

Adoption of Learning Management Systems in Nigerian Tertiary Institutions: Issues and Challenges

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ABSTRACT

Traditionally, tertiary institutions delivered their flexible teaching programs to students with the aid of print based course material and with limited information technology support such as email and electronic discussion lists. However, with recent advances in the digital technologies, institutions are increasingly seeking the potential use of information and communication technologies (ICT) to facilitate their flexible teaching needs. Learning management systems are ICT intervention that aids teaching and learning. Learning management systems help the instructor deliver material to the students, administer tests and other assignments, track student progress, and manage record-keeping. The study aims at identifying the level of adoption of learning management systems by Nigerian tertiary institutions, as well as identify the issues and challenges that hinder the adoption of the technology. 100 respondents were sampled in the study from the faculty of education of the Imo State University. Data was collected with questionnaires and data collected was analyzed using descriptive statistics. The result of the research showed that there was low to null adoption of learning management systems in Nigerian tertiary institutions. Issues identified in the study facing the adoption of learning management system which includes security issues and difficulty in integrating courseware into the Learning management among others. The study also identified challenges hindering adoption of learning management systems in Nigerian tertiary institution which includes poor power supply, high internet access tariffs, and unwillingness to adopt to change amongst other challenges. The study recommends improvement in availability of support infrastructure, subsidization of tariffs for internet access and improvement of power supply in Nigeria amongst other recommendations.

General Terms

Learning management systems, Nigerian Tertiary institutions

Keywords

Learning, management, systems, tertiary, institution

1. INTRODUCTION

Economic, social and technological forces are placing enormous demands on tertiary educational institutions and call for increasingly flexible and diverse systems to cater to an ever growing range of learning needs. Flexible approaches aim to provide learners with greater choice over when, where and how they learn by adopting various flexible delivery strategies such as distance education, online learning, and mixed mode delivery, self paced or self directed learning strategies. Traditionally, tertiary institutions delivered their flexible teaching programs to students with the aid of print

based course material and with limited information technology support such as email and electronic discussion lists. However, with recent advances in the digital technologies, institutions are increasingly seeking the potential use of information and communication technologies (ICT) to facilitate their flexible teaching needs. In particular, with the emergence of internet and web technologies, tertiary institutions around the world have been seeking to exploit the use of e-learning technologies to support their distance teaching. Among the diverse e-learning technologies, the learning management system (LMS) is a popular e-delivery medium within institutions. [1] Assert that with response to growing needs of the student population, online education is increasingly common in tertiary education. Institutions are adopting e-learning technologies for two purposes:

- 1) To enhance the flexibility of traditional classroom based face to face courses with web access to syllabi, materials and discussions
- 2) As a sole channel of distance education modality that eliminates or reduces “on-ground” classroom time [2].

Educators rarely have all the technological skills needed to develop custom web sites for online classes. Therefore, many educational institutions have adopted online course-building applications, or a LMS to facilitate online learning [3]. The popular LMS systems in use are Blackboard, WebCT and Moodle applications. Two major functionalities associated with LMS are course administration and management and course pedagogy, teaching and learning [3].

2. CONCEPTUAL OVERVIEW OF LEARNING MANAGEMENT SYSTEMS

A learning management system (LMS) is a software application or Web-based technology used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums, [4]. Learning Management Systems (LMSs) are also described as internet based software allowing instructors to manage materials distribution, assignments, communications and other aspects of instructions for their courses” [5]. Learning management systems help the instructor deliver material to the students, administer tests and other assignments, track student progress, and manage record-keeping. Learning Management Systems are focused on online learning delivery but support a range of uses, acting as a platform for

fully online courses, as well as several hybrid forms, such as blended learning and flipped classrooms.

2.1 Features of Learning Management System

Integration with Human Resource Department - LMSs that aren't synchronized with Human Resources systems misses the boat. When systems are integrated, a human resources employee can enter new employees information into the HR system, and the employee is automatically signed up for training tailored to his or her role within the company.

Administration tools- The LMS must enable administrators to manage user registrations and profiles, define roles, set curricula, chart certification paths, assign tutors, author courses, manage content, and administer internal budgets, user payments, and charge-backs. Administrators need complete access to the training database, enabling them to create standard and customized reports on individual and group performance. Reports should be scalable to include the entire workforce. The system should also be able to build schedules for learners, instructors, and classrooms. Most important, all features should be manageable using automated, user-friendly interfaces. In addition, the system should be able to identify employees who need a particular course and tell them how it fits into their overall career path, when it's available, how it's available (classroom, online, CD-ROM), if there are prerequisites, and when and how they can fulfill those prerequisites. Once learners complete a course, the LMS can administer tests based on proficiency requirements, report test results, and recommend next steps. In that capacity, LMSs are instrumental in assuring that organizations meet rigid certification requirements in such vertical markets as healthcare, finance, and government.

Content access-This involves the medium (e.g., classroom, CD-ROM, online, etc.) in which the content is delivered, the method (e.g., instructor-led, self-paced, blended) in which the content is delivered, the languages in which the content is delivered and to whom the content is being delivered (e.g., students, employees, customers, partners, etc.).

Content development- Content development encompasses authoring, maintaining, and storing the learning content. This is where the issues of authoring-tool compatibility, version control, and re-usable learning objects are considered.

Content integration-It's important for an LMS to provide native support to a wide range of third-party courseware. When shopping for an LMS, keep in mind that some LMSs are compatible only with the supplier's own courseware, and others do little more than pay lip-service to learning content standards. An LMS supplier should be able to certify that third-party content will work within their system, and accessing courses should be as easy as using a drop-down menu.

Skills management-Skill assessment and management capabilities revolve around learners assessing their competency gaps. Skills assessments can be culled from multiple sources, including peer reviews and 360-feedback tools. Managers must be able to determine whether results are weighted, averaged, or compared to determine a skill gap. Businesses also might use this feature to search their employee base for specialized skills.

Assessment capabilities-It's a good idea to have an assessment feature that enables authoring within the product and includes assessments as part of each course. Evaluation, testing, and assessment engines help developers build a program that becomes more valuable over time.

Adherence to standards-An LMS should attempt to support standards, such as SCORM. Support for standards means that the LMS can import and manage content and courseware that complies with standards regardless of the authoring system that produced it. Beware: Unless the supplier certifies that the content will work on your LMS, plan on additional expenses.

- **Configurability-**If an organization needs to completely re-engineer its internal processes to install an LMS or employ expensive programming resources to make changes to the LMS, then it's probably not a good fit. Also, it's helpful if IT and designers can access the LMS behind the scenes; they need to set processes and standards based on company policy. To make some systems IT user-friendly, some LMS providers have user groups or customer advisory councils that provide insight into installing or upgrading systems.

Security-Security is a priority in any data system containing employee information and proprietary content. Security measures typically include passwords and encryption.

2.2 Benefits of Learning Management Systems.

A Learning Management system can be very useful for organizing and presenting digital content. If you are deciding whether or not your district should use an LMS, consider some other benefits:

Communication: LMS tools foster communication with students and parents outside of the classroom. This may include: Discussion forums, Real-time messaging, Videoconferencing, E-mail, Announcement posts amongst others.

Accessibility: Web-based learning management systems are accessible to all students regardless of their location. This allows colleges and universities to reach a diverse student population. At high school and middle school levels, an LMS allows students to access their assignments and course content from home. Furthermore, the technology promotes globalization with open, flexible learning environments.

Time: Learning management systems allow instructors to post additional content and resources to enhance the curriculum, providing learning opportunities without the constraint of classroom schedules or limited class time.

Flexibility: Students learn at different rates, and learning management systems provide the flexibility needed to meet their unique learning needs. Students can go back and review content as needed, or spend additional time researching a topic of interest. This self-directed learning gives students more control over their education.

- **Variety:** Learning management systems support multiple learning modes. Students can learn the content through audio, video, photos, articles, and interactive simulations.

- **Collaboration:**LMS tools foster student collaboration on group projects. Built-in features support group blogs and wikis as collaborative spaces for learning. In addition, file sharing tools allow groups to post and share information.

- **Community:** An LMS platform supports a community of learners working together to build knowledge. Discussion

forums, link and file-sharing and real-time messaging encourage student communities to come together and share knowledge.

2.3 Examples of Learning Management Systems

Many online platforms have tools and features designed specifically for educators, they include:

- Blackboard -Blackboard is a comprehensive online education platform that includes a mobile application and real-time collaboration features. Assessment tools include an online test generator, interactive rubrics, and built-in reports.
- Desire2Learn-This is an integrated suite of products for the creation, delivery, and management of online courses. Includes a mobile application, student assessment data, and tools for capturing and broadcasting presentations live and on-demand.
- Edmodo Edmodo is a free online platform that emphasizes collaboration and social media to customize learning. Designed specifically for classroom use, this platform includes tools for homework, assessment, discussion, and mobile learning. Additionally, Edmodo communities connect teachers to a global network of educators.
- NEO-NEO offers both free and premium plans with unlimited storage. The K12 platform features instructional content delivery, calendar, discussion, videoconferencing, blog, and wiki tools. Assessment tools include an online grade book, rubric generator, and built-in reports.
- Google Sites- Google sites is a free, customizable Web site templates with settings for accessing and sharing information. Provides seamless integration with Google Docs* and Google Calendar*.
- Moodle-Moodle is a free web application that educators can use to create effective online learning sites. Includes an educator community and support center.
- Rcampus-Rcampus is an intuitive platform for managing instructional content, grade books, assessments, and collaboration. Includes an e-Portfolio application and rubric builder with real-time student progress reporting.
- Schoology-Schoology is a free platform with tools to embed media and manage online discussions. A collaboration feature allows educators to share materials and integrate public content. Assessment tools generate tests, provide direct student feedback, and track progress. Additional tools can analyze student activity and engagement with the material.

2.4 Theoretical Framework

Technological innovation has been the pillar of success in many organisations in the knowledge age, irrespective of the organisation type. [6] Introduced a technology acceptance model (TAM) to address the lack of an acceptance-measuring tool, to help both the information technology vendor and the information systems manager to evaluate the user's behaviour towards the vendor's product. [6] Argued that in addition to the theoretical value of better measures to predict and explain systems, the TAM has great practical value for the organisation. The TAM is underpinned by two theoretical constructs: the perceived usefulness and perceived ease of use [7]. According to the TAM, the perceived usefulness of the system influences user attitudes towards adopting the system. [7] Highlighted the role of attitude in influencing the adoption of a new system. The argument was that attitude could be

used to determine behavioural intention of the user. These two constructs are related to relative advantage, complexity, and compatibility which was suggested by [8] as measures of the adoption rate for the diffusion of innovation. The user attitude towards a system has been said to be a determining factor in whether they will use the system or not [6]. In the case of LMS, in order for the students to use the online teaching tools and use them effectively, the students ought to have a positive attitude towards the tools, perceive them as useful, and be willing to try them. This could require a big perceptual adjustment, depending on the students' current perception of usefulness of the Learning management systems.

Diffusion of Innovation Theory is another theory that tends to attempt to explain why users will or will not adopt the use of a new technology. Diffusion is the process of communicating an innovation or intervention among the members of a social system over a period of time [9]. The decision to accept an innovation and the innovation adoption rate are affected by the adopter's perception of the innovation [10]. This perception is based on the most influential characteristics of innovation, such as relative advantage, compatibility, complexity, trialability, and observability of the innovation [9],[11],[12]. This study focuses on the relative advantage, compatibility, and complexity of the innovation as they have been widely studied and have been noted to have the most consistent significant relationship to innovation adoption [13],[10].

3. RELATED WORKS

Many institutions use Learning Management Systems as their platform to conduct fully online courses [14]. Examples of Learning Management Systems includes Moodle, Blackboard, WebCT, and a lot more. Moodle is a wellknown Course Management System (CMS) or LMS. Moodle, in fact, has become very popular among educators around the world because of its easiness and economy. Blackboard is a course management software application that is used in higher institutions of learning. It has quite a number of learning tools that includes online discussion board, a course calendar, information announcement, course content management, electronic mail, reviews, navigation tools, access control, grade maintenance and distribution, student progress tracking, auto marked quizzes and exams, etc. [15], [16]. According to [17], a robust LMS should contain several functions such as automation of administrative activities, self-service and self-guided services, rapid assembly and delivery of learning content, a scalable web-based platform, portability and standard support, and knowledge reuse. The common features of any education learning management system include: (i) Content management, (ii) Assessment and testing, (iii) Curriculum planning, (iv) Reports generation, (v) Communication and collaboration, (vi) Classroom and college announcements [18]. A learning management system for educational background should be able to do the following: (i) centralized and automate administration, (ii) self service and guided services, (iii) Speed in assembling and delivery of learning content, (iv) Integrated training initiatives on a web platform, (v) support for portability and standards, and (vi) content personalization and knowledge reusability feature [19].

According to [8], an idea that is believed to be incompatible with traditional ideas will not be adopted unless the idea is compatible with the existing values and past experiences of the individual who is faced with a decision to adopt the new idea. [20] Confirmed in their findings that compatibility has a

significant, positive effect on the adoption of an innovative learning system. Complexity refers to the degree to which the users or adopters of the innovation find the innovation less challenging and easy to use [11], [9], [12]. It is related to the ease-of-use concept, which forms a construct of the technology acceptance model [6]. However, complexity is inclined towards measuring the rate of adoption. Complexity is a cause for concern in many areas of study where research projects have emanated from a desire to solve complex issues.

The complexity of the innovative system could be problematic if students have to put effort into learning first how to use the LMS and then to learn the skills taught through the LMS. [21] Affirmed that if innovation requires learning, it would be adopted slowly. According to [9], an idea that is believed to be incompatible with traditional ideas will not be adopted unless the idea is compatible with the existing values and past experiences of the individual who is faced with a decision to adopt the new idea. [20] Confirmed in their findings that compatibility has a significant, positive effect on the adoption of an innovative learning system.

4. AIMS AND OBJECTIVES OF THE STUDY

The broad aim of the survey is to identify the issues and challenges hindering the adoption of learning management systems in Nigerian Tertiary Institutions. The specific objectives of the study however include:

1. To identify the level adoption of learning management system by Nigerian Tertiary Institutions.
2. To identify issues and challenges that hinders the adoption of learning management systems by Nigerian Tertiary Institutions.

4.1 Research Questions

To further propel the research in the positive light, the research will attempt to provide answers to the following research questions:

1. What is the level of adoption of learning management systems in Nigerian tertiary institutions?
2. What are the issues hindering the adoption of learning management systems by Nigerian Institutions?
3. What are the issues hindering the adoption of learning management systems by Nigerian Institutions?

4.2 Research Methods and Methodology

The study followed a descriptive research methodology in which a field survey of the study area was carried out.

4.3 Population of the Study

The population of the study includes students and faculty members in tertiary institutions in Nigeria.

4.4 Sampling Techniques and Sample Size

120 respondents were purposively sampled from the faculty of education of the Imo State University Owerri. 120 questionnaires were distributed and 100 were properly filled out and returned hence making the sample size of the study 100 (n = 100).

4.5 Method of Data Collection

Data for the study was collected through Primary and Secondary data methods. Primary data was collected using questionnaires while secondary data was collected through review of related literature.

4.6 Instrument for Data Collection

The instrument for data collection was a 20 item structured questionnaire. The questionnaire responses were rated using the four-point likert scale.

4.7 Pilot Study

A pilot study was carried out in the department of Educational technology of the Alvan Ikoku Federal College of Education Owerri.

4.8 Validation of Research Instrument

The instrument was validated by two measurement and evaluation experts in order to ensure its usability, validity and reliability.

4.9 Method of Data Analysis

Data from the survey was analyzed using descriptive statistics which include, frequency distribution tables and percentages.

5. RESULTS AND DISCUSSION

Table 1: Level of adoption of learning management systems in Nigerian tertiary institutions.

Response	Frequency	Percentage (100%)
High Adoption	5	5
Low Adoption	15	15
Very Low Adoption	25	25
No Adoption	55	55
Total	100	100

Source: Field Study 2018.

The result from table 1 above shows that a majority of respondents (55%) stated that there was no adoption of learning management systems in tertiary institutions in Nigeria, 25% of respondents stated that there was very low adoption of LMS in tertiary institutions in Nigeria, 15% of the respondents submitted that there was low adoption of LMS in Nigerian tertiary institutions and 5% of the respondents stated there was high adoption of LMS in Nigerian tertiary institutions.

Table 2: Issues of Learning Management systems

Response	Frequency	Percentage (100%)
Security issues associated with use of LMS	90	90
LMS are not updated regularly	45	45
Difficulty in customizing LMS to specific use of institution	75	75
Difficulty in integrating individual courseware into the LMS.	95	95
Difficulty of LMS fitting into existing administrative workflows	68	68
Some LMS are machine and platform dependent	40	40
Complexity of LMS	80	80

Source: Field Survey 2018

The results from table 2 above shows that there were a lot of issues that face adoption and use of learning management systems. The issues identified in the study by the respondents include; Security issues(90%), LMS are not regularly updated (45%), Difficulty in customizing LMS to specific use of institutions (75%), Difficulty in Integrating individual courseware into the LMSs (95%), Difficulty of LMS to fit into existing administrative workflows (68%), machine and platform dependency of some LMS (40%), Complexity issues of LMS (80%).

Table 3: Challenges hindering the adoption of learning management systems in Nigerian Tertiary institutions

Response	Frequency	Percentage (100)
Unavailability of support Infrastructure	90	90
Poor power supply	100	100
High internet access tariffs	95	95
High cost of implementation of LMS	89	89
Lack of IT skills	92	92
Unwillingness to adopt change	85	85
Bureaucratic bottlenecks	70	70

Source: Field Survey 2018

The result from table 3 above shows that there were quite a good number of challenges that hinder adoption of Learning management systems by Nigerian tertiary institutions. The challenges identified by the research include; Unavailability of support infrastructure (90%), Poor Power Supply (100%), High internet access tariffs (95%), High cost of implementation of LMS (89%), Lack of Information Technology skills (92%), Unwillingness to adopt a paradigm shift of pedagogy (85%), and finally Bureaucratic bottlenecks (70%).

6. SUMMARY OF FINDING

The results of the study are summarized below;

1. The level of adoption of LMS in Nigerian Tertiary institutions is very low to Null. This is evident in the figures as displayed in Table 1 above. The results in table 1 above showed that only 5% of the respondents agreed that there was high adoption of LMS in Nigerian tertiary institutions. Further research revealed that the very few institutions of higher learning in Nigeria that have deployed fully the use of LMS were mostly privately owned tertiary institutions like The American University of Nigeria, Baze University amongst others. Public owned institutions were found to have not keyed into this technology.
2. There are some issues identified with use of learning management systems as uncovered by the results of the research. Issues facing the use of LMS as identified by the study include; security issues as it is possible for LMS to be hacked into and vital information compromised. Other issues

include irregular updates to the LMS, there are issues of difficulty in customizing LMS to specific institutions, and at times integrating courseware into the LMS can pose a challenge. Fitting the current administrative workflow into the LMS could be a herculean task and it is seen that learning management systems could be machine, device and platform dependent. Some LMS work only on Windows Operating Systems and will not work on MAC Operating systems. Some will not work on mobile and handheld devices. Learning management systems at times have usability issues. It was discovered that users often found it difficult to use LMS and this complexity issues hinders users adoption of LMS. This finding opines with the study of [21] which affirmed that if innovation requires learning, it would be adopted slowly. Furthermore the complexity of the innovative system could be problematic if students have to put effort into learning first how to use it.

3. The study also identified challenges that hinder the adoption of learning management systems by Nigerian tertiary institutions. Challenges identifies include, Unavailability of support infrastructures like computer systems and associated peripherals, poor power supply which is a major pitfall. Power supply is vital to effective deployment of LMS and the power supply situation in the country makes it almost impossible for a seamless adoption of LMS. Learning management is online and internet based and the high internet access tariff poses a great challenge. High cost of implementing LMS is also a major challenge. Lack of technical skills in use of LMS and bureaucratic bottlenecks are other challenges identified by the study. Unwillingness to adopt changes is a challenge to the adoption of LMS in Nigerian Tertiary Institutions. It was discovered in the study that both students and faculty members found it very difficult to accept a paradigm shift from current pedagogies and instructional methods. They would rather stick to the traditional methods of teaching and learning. This is supports the study of [8], which states that an idea that is believed to be incompatible with traditional ideas will not be adopted unless the idea is compatible with the existing values and past experiences of the individual who is faced with a decision to adopt the new idea; and that of [20], which confirmed in their findings that compatibility has a significant, positive effect on the adoption of an innovative learning system.

7. RECOMMENDATIONS

The study recommends the following;

1. Huge investments in Information Technology infrastructures to support the use of LMS in tertiary institutions.
2. Subsidization of internet access tariffs to make it readily accessible to both students and faculty members on campus.
3. Improvement of the power supply situations in Nigeria, as the LMS cannot be used effectively in teaching, learning, student evaluation and administrative roles without uninterruptible power supply.
4. Capacity building for both students and faculty members on how to use IT based technologies in education especially LMS.
5. Radical change in attitude and receptiveness to innovative technologies are recommended.

8. REFERENCES

- [1] Smith, T., & Rupp, F. (2004). Innovation in Open & Distance Learning: Kogan Page London.
- [2] Graves, W. H. (2001). The New Challenges of E-Learning. Ubiquity, 1(43). Communications of ACM.

- Retrieved 30 August, 2004, from:
<http://portal.acm.org.ezproxy.massey.ac.nz/citation>.
- [3] Vrasidas, C. (2004). Issues of pedagogy and design in e-learning systems. *Communications of ACM*. Retrieved 31 August, 2004, from:
<http://portal.acm.org.ezproxy.massey.ac.nz/citation>.
- [4] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- [5] Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204.
- [6] Rogers, E. M. (2002). Diffusion of preventive innovations. *Addictive Behaviors*, 27(6), 989–993.
- [7] Dingfelder, H. E., & Mandell, D. S. (2011). Bridging the research-to-practice gap in autism intervention: An application of diffusion of innovation theory. *Journal of Autism and Developmental Disorders*, 41(5), 597–609.
- [8] Bennett, J., & Bennett, L. (2003). A review of factors that influence the diffusion of innovation when structuring a faculty training program. *The Internet and Higher Education*, 6(1), 53–63.
- [9] Sanson-Fisher, R. W. (2004). Diffusion of innovation theory for clinical change. *Medical Journal of Australia*, 180(6), 55–56.
- [10] Hsu, H. (2012). The acceptance of Moodle: an empirical study based on UTAUT. *Creative Education*. 3 (8B): 44-46.
- [11] Hutchins, H.M. (2001). Enhancing the business communication course through WebCT, *Business Communication Quarterly*, 64: 87-94.
- [12] Marchewka, J., Liu, C., & Kostiwa, K. (2007). An application of the UTAUT model for understanding student perceptions using course management software, *Communications of the IIMA*, 7 (2): 93-104.
- [13] Ellis, Ryann K. (2009). Field Guide to Learning Management Systems. ASTD Learning Circuits. URL (last checked 10 April 2012)
http://www.astd.org/NR/rdonlyres/12ECDB99-3B91-403E-9B15-7E597444645D/23395/LMS_fieldguide_20091.pdf.
- [14] Kulshrestha, T., & Kant, A. R. (2013). Benefits of Learning Management System (LMS) in Indian education. *International Journal of Computer Science & Engineering Technology (IJCSET)*.
- [15] Sharma, A. & Vatta, S. (2013). Role of Learning Management Systems in education. *International Journal of Advanced Research in Computer Science and Software Engineering*. 3 (6).
- [16] Duan, Y., He, Q., Feng, W., Li, D., & Fu, Z. (2010). A study on e-learning take-up intention from an innovation adoption perspective: A case in China. *Computers & Education*, 55(1), 237–246.
- [17] Engelbrecht, E. (2003). E-learning-from hype to reality. *Progressio*, 25(1), 20.