 0.008$), and 500 level (OR = 4.75, 95% CI: 1.71–13.21, $p = 0.003$) were significantly more likely to demonstrate the

outcome of interest. Although 600-level students also showed increased odds (OR = 2.38, 95% CI: 0.74–7.65), this association was not statistically significant ($p = 0.145$).

Other factors, including age, sex, marital status, religion, and access to reliable internet service, did not show significant associations with the outcome ($p > 0.05$).

SECTION C

ATTITUDES TOWARDS THE USE OF LEARNING MANAGEMENT SYSTEMS

Table 5: Respondents responses on attitude towards the use of Learning Management Systems

Variables	n=410 Freq. (%)				
	SD	D	N	A	SA
Use of LMS can improve student academic performance	20 (4.9)	6 (1.5)	46 (11.2)	206 (50.2)	132 (32.2)
I would like to get more training on using LMS	5 (1.2)	22 (5.4)	67 (16.3)	212 (51.7)	104 (25.4)
I will ask for help from others when I face a challenge while using the LMS	11 (2.7)	8 (2.0)	80 (19.5)	220 (53.7)	91 (22.2)
Use of LMS will Increase the interaction between lecturers and students	7 (1.7)	32 (7.8)	114 (27.8)	170 (41.5)	87 (21.2)
LMS helps to deliver the information to students quickly	12 (2.9)	11 (2.7)	73 (17.8)	209 (51.0)	105 (25.6)
Use of LMS will provide interesting learning environment	8 (2.0)	10 (2.4)	84 (20.5)	209 (51.0)	99 (24.1)
Learning by using the LMS will gradually replace the formal method of education	12 (2.9)	64 (15.6)	137 (33.4)	137 (33.4)	60 (14.6)
Use of LMS will facilitate my learning process	8 (2.0)	13 (3.2)	96 (23.4)	200 (48.8)	93 (22.7)
In the future the use of LMS will become a necessity for all students	9 (2.2)	32 (7.8)	134 (32.7)	159 (38.8)	76 (18.5)
The use of LMS will reduce the role of the teacher and increase the role of the student in the learning process	20 (4.9)	50 (12.2)	142 (34.6)	141 (34.4)	57 (13.9)
LMS makes it easy for teachers to provide students with individual learning environment	9 (2.2)	19 (4.6)	96 (23.4)	211 (51.5)	75 (18.3)
LMS contributes in integrating the educational resources effectively	8 (2.0)	18 (4.4)	79 (19.3)	213 (52.0)	92 (22.4)
Use of LMS will increase the flexibility of the educational institution system in terms of time and location	10 (2.4)	16 (3.9)	68 (16.6)	207 (50.5)	109 (26.6)
Use of LMS offers better academic performance than the normal formal education	14 (3.4)	41 (10.0)	130 (31.7)	154 (37.6)	71 (17.3)

Note: SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree.

A majority of respondents believed that the use of LMS can improve student academic performance, with 206 (50.2%) agreeing and 132 (32.2%) strongly agreeing, while only 6 (1.5%) disagreed and 20 (4.9%) strongly disagreed, and 46 (11.2%) remained neutral. Similarly, most indicated interest in receiving more training on using LMS, as 212 (51.7%) agreed and 104 (25.4%) strongly agreed, compared to 22 (5.4%) who disagreed, 5 (1.2%) who strongly disagreed, and 67 (16.3%) who were neutral. Willingness to seek help when facing challenges was also high, with 220 (53.7%) agreeing and 91 (22.2%) strongly agreeing, while 8 (2.0%) disagreed, 11 (2.7%) strongly disagreed, and 80 (19.5%) were neutral.

On whether LMS increases lecturer–student interaction, 170 (41.5%) agreed and 87 (21.2%) strongly agreed, while 32 (7.8%) disagreed, 7 (1.7%) strongly disagreed, and 114 (27.8%) were neutral. LMS was also seen as delivering information quickly, with 209 (51.0%) agreeing and 105 (25.6%) strongly agreeing, compared to 11 (2.7%) who disagreed, 12 (2.9%) who strongly disagreed, and 73 (17.8%) who were neutral. Likewise, the majority felt that LMS provides an interesting learning environment, with 209 (51.0%) agreeing and 99 (24.1%) strongly agreeing, while 10 (2.4%) disagreed, 8 (2.0%) strongly disagreed, and 84 (20.5%) were neutral.

Responses were more mixed regarding LMS gradually replacing formal education, as 137 (33.4%) agreed and 60 (14.6%) strongly agreed, while 64 (15.6%) disagreed, 12 (2.9%) strongly disagreed, and 137 (33.4%) were neutral. Most agreed that LMS facilitates the learning process, with 200 (48.8%) agreeing and 93 (22.7%) strongly agreeing, compared to 13 (3.2%) who disagreed, 8 (2.0%) who strongly disagreed, and 96 (23.4%) who were neutral. Similarly, a majority felt that LMS will become a necessity in the future, with 159 (38.8%) agreeing and 76 (18.5%) strongly agreeing, while 32 (7.8%) disagreed, 9 (2.2%) strongly disagreed, and 134 (32.7%) were neutral.

On whether LMS reduces the role of the teacher while increasing that of the student, 141 (34.4%) agreed and 57 (13.9%) strongly agreed, whereas 50 (12.2%) disagreed, 20 (4.9%) strongly disagreed, and 142 (34.6%) were neutral. For the ability of LMS to provide individual learning environments, 211 (51.5%) agreed and 75 (18.3%) strongly agreed, compared to 19 (4.6%) who disagreed, 9 (2.2%) who strongly disagreed, and 96 (23.4%) who were neutral. Similarly, respondents strongly endorsed LMS as a tool to integrate educational resources effectively, with 213 (52.0%) agreeing and 92 (22.4%) strongly agreeing, while 18 (4.4%) disagreed, 8 (2.0%) strongly disagreed, and 79 (19.3%) were neutral.

Flexibility of the educational system was also widely supported, with 207 (50.5%) agreeing and 109 (26.6%) strongly agreeing, compared to 16 (3.9%) who disagreed, 10 (2.4%) who strongly disagreed, and 68 (16.6%) who were neutral. Finally, on whether LMS offers better academic performance than formal education, 154 (37.6%) agreed and 71 (17.3%) strongly agreed, while 41 (10.0%) disagreed, 14 (3.4%) strongly disagreed, and 130 (31.7%) remained neutral.

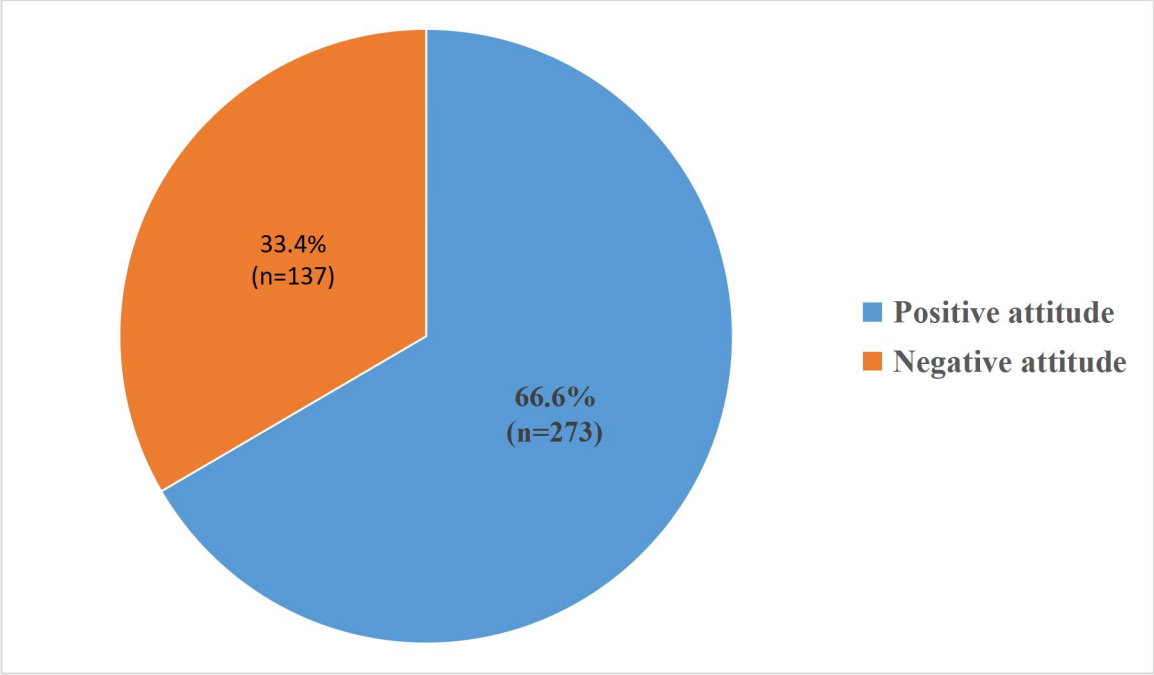


Figure 2: Attitude of respondents towards the utilization of Learning Management Systems.

The pie chart illustrates respondents' attitudes. About two-thirds, 273 respondents (66.6%), demonstrated a positive attitude, while 137 respondents (33.4%) expressed a negative attitude.

Table 6: Sociodemographic factors and attitude towards Learning Management Systems

Variables	Attitude		Test statistic (χ^2)	p-value
	Positive (n=273) Freq. (%)	Negative (n=137) Freq. (%)		
Age Group (years)				
≤ 18	18 (64.3)	10 (35.7)	$\chi^2 = 5.075$	0.168
19 – 24	192 (64.4)	106 (35.6)		
25 – 29	58 (77.3)	17 (22.7)		
30 - 34	5 (55.6)	4 (44.4)		
Sex				
Female	136 (64.8)	74 (35.2)	$\chi^2 = 0.643$	0.464
Male	137 (68.5)	63 (31.5)		
Religion				
Christianity	265 (66.9)	131 (33.1)	0.581+	0.565
Islam	8 (57.1)	6 (42.9)		
Ethnicity				
Edo-indigenes	128 (65.0)	69 (35.0)	$\chi^2 = 0.442$	0.531
Non-Edo indigenes	145 (68.1)	68 (31.9)		
Marital status				
Ever married	262 (66.2)	134 (33.8)	0.936+	0.402
Never married	11 (78.6)	3 (21.4)		
Level of study				
200 level	34 (57.6)	25 (42.4)	$\chi^2 = 8.971$	0.061
300 level	35 (59.3)	24 (40.7)		
400 level	89 (70.1)	38 (29.9)		
500 level	38 (60.3)	25 (39.7)		
600 level	77 (75.5)	25 (24.5)		
Knowledge of Learning Management Systems				
Good	179 (76.2)	56 (23.8)	$\chi^2 = 33.436$	<0.001*
Poor	49 (44.5)	61 (55.5)		

+Fisher's Exact Test, * $p < 0.05$

Bivariate analysis showed that respondents' knowledge of LMS was significantly associated with their attitude ($p < 0.001$). Students with good knowledge were more likely to have a positive attitude 179 (76.2%) compared to those with poor knowledge 49 (44.5%).

Other sociodemographic factors including age, sex, religion, ethnicity, marital status, and level of study were not significantly associated with attitude ($p > 0.05$), although students in higher levels such as 400 level 89 (70.1%), 600 level 77 (75.5), and 500 level 38 (60.3%) tended to report more positive attitudes than those in lower levels such as 200 level 34 (57.6%) and 300 level 35 (59.3%).

Table 7: Predictors of attitude towards Learning Management Systems

Variables	β (regression coefficient)	p-value	Odds ratio	95% C.I. for Odds ratio	
				Lower	Upper
Age in years	-0.025	0.756	0.975	0.832	1.143
Sex					
Male*			1		
Female	-0.101	0.717	0.904	0.524	1.561
Marital status					
Ever married*			1		
Never married	-0.293	0.749	0.746	0.124	4.493
Religion					
Christianity *			1		
Islam	-1.453	0.055	0.234	0.053	1.033
Level of study					
200 level*			1		
300 level	-0.010	0.988	0.990	0.261	3.757
400 level	-0.293	0.670	0.746	0.194	2.869
500 level	0.153	0.773	1.166	0.411	3.302
600 level	-0.683	0.163	0.505	0.193	1.318
Knowledge of Learning management systems					
Good*			1		
Poor	-1.361	<0.001**	0.256	0.146	0.449
Ease of use					
Yes*			1		
No	-0.371	0.190	0.690	0.396	1.202
Access to reliable internet service					
Yes*			1		
No	-0.859	0.004**	0.423	0.235	0.762
Cost efficiency of using the LMS					
Yes*			1		
No	-0.652	0.031**	0.521	0.288	0.942
Lecturers' preference for teaching with the LMS					
Yes*			1		
No	-1.029	0.001**	0.357	0.193	0.663

β : Coefficient of regression; OR: Odds ratio; CI: Confidence interval; * Reference category; ** $p < 0.05$; $R^2 = 23.0 - 31.9\%$.

Multivariate analysis revealed that knowledge, access to reliable internet service, cost efficiency, and lecturers' preference for teaching with the LMS were significant predictors of willingness to use the system. Respondents with poor knowledge were significantly less likely to be willing compared to those with good knowledge (OR = 0.256, 95% CI: 0.146–0.449, $p < 0.001$). Similarly, lack of reliable internet reduced the odds of willingness (OR = 0.423, 95% CI: 0.235–0.762, $p = 0.004$). Perceiving the LMS as not cost-efficient was also associated with reduced willingness (OR = 0.521, 95% CI: 0.288–0.942, $p = 0.031$). In addition, students who reported that lecturers did not prefer teaching with the LMS were less likely to be willing (OR = 0.357, 95% CI: 0.193–0.663, $p = 0.001$).

Other variables including age, sex, marital status, religion, level of study, and ease of use were not significant predictors of willingness ($p > 0.05$).

SECTION D
WILLINGNESS TO UTILIZE LEARNING MANAGEMENT SYSTEMS

Table 8: Respondents' response on willingness to utilise Learning Management Systems

Variables	n=410 Freq. (%)			
	SD	D	A	SA
I can work out how to use a computer system without a lot of help from others	14 (3.4)	67 (16.3)	244 (59.5)	85 (20.7)
I feel confident in being able to download information from the Internet	5 (1.2)	26 (6.3)	262 (63.9)	117 (28.5)
I feel confident in using Internet search engines (e.g. Google and Yahoo Bing)	6 (1.5)	17 (4.1)	256 (62.4)	131 (32.0)
I can help others to use a computer	9 (2.2)	59 (14.4)	243 (59.3)	99 (24.1)
I would love to study using LMS in the future	5 (1.2)	40 (9.8)	279 (68.0)	86 (21.0)
I will engage with LMS to improve my study performance if available	5 (1.2)	31 (7.6)	275 (67.1)	99 (24.1)
I am open to replacing traditional classroom materials with LMS-based resources.	16 (3.9)	85 (20.7)	244 (59.5)	65 (15.9)
I would like my instructors to use LMS in some of my courses	4 (1.0)	54 (13.2)	267 (65.1)	85 (20.7)
I would like my instructors to use LMS in all of my courses	21 (5.1)	129 (31.5)	206 (50.2)	54 (13.2)
The idea of learning through an LMS motivates me.	7 (1.7)	80 (19.5)	255 (62.2)	68 (16.6)
I have the necessary devices (e.g., smartphone, laptop) to use an LMS effectively.	8 (2.0)	48 (11.7)	245 (59.8)	109 (26.6)
I have access to reliable internet service to use an LMS consistently	17 (4.1)	90 (22.0)	222 (54.1)	81 (19.8)
I am not interested in using an LMS because I prefer face-to-face teaching	70 (17.1)	204 (49.8)	113 (27.6)	23 (5.6)

Note: SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree.

A majority could independently use computer systems, with 244 (59.5%) agreeing and 85 (20.7%) strongly agreeing, while only a small proportion disagreed [67 (16.3%)] or strongly disagreed [14 (3.4%)]. Similarly, confidence in downloading information from the internet was high, with 262 (63.9%) agreeing and 117 (28.5%) strongly agreeing, compared to just 26 (6.3%) who disagreed and 5 (1.2%) who strongly disagreed. This trend continued with internet search engines, where 256 (62.4%) agreed and 131 (32.0%) strongly agreed, making it one of the most highly rated skills. Helping others use a computer also attracted considerable agreement, with 243 (59.3%) agreeing and 99 (24.1%) strongly agreeing.

Attitudes toward LMS adoption were generally favourable. The majority expressed interest in studying with LMS in the future, with 279 (68.0%) agreeing and 86 (21.0%) strongly agreeing. Similarly, 275 (67.1%) agreed and 99 (24.1%) strongly agreed that they would engage with LMS to improve study performance. Selective acceptance was observed in instructor use of LMS; while 267 (65.1%) agreed and 85 (20.7%) strongly agreed it should be used in some courses, fewer supported its adoption across all courses, with only 206 (50.2%) agreeing and 54 (13.2%) strongly agreeing, while 129 (31.5%) disagreed.

Motivation toward LMS showed mixed responses. Although 255 (62.2%) agreed and 68 (16.6%) strongly agreed that learning through LMS was motivating, 80 (19.5%) disagreed. Willingness to replace classroom materials with LMS-based resources was similarly divided, with 244 (59.5%) agreeing and 65 (15.9%) strongly agreeing, while 85 (20.7%) disagreed.

Resource availability reflected partial readiness. Most respondents had devices suitable for LMS use, with 245 (59.8%) agreeing and 109 (26.6%) strongly agreeing, though 48 (11.7%) disagreed. However, internet access was less consistent, as 222 (54.1%) agreed and 81 (19.8%) strongly agreed to having reliable service, while 90 (22.0%) disagreed.

Rejection of LMS in favour of face-to-face learning was minimal. A combined 274 (66.9%) disagreed, while 113 (27.6%) agreed and only 23 (5.6%) strongly agreed.

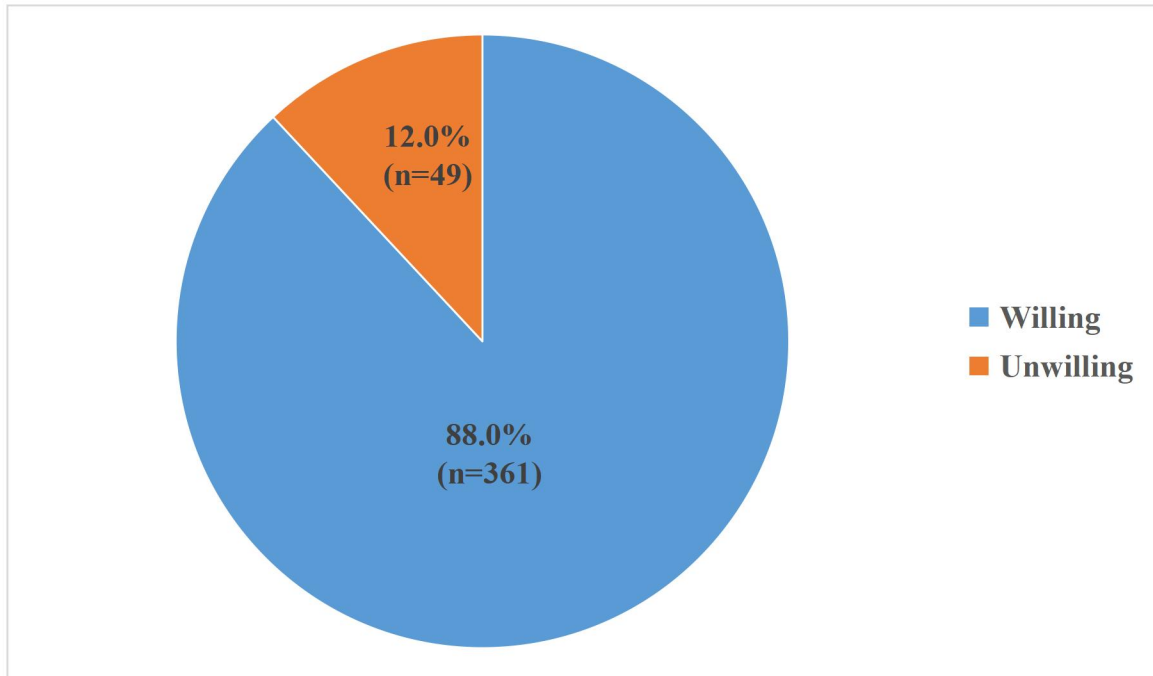


Figure 3: Willingness of respondents to utilize Learning Management Systems for academic activities.

agement Systems for academic activities.

The pie chart depicts respondents' willingness. A vast majority, 361 respondents (88.0%), indicated that they were willing, while 49 respondents (12.0%) reported being unwilling.

Table 9: Sociodemographic factors and willingness to utilize Learning Management Systems

Variables	Willingness		Test statistic (χ^2)	p-value
	Willing (n=361) Freq. (%)	Unwilling (n=49) Freq. (%)		
Age Group (years)				
≤ 18	23 (82.1)	5 (17.9)	2.302+	0.476
19 – 24	261 (87.6)	37 (12.4)		
25 – 29	69 (92.0)	6 (8.0)		
30 – 34	8 (88.9)	1 (11.1)		
Sex				
Female	183 (87.1)	27 (12.9)	$\chi^2 = 0.336$	0.648
Male	178 (89.0)	22 (11.0)		
Religion				
Christianity	348 (87.9)	48 (12.1)	0.318+	>0.999
Islam	13 (92.9)	1 (7.1)		
Ethnicity				
Edo-indigenes	179 (90.9)	18 (9.1)	$\chi^2 = 2.854$	0.096
Non-Edo indigenes	182 (85.4)	31 (14.6)		
Marital status				
Ever married	347 (87.6)	49 (12.4)	1.967+	0.391
Never married	14 (100.0)	0 (0.0)		
Level of study				
200 level	49 (83.1)	10 (16.9)	$\chi^2 = 3.785$	0.439
300 level	50 (84.7)	9 (15.3)		
400 level	113 (89.0)	14 (11.0)		
500 level	55 (87.3)	8 (12.7)		
600 level	94 (92.2)	8 (7.8)		
Knowledge of Learning Management Systems				
Good	218 (92.8)	17 (7.2)	$\chi^2 = 13.670$	<0.001*
Poor	87 (79.1)	23 (20.9)		
Attitude towards Learning Management Systems				
Positive	267 (97.8)	6 (2.2)	$\chi^2 = 73.859$	<0.001*
Negative	94 (68.6)	43 (31.4)		

+Fisher's Exact Test; * $p < 0.05$

Bivariate analysis showed that sociodemographic characteristics such as age, sex, religion, ethnicity, marital status, and level of study were not significantly associated with willingness to use the Learning Management System ($p > 0.05$). In contrast, knowledge and attitude were significant predictors. Respondents with good knowledge were more willing 218 (92.8%) compared to those with poor knowledge 87 (79.1) ($p < 0.001$). Similarly, willingness was markedly higher among those with a positive attitude 267 (97.8%) compared to respondents with a negative attitude (68.6%) ($p < 0.001$).

Table 10: Predictors of willingness to utilize Learning Management Systems

Variables	β (regression coefficient)	p-value	Odds ratio	95% C.I. for Odds ratio	
				Lower	Upper
Age in years	0.089	0.486	1.093	0.851	1.405
Gender					
Male*			1		
Female	0.191	0.638	1.210	0.546	2.682
Level of study					
200 level*			1		
300 level	-0.673	0.300	0.510	0.143	1.823
400 level	-0.407	0.545	0.666	0.179	2.481
500 level	-0.577	0.468	0.562	0.118	2.664
600 level	-0.700	0.494	0.496	0.067	3.697
Knowledge					
Good*			1		
Poor	-0.389	0.357	0.677	0.296	1.550
Attitude					
Positive*			1		
Negative	-2.993	<0.001**	0.050	0.016	0.158
Availability of ICT support as required					
Yes*			1		
No	-1.400	0.005	0.247	0.092	0.662
Cost efficiency of using the LMS					
Yes*			1		
No	0.282	0.578	1.325	0.492	3.570
Lecturers' preference for teaching with the LMS					
Yes*			1		
No	-0.208	0.706	0.812	0.275	2.396

β : Coefficient of regression; OR: Odds ratio; CI: Confidence interval; * Reference category; ** $p < 0.05$; $R^2 = 20.1 - 39.3\%$.

Multivariate analysis showed that age, gender, level of study, knowledge, cost efficiency, and lecturers' preference for teaching with the LMS were not significant predictors of the outcome. However, attitude and availability of ICT support emerged as significant factors. Respondents with a negative attitude were significantly less likely to achieve the outcome compared to those with a positive attitude (OR = 0.050, 95% CI: 0.016–0.158, $p < 0.001$). In addition, students without ICT support had lower odds of achieving the outcome than those with support (OR = 0.247, 95% CI: 0.092–0.662, $p = 0.005$).

SECTION E

FACTORS INFLUENCING ADOPTION OF LEARNING MANAGEMENT SYSTEM

Variables	n=410 Freq. (%)				
	SD	D	N	A	SA
The LMS is simple and easy to use	13 (3.2)	17 (4.1)	137 (33.4)	174 (42.4)	69 (16.8)
The LMS is accessible all the time	6 (1.5)	54 (13.2)	137 (33.4)	144 (35.1)	69 (16.8)
The LMS delivers information that is useful in the classroom	5 (1.2)	11 (2.7)	84 (20.5)	225 (54.9)	85 (20.7)
The LMS provides sufficient educational material	5 (1.2)	22 (5.4)	121 (29.5)	189 (46.1)	73 (17.8)
The educational material on the LMS is simple to understand	9 (2.2)	6 (1.5)	126 (30.7)	184 (44.9)	85 (20.7)
The material on the LMS is relevant and up-to-date	6 (1.5)	16 (3.9)	125 (30.5)	191 (46.6)	72 (17.6)
Availability of training by the school's ICT personnel	13 (3.2)	48 (11.7)	119 (29.0)	166 (40.5)	64 (15.6)
Availability of ICT support as required	12 (2.9)	44 (10.7)	109 (26.6)	177 (43.2)	68 (16.6)
Cost efficiency of using the LMS in terms of internet costs and device requirements	9 (2.2)	51 (12.4)	115 (28.0)	157 (38.3)	78 (19.0)
University provision of a free internet service to access the LMS	12 (2.9)	35 (8.5)	93 (22.7)	167 (40.7)	103 (25.1)
Requirement of specialized skills to use the LMS	20 (4.9)	64 (15.6)	138 (33.7)	135 (32.9)	53 (12.9)
Lecturers' preference for teaching with the LMS	10 (2.4)	54 (13.2)	135 (32.9)	154 (37.6)	57 (13.9)
Other students' preference for learning with the LMS	10 (2.4)	37 (9.0)	159 (38.8)	144 (35.1)	60 (14.6)

Table 11: Factors influencing respondents' adoption of Learning Management Systems

Note: SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree.

A considerable proportion of respondents perceived the LMS as simple and easy to use, with 174 (42.4%) agreeing and 69 (16.8%) strongly agreeing, whereas only 17 (4.1%) disagreed and 13

(3.2%) strongly disagreed. In terms of accessibility, 144 (35.1%) expressed agreement and 69 (16.8%) strong agreement, though 54 (13.2%) and 6 (1.5%) expressed contrary views. The platform was also regarded as useful in delivering classroom information, as 225 (54.9%) agreed and 85 (20.7%) strongly agreed, while only a few, 11 (2.7%) and 5 (1.2%) did not share this opinion.

On the adequacy of educational resources, 189 (46.1%) agreed and 73 (17.8%) strongly agreed, compared with 22 (5.4%) and 5 (1.2%) who disagreed and strongly disagreed respectively. Similarly, 184 (44.9%) and 85 (20.7%) found the materials easy to comprehend, while only 6 (1.5%) and 9 (2.2%) held opposing views. The relevance and timeliness of content received support from 191 (46.6%) who agreed and 72 (17.6%) who strongly agreed, against 16 (3.9%) and 6 (1.5%) who disagreed.

Availability of training by ICT staff was acknowledged by 166 (40.5%) who agreed and 64 (15.6%) who strongly agreed, although 48 (11.7%) and 13 (3.2%) did not share this perception. Similarly, ICT support as required was affirmed by 177 (43.2%) and 68 (16.6%), while 44 (10.7%) and 12 (2.9%) disagreed. With respect to cost efficiency, 157 (38.3%) agreed and 78 (19.0%) strongly agreed, while 51 (12.4%) and 9 (2.2%) expressed contrary opinions.

Provision of free internet access by the university was supported by 167 (40.7%) who agreed and 103 (25.1%) who strongly agreed, though 35 (8.5%) disagreed and 12 (2.9%) strongly disagreed. The requirement for specialized skills was acknowledged by 135 (32.9%) who agreed and 53 (12.9%) who strongly agreed, whereas 64 (15.6%) and 20 (4.9%) disagreed.

Regarding staff perspectives, 154 (37.6%) believed lecturers preferred teaching with the LMS and 57 (13.9%) strongly endorsed this, although 54 (13.2%) and 10 (2.4%) disagreed. Concerning peer attitudes, 144 (35.1%) agreed and 60 (14.6%) strongly agreed that other students preferred using the LMS, while 37 (9.0%) and 10 (2.4%) opposed this view.

CHAPTER FIVE

5.1 DISCUSSION

The mean age of respondents was 22 years, and nearly three quarters were within the age range of 24-year range. This reflects the usual pattern in Nigerian medical schools, where students enter directly after secondary education. A similar finding was reported in Enugu, where most medical students were under 25 years, reinforcing the early start of medical training in the country.⁵² By contrast, in Europe, students tend to be older due to pre-medical requirements and delayed entry.⁵³ The relatively young age in Nigeria may support faster adaptation to digital platforms like learning management systems (LMS), though it may also be associated with less maturity in managing self-directed online study.⁵⁴ Early introduction of structured digital literacy training could help maximize the benefits of this adaptability.

Gender distribution was almost equal, with just over half being female and slightly fewer being male. This balance marks a shift from the historical male dominance of medicine in Nigeria. In Ibadan, a similar pattern of increasing female enrolment has been observed.⁵⁵ By contrast, some European cohorts remain male-dominated in senior years, partly due to retention issues.⁵³ Gender balance is beneficial for diversity and collaboration in medical education. Ensuring that both male and female students are equally supported in their use of LMS will be essential for promoting inclusive learning.

In terms of religion, almost all respondents were Christians, while less than one in ten identified as Muslim. This pattern is consistent with the demographics of southern Nigeria, where Christianity is predominant. A related study among southern Nigerian medical students also found a Christian majority.⁵² Although religion may not directly affect adoption of LMS, cultural values and community norms can shape openness to new technologies.⁵³ Designing platforms that remain culturally inclusive ensures that no group is alienated in the digital learning process.

Ethnic representation was broad, though nearly one third of the respondents were Benin, reflecting the geographical location of the University of Benin in Edo State. Other groups such as Esan, Yoruba, and Urhobo/Isoko/Itsekiri/Ijaw were also represented, showing the university's diversity. Similar diversity has been observed in Ibadan, another federal institution.⁵⁵ Such

heterogeneity enriches peer learning but also raises the need for equity in LMS design and access, so that minority groups do not feel marginalized.

Marital status revealed that almost all students were single, with only a small fraction being married. This is consistent with their young age and mirrors findings from Ghana, where medical students were overwhelmingly unmarried.⁵⁶ Being largely single may make it easier to dedicate time to online learning without competing family responsibilities. However, as students advance in age and life circumstances, responsibilities outside school may affect LMS engagement, underscoring the need for flexible systems that adapt to changing lifestyles.

By academic level, nearly one third of respondents were in 400 level, followed by about one quarter in 600 level. This reflects the typical student distribution across the program. A study in Enugu also found strong LMS interest in clinical levels, particularly where integration with hospital-based training was required.⁵² These groups represent an important target for reinforcing LMS use, as they straddle theoretical and practical aspects of training.

Financially, more than two thirds of students depended on parental support, while fewer than one fifth supported themselves and fewer than one in ten received scholarships. This pattern reflects the limited educational loan systems in Nigeria, unlike in higher-income countries where a mix of loans, scholarships, and work-study programs is more common.⁵³ Heavy reliance on parents may translate into unequal access to laptops, smartphones, or reliable internet, which are prerequisites for effective LMS use. Targeted institutional measures such as subsidized data bundles or loan schemes for digital devices would help reduce this inequality and improve overall adoption.

In this study, awareness of learning management systems was high, with more than four fifths of the respondent's indicating familiarity. Online sources were the most frequently mentioned channels of awareness, followed by social media and colleagues, while only a small fraction reported receiving information through structured trainings or formal lectures. This pattern suggests that much of the exposure to LMS was self-directed, rather than institutionally driven. Comparable findings were observed in Zambia, where students' knowledge of e-learning expanded rapidly after institutional training during the COVID-19 pandemic²⁵, while in Ghana, a majority of students remained limited to basic computer literacy without practical familiarity

with LMS²⁶. The relatively strong awareness in this study contrasts with findings from Nsukka, where more than two thirds of students were unfamiliar with key platforms such as Moodle and Canvas.²⁸

Beyond awareness, most students demonstrated an accurate understanding of what an LMS is, with nearly all correctly defining it as a software platform for delivering and managing courses. Only a small minority confused it with social media platforms or unrelated systems like hospital management tools. In terms of features and functionalities, more than three quarters of the respondents identified core elements such as progress tracking, online quizzes, and communication with instructors, while a smaller group misattributed functions like financial accounting or real-time patient monitoring. This reflects a depth of understanding that extends beyond superficial awareness, suggesting that students are not only exposed to LMS but are also developing insight into its educational applications. Similar observations were reported in Ibadan, where undergraduates showed a high level of recognition of LMS benefits, particularly in promoting active learning and vocabulary development²⁷.

The recognition of LMS benefits was also noteworthy, with nearly all respondents identifying reinforcement of knowledge and assessment as its key advantage, while only a few perceived it as a complete substitute for face-to-face training or as primarily for entertainment. This distinction reflects an appreciation of the complementary role of LMS in medical education. The most commonly mentioned platforms were Google Classroom and YouTube, far outpacing Blackboard and Moodle. This finding aligns with the Philippine study, where students gravitated toward simpler, more familiar platforms such as online discussions and presentations rather than complex LMS with advanced functionalities²⁴. The preference for widely accessible platforms may be linked to ease of use, availability across devices, and integration with daily academic routines.

When overall knowledge was considered, nearly three fifths of the students demonstrated good knowledge, while about one third had poor knowledge. These proportions suggest that although awareness and basic understanding were widespread, there was still a considerable gap in translating this into practical and comprehensive knowledge. Similar gaps were highlighted in Ghana, where although most students were computer literate, only a minority had hands-on experience with LMS²⁶. In contrast, in Zambia, structured institutional training significantly

elevated knowledge, showing that exposure alone may not be sufficient²⁵. The relatively high levels of good knowledge in this study may therefore reflect both repeated exposure through medical training and increasing reliance on digital platforms for academic continuity, particularly following the disruptions of the COVID-19 pandemic²⁷.

Further analysis showed that knowledge was not significantly influenced by sex, religion, or marital status, but varied by age and level of study. Students in their mid to late twenties, as well as those in the higher clinical levels, were significantly more likely to have good knowledge than those in early preclinical stages. This progression highlights the cumulative benefits of repeated exposure and the structured integration of LMS features into higher-level coursework. The same trend was observed in Zambia, where institutional training systematically built awareness and competence²⁵, while the absence of such scaffolding in Nsukka left students with gaps in knowledge²⁸. The probable reason for this pattern is the structured nature of medical training, which gradually incorporates digital platforms for assessments, resource sharing, and communication, thereby reinforcing knowledge as students advance.

The significance of these findings lies in their implications for medical education. Strong knowledge of LMS is closely tied to improved engagement, adaptability in blended learning contexts, and resilience during academic disruptions²⁵. It also supports competency-based approaches that require continuous assessment and feedback²⁸. A practical step forward would be to introduce structured LMS training early in medical school, rather than allowing knowledge to accumulate passively with seniority. This would ensure that all students, regardless of level or background, develop the competence to effectively use LMS, ultimately strengthening both learning outcomes and preparedness for technology-driven healthcare education.

Nearly three quarters of the students held a positive attitude toward learning management systems, a stance that likely stems from growing familiarity with digital tools, the perceived convenience of online resources, and the visibility of LMS benefits during recent disruptions to face-to-face teaching. In Vietnam and South Korea, students likewise reported broadly favorable attitudes linked to LMS usefulness and ease of use, supporting the idea that perceived utility drives acceptance^{29,31}; by contrast, large surveys in Pakistan found more negative sentiment where institutional systems and resource quality were poor, illustrating how implementation quality can temper otherwise positive dispositions³⁰. This favorable orientation matters because

positive attitudes are strongly associated with willingness to adopt and sustain e-learning practices, which in turn supports continuity of medical education during crises^{29,31,33}. Universities should therefore consolidate this goodwill by formalizing LMS orientation and strengthening system reliability.

Most students believed that LMS would improve academic performance, a view that is probably rooted in the immediate access to materials, ease of revision, and the availability of formative assessments that LMS platforms often facilitate. Studies from Vietnam and Nigeria similarly linked LMS use to perceived gains in learning and greater control over one's studies, whereas the Pakistan study suggested that when platforms are poorly configured or resourced students are less convinced of academic benefit^{29,33,30}. Because the perception that LMS enhances learning predicts sustained use and engagement, aligning LMS features with assessment and feedback needs could amplify learning gains and student retention^{29,31}. A sensible next step is to integrate LMS-based formative assessments and feedback loops into core courses.

More than two thirds of respondents said they would welcome additional training and would seek help when challenges arise, which likely reflects recognition that informal exposure (social media or ad hoc use) is insufficient for confident, effective LMS use. This matches findings from South Korea showing that self-efficacy and training strongly influence perceived ease of use and attitudes, while studies from Pakistan and Egypt highlight that lack of institutional training or only neutral satisfaction undermines confidence and uptake^{31,30,32}. Given the clear link between competence and positive disposition, structured onboarding and regular hands-on workshops for students (and refresher sessions) should be prioritized to build lasting competence and reduce reliance on informal help-seeking.

Many students agreed that LMS promotes interaction, delivers information quickly, and creates an interesting and flexible learning environment responses likely driven by the familiarity and ubiquity of user-friendly platforms such as Google Classroom and video hosts that require little technical overhead. The Vietnam and South Korea studies reported similar appreciation for access and interactivity, while the Nigerian and Pakistani reports flagged communication and teacher-support gaps where platforms or instructor engagement were weak^{29,31,33,30} because interactive, accessible platforms enhance collaborative learning and can widen access to

educational resources, institutions should encourage lecturers to adopt interactive LMS features and provide simple guides that highlight discussion, quiz and feedback tools.

Views were more mixed on whether LMS could entirely replace formal education or reduce the teacher's role, a hesitancy that probably reflects students' appreciation that clinical and hands-on skills demand in-person practice which LMS alone cannot deliver. This cautious stance is echoed in Egypt and Pakistan where many students reported neutral satisfaction or preferred face-to-face elements despite recognizing LMS benefits^{32,30}. The balance here is important: over-reliance on online modalities risks hollowing out essential clinical exposure, so a blended learning approach that preserves practical training while leveraging LMS for theory and assessment is recommended.

Finally, the multivariate findings that knowledge, reliable internet, cost efficiency, and lecturers' preference predicted willingness make intuitive sense: familiarity breeds confidence, and poor connectivity, cost concerns, or lack of teacher endorsement undermine uptake. This aligns with the Technology Acceptance Model evidence from South Korea showing self-efficacy and perceived usefulness as key drivers of intention to use³¹, and with Pakistan and Egypt where institutional readiness and teacher preparedness strongly influenced attitudes and satisfaction^{30,32}. Because these structural and human factors determine whether attitudes translate into sustained use, practical interventions should focus on improving internet access (including subsidized data), demonstrating cost benefits, and training faculty so they model LMS use.

Nearly nine in ten students expressed willingness to utilize Learning Management Systems, a stance that likely stems from confidence in digital skills, the perceived flexibility of online resources, and recognition of LMS benefits for independent learning and academic performance. Comparable findings have been reported in the Philippines and Nigerian studies, where students demonstrated strong behavioral intention and perceived usefulness of LMS ^{35,33}. In contrast, adoption among Indonesian and Nigerian undergraduates was sometimes tempered by technical or institutional limitations, reflecting how access and system quality shape willingness. ^{36,38} This broad willingness is critical because positive disposition toward LMS predicts sustained engagement and facilitates continuity of learning in contexts where face-to-face instruction is

limited^{35,36}. Universities should therefore strengthen orientation programs and ensure system reliability to consolidate this favorable readiness.

Students' willingness to engage with LMS for academic tasks was reinforced by their general confidence in handling digital tools. Around two-thirds to three-quarters reported being able to use computers independently, navigate online resources, and assist peers, which likely underpins their readiness to adopt LMS. Similar patterns of digital self-efficacy were observed among early adopters in Vietnam and South Korea ^{29,31}, and in Indonesian undergraduates, where attitude and intention influenced actual usage ^{36,37}. By contrast, limited experience or high anxiety in some clusters from Nigeria and Indonesia reduced adoption rates ^{38,36}. Enhancing students' confidence through structured training and guided practice may therefore strengthen willingness to engage consistently.

Resource availability also influenced readiness. While roughly three-quarters reported having adequate devices, slightly fewer had reliable internet access, echoing findings from Pakistan and Egypt where connectivity constraints and variable institutional support affected engagement ^{30,32}. Ensuring students have both devices and stable connectivity is thus a necessary foundation for LMS uptake, as gaps in ICT infrastructure can limit the translation of willingness into actual usage.

Students were more selective regarding the integration of LMS into their courses. More than two-thirds supported partial adoption, while fewer endorsed LMS as a replacement for all courses. This selective approach mirrors cautious attitudes observed in Egypt and Pakistan, where students valued face-to-face interaction for practical or clinical learning despite recognizing LMS benefits ^{32,30}. The implication is that LMS is most effective as a complement to traditional instruction, particularly for theoretical content, formative assessments, and self-paced study.

Finally, multivariate analysis confirmed that attitude and ICT support were the strongest predictors of willingness, with other sociodemographic factors playing no significant role. Students with positive attitudes and access to support were markedly more likely to engage, reflecting the broader Technology Acceptance Model literature, which emphasizes self-efficacy, perceived usefulness, and institutional readiness as drivers of adoption^{31,35}. Practical measures to

translate willingness into sustained use should therefore include structured onboarding, visible faculty engagement, and reliable ICT support.

A substantial proportion of students viewed the LMS as easy to use, accessible, and rich in relevant educational content, likely reflecting growing digital literacy, prior exposure to online learning platforms, and the perceived convenience of having classroom resources available on demand. More than four fifths recognized the usefulness of the LMS for delivering classroom information and providing sufficient educational material. This aligns with findings from Saudi Arabia and Ghana, where perceived ease of use and usefulness were strong determinants of adoption^{39,40}. In both studies, familiarity with digital tools, prior positive experiences, and well-supported platforms enhanced willingness to adopt LMS, emphasizing that perceived utility and usability are central to successful implementation.

Nearly three quarters of respondents acknowledged the availability of ICT support and training, while a slightly smaller proportion affirmed that cost efficiency and institutional provisions, such as free internet access, facilitated adoption. Similar patterns were observed in Uganda and Nigeria, where access to reliable internet, technical support, and training were critical enablers of e-learning uptake⁴¹. Conversely, lack of institutional support, high costs, and limited training hindered engagement, demonstrating that infrastructural and organizational readiness strongly shape LMS adoption.

Regarding social and institutional influences, more than two thirds of students perceived that lecturers preferred using the LMS and that their peers also valued it. This is consistent with literature highlighting the role of faculty endorsement, peer engagement, and organizational culture in shaping adoption rates^{39,42}. In contexts where instructors actively integrate LMS into teaching and students observe peers using the system, willingness and sustained use are markedly higher.

Challenges identified by respondents, such as the need for specialized skills or occasional difficulties with accessibility, echo barriers reported in Ghana, Uganda, and Nigeria, where complex organizational structures, internet costs, and technophobia limited LMS adoption^{40,41,42}. These findings underscore that while students may be willing and capable, external constraints such as connectivity, technical support, and user training remain critical determinants of uptake.

Overall, the multivariate evidence from the current study, showing that attitude and availability of ICT support significantly predict LMS adoption, aligns with broader literature emphasizing the interplay of personal competence, technological ease of use, and institutional support in shaping e-learning engagement³⁹⁻⁴². Efforts to improve adoption should therefore prioritize reliable ICT infrastructure, targeted training, cost-efficient access, and faculty modeling of LMS use, ensuring that both technological and human factors are addressed.

5.2 CONCLUSION

Nearly all respondents were aware of Learning Management Systems, with more than three fifths demonstrating good knowledge of their purpose, features, and educational applications. Level of study emerged as a significant predictor of good knowledge as those in higher levels were more likely to have good knowledge of LMS

Correspondingly, nearly three quarters of students held positive attitudes toward LMS, appreciating its convenience, ability to support independent learning, and role in complementing face-to-face instruction.

More than four fifths expressed willingness to use LMS, reinforced by digital competence and confidence in navigating online tools. However, adoption was moderated by selective integration into courses, with students favoring LMS as a complement rather than a replacement for in-person teaching.

Key factors influencing adoption included perceived ease of use, usefulness, availability of ICT support and training, access to reliable devices, and cost efficiency. Ensuring structured orientation, institutional support, and robust infrastructure will be critical to sustaining engagement and maximizing the educational benefits of LMS.

5.3 RECOMMENDATIONS

To the Federal Ministry of Education

1. Increase funding to universities to ensure provision of reliable internet, adequate digital devices, and robust ICT infrastructure for students and faculty.
2. Develop and implement nationwide programs to enhance digital literacy among medical students, emphasizing effective use of Learning Management Systems.
3. Mandate periodic assessments of digital readiness and LMS utilization across institutions to identify gaps and inform policy interventions.
4. Promote policies that ensure equitable access to digital resources, including subsidized data plans or institutional internet provision, to reduce financial barriers.
5. Encourage integration of LMS into curricula with guidelines that balance online and face-to-face learning for optimal educational outcomes.

2. To University / Institutional Authorities

1. Establish internal support systems, including on-site ICT help desks, peer-support networks, and structured LMS training sessions for students and staff.
2. Monitor and periodically review LMS adoption and usage patterns to identify barriers and ensure students engage effectively with digital platforms.
3. Provide continuous professional development for faculty on LMS functionalities, instructional design, and digital teaching strategies.
4. Recognize and reward faculty and students who effectively utilize LMS to enhance learning, fostering motivation and sustained engagement.
5. Implement flexible digital learning initiatives, including guided tutorials, refresher workshops, and interactive online sessions, to support students at all levels.

3. To Individual Students / Learners

1. Engage actively with LMS by exploring available features, completing modules, and participating in online discussions.
2. Seek help promptly when encountering technical or content-related challenges, leveraging institutional support and peer networks.
3. Prioritize digital competence by participating in training, workshops, and self-directed learning to maximize the benefits of LMS.
4. Advocate for improvements in LMS design, accessibility, and functionality by providing constructive feedback to faculty and institutional authorities.
5. Build supportive peer networks to share knowledge, strategies, and encouragement for effective online learning and digital engagement.

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APPENDIX

INFORMED CONSENT FORM

TITLE OF STUDY:

KNOWLEDGE, ATTITUDE AND WILLINGNESS TO USE LEARNING MANAGEMENT SYSTEMS AMONG MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN

INVESTIGATORS: ABUMERE EKIOMO EWOMAZINO, ADEKUNLE THEOPHILUS AYODEJI

SUPERVISORS: Dr. O. E. OBARISIAGBON, DR. N. MOKOGWU

FINANCIAL SPONSORSHIP: This research project is self-sponsored.

PURPOSE OF THE STUDY: The purpose of this study is to assess the knowledge, attitude/perception and willingness to use learning management systems among medical students in the University of Benin.

PROCEDURES INVOLVED IN THE STUDY: You are kindly requested to complete a questionnaire designed to assess the knowledge, attitude/perception and willingness to use learning management systems among medical students in the University of Benin. This questionnaire is for research purposes only.

COMPENSATION: There will be no financial compensation for participating in this study.

VOLUNTARY PARTICIPATION: Your participation in this research is completely voluntary. There will be no discrimination against you if you choose not to participate. You are free to change your mind and withdraw from the study at any time, even if you initially agreed to participate in it.

SIDE EFFECTS: There are no anticipated adverse effects associated with participating in this study.

BENEFIT: The benefit of this study includes the provision of useful local data for understanding the attitudes and willingness to use learning management systems among medical students. This data could be useful in guiding the formulation of educational policy and ultimately improve learning outcomes.

CONFIDENTIALITY: All information and data obtained during this study will be kept confidential. Participant names will not be recorded on the questionnaire, and all information collected will be stored securely.

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Ethics and Research Committee

University of Benin Teaching Hospital

Benin City

Tel: +2347063331337

CERTIFICATE OF CONSENT

I have read the above information (or it has been read to me). I had the opportunity to ask questions and the questions were answered to my satisfaction.

I voluntarily consent to take part in this study.

Signed: _____

DEPARTMENT OF PUBLIC HEALTH AND COMMUNITY MEDICINE, UNIVERSITY OF BENIN, BENIN CITY

KNOWLEDGE, ATTITUDE, AND WILLINGNESS TO USE LEARNING MANAGEMENT SYSTEMS AMONG MEDICAL STUDENTS IN THE UNIVERSITY OF BENIN

S/N _____

Good day. We are final year medical students conducting a study on the knowledge, attitudes, perception and willingness of medical students at the University of Benin to adopt a Learning Management System (LMS) in the pursuit of their academics.

By filling this questionnaire, you consent to have your data included in this study. All information given will be treated as confidential. Please tick and fill in as appropriate. Thank you.

Section A: Socio-demographic data

Age (as at last birthday): _____

Gender: Male () Female ()

Marital status: Single () Married () Co-habiting () Separated () Divorced () Widowed ()

Tribe: Benin () Yoruba () Igbo () Hausa () Esan () Others (specify) _____

Religion: Christian () Islam () African Traditional religion () Others (specify) _____

Level: 200 level () 300 level () 400 level () 500 level () 600 level ()

Funding (Tick all that apply): Self () Parents () Scholarship () Others (specify) _____

Section B: Knowledge of (Features and functionalities of) learning management system

1. Have you ever heard of the term 'Learning Management System'? Yes() No()
2. What is a Learning Management System (LMS)? () A software platform used to deliver, track, and manage educational courses and training programs () A social media platform for students () A tool for hospital patient management () None of the above

3. How did you learn about these LMS? Select all that apply: Lecturers () Colleagues () special trainings () Social media () online sources () Television () Radio ()
4. Which of the following features are commonly found in an LMS? **Select all that apply:** () Course content delivery () Student progress tracking () Online quizzes and assessments () Financial accounting
5. Which of the following is a typical functionality of an LMS? **Select all that apply:** () Communication between instructors and students () Automated grading of assessments () Real-time patient monitoring () Generating reports on learner performance
6. What types of content can be uploaded to an LMS? **Select all that apply:** () Videos and presentations () Text documents and PDFs () Interactive modules and quizzes
7. LMS platforms can adapt learning content based on the learner's skill level or position. () True () False
8. Which of the following best describes the benefit of LMS? **Select all that apply:** () To reinforce knowledge and test learning () To entertain students without educational purpose () To replace all face-to-face clinical training () None of the above
9. What is the primary purpose of tracking student progress in an LMS? **Select all that apply:** () To monitor and support student learning and performance () To share student data publicly () To reduce instructor workload by eliminating feedback () None of the above
10. Can LMS platforms be accessed from multiple devices (e.g., computers, tablets, smartphones)? () Yes () No
11. Which of the following LMS platforms are commonly used in nursing education? **Select all that apply:** Google classroom () Moodle () Blackboard () Youtube () Others (please specify).....

Section C: Attitudes towards (use of) learning management system

For each of the following statements, select an option between 1-5 that best reflects your attitude towards the use of Learning Management Systems (1= **strongly disagree**, 2 = **disagree**, 3 = **neither agree nor disagree**, 4 = **agree**, 5 = **strongly agree**)

	Statements	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1.	Use of LMS can improve student academic performance					
2.	I would like to get more training on					

	using LMS					
3.	I will ask for help from others when I face a challenge while using the LMS					
4.	Use of LMS will Increase the interaction between lecturers and students					
5.	LMS helps to deliver the information to students quickly					
6.	Use of LMS will provide interesting learning environment					
7.	Learning by using the LMS will gradually replace the formal method of education					
8.	Use of LMS will facilitate my learning process					
9.	In the future the use of LMS will become a necessity for all students					
10.	The use of LMS will reduce the role of the teacher and increase the role of the student in the learning process					
11.	LMS makes it easy for teachers to provide students with individual learning environment					
12.	LMS contributes in integrating the educational resources effectively					
13.	Use of LMS will increase the flexibility of the educational institution system in terms of time and location					
14.	Use of LMS offers better academic performance than the normal formal education					

Section D: Willingness to utilize learning management system for learning activities

For each of the following statements, select an option between 1-4 that best reflects your willingness to utilize Learning Management Systems (**disagree strongly = 1, disagree = 2, agree = 3, and agree strongly = 4**)

I see myself as someone who:-	Disagree	Disagree	Agree	Agree
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		Strongly			Strongly
1.	Can work out how to use a computer system without a lot of help from others				
2.	Feels confident in being able to download information from the Internet				
3.	Feels confident in using Internet search engines (e.g. Google and Yahoo Bing)				
4.	Can help others to use a computer				
5.	Would be pleased to study using LMS in the future				
6.	Intends to engage with LMS to improve my study performance as often as needed				
7.	Intends to utilize LMS routinely				
8.	Intends to use the eLearning mode of study again				
9.	Intends to use eLearning for future study or training				
10.	Would seriously consider studying in eLearning mode again				

Section E: Factors influencing adoption of learning management system for academics

For each of the following factors, select an option between 1-5 (1= Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

	Factors that would influence my choice to use a LMS for academics if use were optional:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	The LMS is simple and easy to use					
2.	The LMS is very user-friendly					
3.	The LMS is accessible all the time					
4.	The LMS delivers information that is useful in the classroom					
5.	The LMS provides sufficient information for instruction					
6.	The information I receive from the					

	LMS is simple to understand					
7.	The LMS provides up-to-date information					
8.	Availability of training by the school's ICT personnel on use of the LMS					
9.	Availability of ICT support as required					
10.	Cost efficiency of using the LMS in terms of internet costs and device requirements					
11.	University provision of a free internet service to access the LMS					
12.	Requirement of specialized skills to use an LMS					
13.	My lecturers' preference for teaching with the LMS					
14.	Other students' preference for learning with the LMS					

**ETHICAL APPROVAL FROM HEALTH RESEARCH ETHICS COMMITTEE (HREC),
UNIVERSITY OF BENIN TEACHING HOSPITAL, BENIN CITY, EDO STATE.**

**HEALTH RESEARCH
ETHICS COMMITTEE (HREC)**

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PROTOCOL NUMBER: ADM/E 22/A/VOL. VII/148654912551

PROPOSAL TITLE: "KNOWLEDGE, ATTITUDE AND WILLINGNESS TO USE LEARNING MANAGEMENT SYSTEM AMONG MEDICAL STUDENTS IN UNIVERSITY OF BENIN"

PRINCIPAL INVESTIGATOR(S): ABUMERE EKIOMO EWOMAZINO AND ADEKUNLE THEOPHILUS AYODEJI

DEPARTMENT/INSTITUTION: DEPARTMENT OF PUBLIC HEALTH AND COMMUNITY MEDICINE, SCHOOL OF MEDICINE, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, NIGERIA

DATE CONSIDERED: JUNE 10TH, 2025

DECISION OF THE COMMITTEE: APPROVED

THIS APPROVAL DATES 10/6/2025 TO 9/6/2026. IF THERE IS DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE HREC SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY

REMARK:

CHAIRMAN: PROF. (MRS) A.N. OFILI

SIGNATURE & DATE: *Antoinette N. Ofili* 10/6/2025

SUPERVISOR (S): PROF. (MRS) E. C. ISAH, DR NDUBUISI MOKOGWU

DECLARATION BY INVESTIGATOR(S):

PROTOCOL NUMBER (please quote in all enquiries)

Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study. In multiyear research, endeavor to submit your annual re-port to the HREC early in order to obtain renewal of your approval and avoid disruption of your research. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit your research site without previous notification

Signature & Date: *Ekiomo* 10/06/25




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PLAGIARISM TEST FORM

INTELLECTUAL PROPERTY & TECHNOLOGY TRANSFER OFFICE (IPTTO)
Vice Chancellor's Office
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CLEARANCE FORM

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