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# PERCEIVED BENEFITS, CHALLENGES AND LEVEL OF IMPLEMENTATION OF LEARNING MANAGEMENT SYSTEM (LMS) AMONG STAFF AND STUDENTS IN DELTA STATE TERTIARY INSTITUTIONS

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**Abstract:**
This study examined the benefits, challenges and level of implementation of Learning Management System (LMS) in Delta State tertiary institutions. A total of six research questions and nine null hypotheses guided the study. The study adopted the descriptive survey method and an ex-post facto research design. The population of the study comprised all students and academic staff of tertiary institutions in Delta State. The sample size for the study comprised 323 academic staff and 380 students. The sampling techniques that were used for the study are proportionate stratified and convenience sampling techniques. The instrument used to collect data in this study is a questionnaire. The questionnaire was face and content validated by experts while Cronbach's alpha reliability coefficient was used to estimate the reliability of the instrument. Mean, Standard Deviation and Independent samples t-test were used to analyse the data. The findings of the study revealed that the benefits of the learning management system as perceived by academic staff of tertiary institutions in Delta State is high; that there is a significant difference between the perception of staff and students on the benefits of the Learning Management System in tertiary institutions in Delta State; that no significant difference was found between the perception of male and female staff on the benefits of the Learning Management System in tertiary institutions in Delta State; that the benefits of the Learning Management System as perceived by students of tertiary institutions in Delta State is high; and that there is no significant difference between the perception of male and female students on the benefits of the Learning Management System in tertiary institutions in Delta State. The study recommended amongst others, that management should conduct pragmatic seminars and workshops to educate students and staff about

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the use of the LMS and the benefits they stand to gain in using the LMS for their academic activities.

**Keywords**: Learning Management System (LMS); academic staff; undergraduate students; Delta State tertiary institutions

## 1. Introduction

The advent of the coronavirus pandemic (COVID-19) has triggered an extraordinary global education emergency. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020) indicate that as of March 29, 2020, there were over 1.5 billion students out of school global, including Nigeria. The shutdown of schools coupled with other social distancing protocols has forced countries to adopt emergent management mechanisms to ensure that teaching and learning continue unhindered.

Accordingly, governments, educational institutions and development agencies across the globe have recognized online learning platforms as a key companion in educational delivery. In order to pursue social distance protocols and maximize value for money, Ndemo (2020) contends that large-scale, national initiatives to deploy technology in support of remote learning, distance education, and online learning during the COVID-19 pandemic are essential. These initiatives are not only emerging and evolving quickly, but they are also critical. This has far-reaching benefits for all countries, both developed and developing. Indisputably, online learning and virtual pedagogy remain the fulcrum to deliver education and undisrupted learning as schools send students home to contain COVID-19 infections.

The trends of technology adoption for educational delivery have been well documented throughout the world before the advent of COVID-19. In Africa for instance, it was posited that the adoption of Learning Management Systems (LMS) in tertiary institutions reached exponential height as of 2005 (Coates, et al., 2005). LMS is described as a server-based or cloud-based software program collecting information about users, course, and content that gives a place to learn and teach without depending on the constraints of time and space (Sharma and Vatta, 2013). Hence, a survey conducted in 42 countries across the continent revealed that a wide range of different e-learning practices was being utilized across the continent with the use of computers and the internet still in its infancy stage (Unwin, et al., 2010). Therefore, the majority of its usage was rudimentary but there was a great deal of excitement among people for exploiting the potential of e-learning.

On the global stage, however, Adkins (2013) predicted that e-learning was evolving as the latest mainstream educational model with a growth rate of 35.6 % annually. It was not surprising to see that Sun, et al. (2008) projected that LMS adoption would increase at a rate of 15% every year between 2011 and 2016. In the United Kingdom, the Education Centre for Analysis and Research (2015) found that the adoption of LMS by students was 82%. Dube and Scott (2014) found that only 20% of students were

using LMS in Tanzania. In Ghana, Dei (2018) revealed that the adoption rate of LMS in Ghanaian universities was 81%.

The centrality of LMS in educational delivery in the 21st Century is never in doubt. Sejzi and Arisa (2013) indicate that LMS can centralize and simplify management to use self-service and guided services; to easily compile and deliver learning materials; to integrate training programmes on a flexible web-based platform; to promote portability, standards, personalize information and reuse expertise. In essence, LMS is used for both pedagogical and administrative purposes in institutions of higher learning.

Despite the relevance of LMS to the educational system, how lectures and students view its advantages, difficulties, and degree of application in the educational system will determine whether it is successful. The body of research demonstrates that there are many difficulties in using online learning platforms like the LMS. For instance, according to Danner and Pessu (2013), the usage of ICT applications in higher education institutions like universities is susceptible to hazards such as a lack of computer access and internet connectivity as well as other related issues like a poor student and faculty competency levels. According to Ndemo (2020), a number of issues, including the weak online teaching infrastructure, the level of ICT proficiency, the complex environment at home, and the lack of experience and knowledge among lecturers and students using Moodle online, among others, work against the successful implementation of technology integration in the classroom. In particular, even students with access to devices may not have the digital skills to learn effectively online. This observation is concerning because, in order to meet the demands of 21st-century education, students and lecturers constitute a crucial link in the chain of motivation in the educational system.

Lecturers and students are the dominant players in the learning experience. The communal involvement of both parties governs the productivity of learning experiences. As such, effective use of LMS as a learning tool will depend on the active involvement of both lecturers and students. While academics are thought to have the greatest impact on promoting and improving LMS use (Alshammari, as mentioned in Lasanthika & Tennakoon, 2019), students also have a responsibility to increase LMS adoption.

Given the foregoing, a comparative analysis of the viewpoints of lecturers and students on the advantages, difficulties, and degree of implementation of LMS is required to comprehend any potential perception gaps impeding LMS's effective adoption. Therefore, the study's goal is to investigate how instructors and students at Delta State Tertiary Institutions perceive the advantages, difficulties, and degree of LMS adoption.

## 2. Research Questions

The following research questions guided the study:

1) What are the benefits of the learning management system as perceived by academic staff of tertiary institutions in Delta State?
2) What are the benefits of the learning management system as perceived by students of tertiary institutions in Delta State?

3) What are the challenges of implementing the learning management system as perceived by academic staff of tertiary institutions in Delta State?
4) What are the challenges of implementing the learning management system as perceived by students of tertiary institutions in Delta State?
5) What is the level of implementation of the learning management system as perceived by academic staff of tertiary institutions in Delta State?
6) What is the level of implementation of the learning management system as perceived by students of tertiary institutions in Delta State?

## 3. Hypotheses

The following null hypotheses were formulated and tested at a 0.05 level of significance:

1) There is no significant difference between the perception of staff and students on the benefits of the learning management system in tertiary institutions in Delta State.
2) There is no significant difference between the perception of staff and students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.
3) There is no significant difference between the perception of staff and students on the level of implementation of the learning management system in tertiary institutions in Delta State.
4) There is no significant difference between the perception of male and female staff on the benefits of the learning management system in tertiary institutions in Delta State.
5) There is no significant difference between the perception of male and female students on the benefits of the learning management system in tertiary institutions in Delta State.
6) There is no significant difference between the perception of male and female staff on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.
7) There is no significant difference between the perception of male and female students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.
8) There is no significant difference between the perception of male and female staff on the level of implementation of the learning management system in tertiary institutions in Delta State.
9) There is no significant difference between the perception of male and female students on the level of implementation of the learning management system in tertiary institutions in Delta State.

## 4. Theoretical Framework of the Study

This study is anchored on Rogers' Diffusion of Innovation (DOI) Theory, developed in 1962. Diffusion of Innovation Theory is a behavioural change model that explains how or why an innovation diffuses through a social population with the end result of acceptance or adoption. Rogers (2003) defines diffusion as "*the process in which an innovation is communicated through certain channels over time among the members of a social system*." The idea is that the diffusion and adoption of innovation do not happen automatically and that institutions promoting a change that want to better understand how to get that change to be accepted the need to understand the stages and elements of how to achieve such acceptance or adoption. The theory identifies invention, communication channels, time, and social system as the four elements that make up the dissemination of innovation. The explanation of each element in relation to the subject of this research is provided below.

### 4.1 Innovation

An innovation is an idea, activity, or endeavor that is seen as a novel by an individual or other unit of adoption writes (Rogers, 2003). The use of an LMS to supplement or, in some circumstances, even replace a more conventional platform of teaching and learning—the face-to-face lecture hall—is the innovation in the case of the introduction of LMS in tertiary institutions in Delta State. For many lecturers at these tertiary institutions, at the time that this technology was presented for consideration, the idea of using an LMS was considered an innovation that could help them communicate with and teach students in a new way especially as the Covid-19 pandemic made it almost impossible to conduct a face-to-face lecture.

### 4.2 Communication Channels

The second component of the DOI Theory is communication channels. Rogers (2003) defined communication as the process through which individuals produce and exchange knowledge with one another in order to reach a common understanding. In the case of the LMS adoption at a university, the promoters of the innovation must communicate with those whose support and cooperation are needed for the adoption and implementation of the innovation; promoters use communication channels to do this. Communication channels that are more social and personal than, for example, mass media such as TV or radio are needed. For instance, the tertiary institutions could have made an advertisement on TV or radio about the benefits of LMSs for teaching, but, as discussed by Sahin (2006), "*interpersonal channels are more powerful to create or change strong attitudes held by an individual*" (p. 1).

### 4.3 Time

The third component in Rogers' DOI Theory is the time it takes to adopt an innovation. Rogers identifies several points on the timeline of adoption (knowledge, persuasion,

decision-making, implementation, and confirmation) and emphasizes that not all adopters of new innovation will proceed from one point to the next at the same time. Promoters of the innovation might better prepare for potential hurdles by understanding how and why willingness or preparedness to accept an invention may differ among persons with diverse characteristics.

An acceptable and practical theoretical framework for comprehending how and why an idea is embraced within or among a community is Rogers' Diffusion of Innovation theory. Accordingly, diffusion of innovation theory will provide insights into and guide this study on the application of LMS in tertiary institutions in Delta State. Having a clear picture of how this technology was successfully adopted in this context may provide guidance for other higher educational institutions in their process of adopting an LMS.

**4.4 Methods**

The study adopted the descriptive method of *ex-post facto* research design. The population of the study comprised 2,047 academic staff and 35,323 students in the 2021/2022 academic session in Delta State Tertiary Institutions. The sample size comprised 323 academic staff and 380 students. The sampling techniques that were used for the study are proportionate stratified and convenience sampling techniques. In using the proportionate stratified sampling technique, the researchers estimated the percentage of the sample size in relation to the overall population size, which resulted in 15.73% for academic staff and 1.07% for students. The researchers in using the convenience sampling technique, decided to use any staff and students that were available and agree to participate in the study, having met the requirement of being an academic staff and student studying at the selected tertiary institutions.

A questionnaire was the tool employed in this study to gather data. Part A of the questionnaire is for staff, and Part B is for students. Each portion is further separated into two sections: section A, which deals with the respondents' demographic information, and section C, which deals with the questions on the questionnaire that related to the numerous research questions. Three separate scales make up the questionnaire for students and staff; Benefits of the Learning Management System Rating Scale, the Challenges of Implementing the Learning Management System Rating Scale, the Level of Implementation of the Learning Management System Rating Scale, and the Benefits of the Learning Management System Rating Scale, which were each used to evaluate the advantages of the learning management system as perceived by students and staff (LMS). A 4-point scale with 1 for strongly disagree, 2 for disagree, 3 for agree, and 4 for highly agree makes up the rating scales. According to their perceptions, the staff and students were asked to answer the questionnaire's items.

The questionnaire was face and content validated by experts of Technical Education; Measurement and Evaluation. They looked at it in terms of content and suitability to the objective of the study. They suggested some alterations which were made. The instrument was deemed valid based on the experts' opinions. The

questionnaire was given to 50 staff members and students at tertiary institutions in other states who are not a part of the study region in order to determine the validity of the instrument. The data's measurements of internal consistency were examined using the Cronbach alpha reliability coefficient. The following coefficients were obtained: Academic staff benefits of the learning management system are 0.83; academic staff challenges of the learning management system are 0.81; academic staff level of implementation of the learning management system is 0.91; student benefits of the learning management system are 0.91; student challenges of the learning management system are 0.82; and student level of implementation of the learning management system is 0.92.

The three research assistants assisted the researchers in distributing the questionnaire to the respondents. The researchers provided training to the research assistants on the use of the instrument and how to administer it. The researchers visited respondents at their offices, lecture halls, and even hostels while they were on campus. Before giving them copies of the questionnaire, they sought and got their consent after informing them. The researchers explained to them the key components of the questionnaire to help them better understand its items. The completed survey was retrieved right away. In order to analyze the data and provide answers to the study questions, mean and standard deviation were used, and an independent samples t-test with a significance threshold of 0.05 was used to evaluate the hypotheses. The study was conducted using SPSS version 26 (Statistical Package for Social Sciences).

## 5. Results

**Research Question 1:** What are the benefits of the learning management system as perceived by academic staff of tertiary institutions in Delta State?

**Table 1:** Mean analysis of the benefits of the learning management system as perceived by academic staff of tertiary institutions in Delta State

| S/N | Statement | Mean | SD | Remark |
|---|---|---|---|---|
| 1. | Using LMS would enable me to significantly improve the overall quality of my teaching. | 3.45 | 0.56 | Accepted |
| 2. | LMS would allow me to develop new technological skills. | 3.40 | 0.50 | Accepted |
| 3. | LMS would allow me greater flexibility and control over my work. | 3.40 | 0.55 | Accepted |
| 4. | Using LMS would be an efficient use of my time to increase my productivity. | 3.37 | 0.55 | Accepted |
| 5. | LMS would allow for more meaningful student learning. | 3.37 | 0.54 | Accepted |
| 6. | Using LMS would make it easier to do my work. | 3.37 | 0.57 | Accepted |
| 7. | Using LMS would increase interaction between students and instructor. | 3.37 | 0.57 | Accepted |
| 8. | Using LMS would enable me to use technology more innovatively in my teaching. | 3.36 | 0.51 | Accepted |

| | | | | |
|---|---|---|---|---|
| 9. | Using LMS would enable me to accomplish course management tasks (management course content, assignments, and resources) more efficiently. | 3.35 | 0.56 | Accepted |
| 10. | Using LMS would help me improve student teaching. | 3.35 | 0.53 | Accepted |
| 11. | Using LMS would increase student access to class information. | 3.35 | 0.57 | Accepted |
| 12. | Using LMS would encourage student engagement with course content. | 3.34 | 0.58 | Accepted |
| 13. | LMS would allow my students to develop greater technological skills. | 3.33 | 0.55 | Accepted |
| 14. | LMS would allow me to reach a wider audience. | 3.33 | 0.58 | Accepted |
| 15. | The benefits of using the LMS outweigh the hassle factor. | 3.30 | 0.51 | Accepted |
| **Average Mean** | | **3.36** | **0.55** | **Accepted** |
| **Criterion Mean = 2.50** | | | | |

Table 1 shows the mean analysis of the benefits of the learning management system as perceived by academic staff of tertiary institutions in Delta State. The result shows that the mean score ranged from 3.30 to 3.45. The criterion mean is 2.50. This means that academic staff perceived all items as the benefits of the learning management system in Delta State. The average mean score is 3.36, which is greater than the criterion mean of 2.50. This means that the benefits of the learning management system as perceived by academic staff of tertiary institutions in Delta State is high.

**Research Question 2:** What are the benefits of the learning management system as perceived by students of tertiary institutions in Delta State?

**Table 2:** Mean analysis of the benefits of the learning management system as perceived by students of tertiary institutions in Delta State

| S/N | Statement | Mean | SD | Remark |
|---|---|---|---|---|
| 1. | Using LMS would be an efficient use of my time and increases my learning | 3.10 | 0.93 | Accepted |
| 2. | LMS would allow me to develop new technological skills. | 3.06 | 0.83 | Accepted |
| 3. | Using LMS would increase my access to class information. | 3.04 | 0.88 | Accepted |
| 4. | Using LMS would encourage me to engage with course content. | 3.02 | 0.88 | Accepted |
| 5. | Using LMS would enable me to use technology more innovatively in my learning. | 2.98 | 0.93 | Accepted |
| 6. | LMS would allow me to accomplish class activities more quickly. | 2.98 | 0.98 | Accepted |
| 7. | Using LMS would help me plan and improve learning. | 2.97 | 0.93 | Accepted |
| 8. | Using the system would make it easier to do my studies. | 2.96 | 0.95 | Accepted |
| 9. | LMS would make learning more interesting for the students. | 2.95 | 0.99 | Accepted |
| 10. | Using LMS would increase interaction between students and instructor. | 2.92 | 0.97 | Accepted |
| 11. | The benefits of using the LMS outweigh the hassle factor. | 2.92 | 0.93 | Accepted |
| 12. | LMS would allow for deeper or more meaningful learning. | 2.91 | 0.94 | Accepted |

| | | | | |
|---|---|---|---|---|
| 13. | LMS would allow me greater flexibility and control over my learning. | 2.91 | 0.90 | Accepted |
| 14. | Using LMS would be compatible with my needs. | 2.89 | 0.97 | Accepted |
| **Average Mean** | | **2.97** | **0.93** | **Accepted** |
| **Criterion Mean = 2.50** | | | | |

Table 2 shows the mean analysis of the benefits of the learning management system as perceived by students of tertiary institutions in Delta State. The result shows that the mean score ranged from 2.89 to 3.10. The criterion mean is 2.50. This means that students perceived all items as the benefits of the learning management system in Delta State. The average mean score is 2.97, which is greater than the criterion mean of 2.50. This means that the benefits of the learning management system as perceived by students of tertiary institutions in Delta State is high.

**Research Question 3:** What are the challenges of implementing the learning management system as perceived by academic staff of tertiary institutions in Delta State?

**Table 3:** Mean analysis of the challenges of implementing the learning management system as perceived by academic staff of tertiary institutions in Delta State

| S/N | Statement | Mean | SD | Remark |
|---|---|---|---|---|
| 1. | Longer time to prepare for an online course. | 3.45 | 0.51 | Accepted |
| 2. | Lack of time to attend online classes. | 3.41 | 0.56 | Accepted |
| 3. | Inability to cover all the course outline. | 3.41 | 0.53 | Accepted |
| 4. | Lack of suitable online environment at home (e.g. presence of children, and other family members). | 3.41 | 0.51 | Accepted |
| 5. | Difficult dividing students into subgroups for group task working. | 3.40 | 0.51 | Accepted |
| 6. | Difficulty in motivating the students in the online environment than in the traditional setting. | 3.40 | 0.52 | Accepted |
| 7. | Difficult receiving student feedback in the online course versus in a traditional face-to-face class. | 3.40 | 0.49 | Accepted |
| 8. | Poor network connectivity during the use of the LMS. | 3.39 | 0.52 | Accepted |
| 9. | Lack of protection for the developed e-materials. | 3.39 | 0.53 | Accepted |
| 10. | Lack of incentives/ Non-repayment for Internet usage. | 3.39 | 0.52 | Accepted |
| 11 | Inability to upload lesson note on the LMS platform. | 3.38 | 0.55 | Accepted |
| 12. | Lack of finance needed for internet data subscription. | 3.36 | 0.54 | Accepted |
| 13. | Inability to assess LMS platforms. | 3.33 | 0.54 | Accepted |
| 14. | Poor power supply to power electronic gadgets needed for the LMS. | 3.33 | 0.50 | Accepted |
| **Average Mean** | | **3.39** | **0.52** | **Accepted** |
| **Criterion Mean = 2.50** | | | | |

Table 3 shows the mean analysis of the challenges of implementing the learning management system as perceived by academic staff of tertiary institutions in Delta State. The result shows that the mean score ranged from 3.33 to 3.45. The criterion mean is 2.50. This means that academic staff perceived all items as the challenges of implementing the learning management system in Delta State. The average mean score is 3.39, which is

greater than the criterion mean of 2.50. This means that the challenges of implementing the learning management system as perceived by academic staff of tertiary institutions in Delta State is high.

**Research Question 4:** What are the challenges of implementing the learning management system as perceived by students of tertiary institutions in Delta State?

**Table 4:** Mean analysis of the challenges of implementing the learning management system as perceived by students of tertiary institutions in Delta State

| S/N | Statement | Mean | SD | Remark |
|---|---|---|---|---|
| 1. | Inability to fully participate in online teaching and learning. | 3.09 | 0.91 | Accepted |
| 2. | Poor network connectivity during the use of the LMS platform. | 3.04 | 0.93 | Accepted |
| 3. | Poor power supply to power electronic gadgets needed for the LMS platform. | 3.00 | 0.98 | Accepted |
| 4. | Lack of finance needed for internet data subscription. | 2.98 | 0.99 | Accepted |
| 5. | Unavailability of support infrastructure. | 2.97 | 0.94 | Accepted |
| 6. | Inability to assess LMS platform. | 2.91 | 0.95 | Accepted |
| 7. | Inability to download lesson notes on the university LMS platform. | 2.89 | 0.97 | Accepted |
| 8. | Lack of IT skills. | 2.85 | 1.03 | Accepted |
| 9. | Lack of time to attend online classes. | 2.78 | 1.00 | Accepted |
| **Average Mean** | | **2.95** | **0.96** | **Accepted** |
| **Criterion Mean = 2.50** | | | | |

Table 4 shows the mean analysis of the challenges of implementing the learning management system as perceived by students of tertiary institutions in Delta State. The result shows that the mean score ranged from 2.78 to 3.09. The criterion mean is 2.50. This means that students perceived all items as the challenges of implementing the learning management system in Delta State. The average mean score is 2.95, which is greater than the criterion mean of 2.50. This means that the challenges of implementing the learning management system as perceived by students of tertiary institutions in Delta State is high.

**Research Question 5:** What is the level of implementation of the learning management system as perceived by academic staff of tertiary institutions in Delta State?

**Table 5:** Mean analysis of the level of implementation of the learning management system as perceived by academic staff of tertiary institutions in Delta State

| S/N | Statement | Mean | SD | Remark |
|---|---|---|---|---|
| 1. | I use Discussion/Forum function to communicate with my students. | 2.42 | 0.72 | Low |
| 2. | I use Chatroom with my students. | 2.42 | 0.70 | Low |
| 3. | I use LMS assignment functions. | 2.24 | 0.62 | Low |
| 4. | I post announcements via LMS. | 2.11 | 0.66 | Low |
| 5. | I use LMS frequently during my academic period. | 2.08 | 0.57 | Low |
| 6. | I create Quizzes via LMS. | 1.97 | 0.50 | Low |

| | | | | |
|---|---|---|---|---|
| 7. | I upload files via LMS. | 1.90 | 0.47 | Low |
| 8. | I create Folders via LMS. | 1.90 | 0.49 | Low |
| 9. | I create digital books via LMS. | 1.89 | 0.45 | Low |
| 10. | I depend on LMS for my work. | 1.82 | 0.53 | Low |
| 11. | I use Label (information) function through LMS. | 1.79 | 0.54 | Low |
| 12. | I post URL links through LMS. | 1.72 | 0.57 | Low |
| 13. | I use Turnitin to check students' work (Plagiarism). | 1.72 | 0.66 | Low |
| **Average Mean** | | **2.00** | **0.57** | **Low** |
| **Criterion Mean = 2.50** | | | | |

Table 5 shows the mean analysis of the level of implementation of the learning management system as perceived by academic staff of tertiary institutions in Delta State. The result shows that the mean score ranged from 1.72 to 2.42. The criterion mean is 2.50. The average mean score is 2.00, which is less than the criterion mean of 2.50. This means that the level of implementation of the learning management system as perceived by academic staff of tertiary institutions in Delta State is low.

**Research Question 6:** What is the level of implementation of the learning management system as perceived by students of tertiary institutions in Delta State?

**Table 6:** Mean analysis of the level of implementation of the learning management system as perceived by students of tertiary institutions in Delta State

| S/N | Statement | Mean | SD | Remark |
|---|---|---|---|---|
| 1. | My lecturers use LMS frequently for teaching and learning. | 2.37 | 1.01 | Low |
| 2. | My lecturers post announcements via LMS. | 2.33 | 1.02 | Low |
| 3. | My lecturers use Chatroom with us. | 2.29 | 0.89 | Low |
| 4. | My lecturers use Label (information) function through LMS. | 2.28 | 0.93 | Low |
| 5. | My lecturers upload files via LMS. | 2.28 | 0.94 | Low |
| 6. | My lecturers use Discussion/Forum function to communicate with us. | 2.27 | 0.94 | Low |
| 7. | My lecturers post URL links through LMS. | 2.27 | 0.95 | Low |
| 8. | My lecturers create Quizzes via LMS. | 2.27 | 0.96 | Low |
| 9. | My lecturers create Folders via LMS. | 2.26 | 0.91 | Low |
| 10. | My lecturers create digital book via LMS. | 2.26 | 0.93 | Low |
| 11. | My lecturers use LMS assignment functions. | 2.25 | 0.92 | Low |
| 12. | My lecturers use Turnitin to check our work (Plagiarism). | 2.20 | 0.94 | Low |
| **Average Mean** | | **2.28** | **0.94** | **Low** |
| **Criterion Mean = 2.50** | | | | |

Table 6 shows the mean analysis of the level of implementation of the learning management system as perceived by students of tertiary institutions in Delta State. The result shows that the mean score ranged from 2.20 to 2.37. The criterion mean is 2.50. The average mean score is 2.28, which is less than the criterion mean of 2.50. This means that the level of implementation of the learning management system as perceived by students of tertiary institutions in Delta State is low.

**Hypothesis 1:** There is no significant difference between the perception of staff and students on the Benefits of the learning management system in tertiary institutions in Delta State.

**Table 7:** t-test analysis of the difference between the perception of staff and students on the Benefits of the learning management system in tertiary institutions in Delta State

| **Status** | ***n*** | **Mean** | ***SD*** | ***df*** | ***t*** | ***P*** | **Remark** |
|---|---|---|---|---|---|---|---|
| Staff | 323 | 3.36 | 0.34 | 700 | 10.04 | 0.000 | Significant |
| Students | 379 | 2.97 | 0.67 | | | | |
| $\alpha = 0.05$ | | | | | | | |

Table 7 shows the t-test analysis of the difference between the perception of staff and students on the benefits of the learning management system in tertiary institutions in Delta State. The result shows that staff ($M = 3.36$, $SD = 0.34$) students ($M = 2.97$, $SD = 0.67$); $t$ (700) = 10.04, $p < 0.05$ level of significance. Hence, the null hypothesis is rejected, meaning that there is a significant difference between the perception of staff and students on the benefits of the learning management system in tertiary institutions in Delta State. Staff appear to possess a higher perception of the benefits of the learning management system in tertiary institutions in Delta State than students.

**Hypothesis 2:** There is no significant difference between the perception of staff and students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.

**Table 8:** t-test analysis of the difference between the perception of staff and students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State

| **Status** | ***n*** | **Mean** | ***SD*** | ***df*** | ***t*** | ***P*** | **Remark** |
|---|---|---|---|---|---|---|---|
| Staff | 323 | 3.39 | 0.30 | 700 | 10.58 | 0.000 | Significant |
| Students | 379 | 2.95 | 0.75 | | | | |
| $\alpha = 0.05$ | | | | | | | |

Table 8 shows the t-test analysis of the difference between the perception of staff and students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State. The result shows that staff ($M = 3.39$, $SD = 0.30$) students ($M = 2.95$, $SD = 0.75$); $t$ (700) = 10.58, $p < 0.05$ level of significance. Hence, the null hypothesis is rejected, meaning that there is a significant difference between the perception of staff and students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State. Staff appear to possess a higher perception of the challenges experienced in implementing the learning management system in tertiary institutions in Delta State than students.

**Hypothesis 3:** There is no significant difference between the perception of staff and students on the level of implementation of the learning management system in tertiary institutions in Delta State.

**Table 9:** t-test analysis of the difference between the perception of staff and students on the level of implementation of the learning management system in tertiary institutions in Delta State

| **Status** | ***n*** | **Mean** | ***SD*** | ***df*** | ***t*** | ***P*** | **Remark** |
|---|---|---|---|---|---|---|---|
| Staff | 323 | 2.00 | 0.30 | 700 | 6.99 | 0.000 | Significant |
| Students | 379 | 2.28 | 0.70 | | | | |
| $\alpha = 0.05$ | | | | | | | |

Table 9 shows the t-test analysis of the difference between the perception of staff and students on the level of implementation of the learning management system in tertiary institutions in Delta State. The result shows that staff ($M = 2.00$, $SD = 0.30$) students ($M = 2.28$, $SD = 0.70$); $t\ (700) = 6.99$, $p < 0.05$ level of significance. Hence, the null hypothesis is rejected, meaning that there is a significant difference between the perception of staff and students on the level of implementation of the learning management system in tertiary institutions in Delta State. Students appear to possess a higher perception of the implementation of the learning management system in tertiary institutions in Delta State than staff.

**Hypothesis 4:** There is no significant difference between the perception of male and female staff on the benefits of the learning management system in tertiary institutions in Delta State.

**Table 10:** t-test analysis of the difference between the perception of male and female staff on the benefits of the learning management system in tertiary institutions in Delta State

| **Sex** | ***n*** | **Mean** | ***SD*** | ***df*** | ***t*** | ***P*** | **Remark** |
|---|---|---|---|---|---|---|---|
| Male | 171 | 3.38 | 0.30 | 321 | 1.08 | 0.282 | Not Significant |
| Female | 152 | 3.34 | 0.37 | | | | |
| $\alpha = 0.05$ | | | | | | | |

Table 10 shows the t-test analysis of the difference between the perception of male and female staff on the benefits of the learning management system in tertiary institutions in Delta State. The result shows that males ($M = 3.38$, $SD = 0.30$) females ($M = 3.34$, $SD = 0.37$); $t\ (321) = 1.08$, $p > 0.05$ level of significance. Hence, the null hypothesis is accepted, meaning that there is no significant difference between the perception of male and female staff on the benefits of the learning management system in tertiary institutions in Delta State.

**Hypothesis 5:** There is no significant difference between the perception of male and female students on the benefits of the learning management system in tertiary institutions in Delta State.

**Table 11:** t-test analysis of the difference between the perception of male and female students on the benefits of the learning management system in tertiary institutions in Delta State

| Sex | *n* | Mean | *SD* | *df* | *t* | *P* | Remark |
|---|---|---|---|---|---|---|---|
| Male | 174 | 2.99 | 0.57 | 375 | 0.61 | 0.544 | Not Significant |
| Female | 203 | 2.95 | 0.75 | | | | |
| $\alpha = 0.05$ | | | | | | | |

Table 11 shows the t-test analysis of the difference between the perception of male and female students on the benefits of the learning management system in tertiary institutions in Delta State. The result shows that males ($M$ = 2.99, $SD$ = 0.57) females ($M$ = 2.95, $SD$ = 0.75); $t$ (375) = 0.61, $p > 0.05$ level of significance. Hence, the null hypothesis is accepted, meaning that there is no significant difference between the perception of male and female students on the benefits of the learning management system in tertiary institutions in Delta State.

**Hypothesis 6:** There is no significant difference between the perception of male and female staff on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.

**Table 12:** t-test analysis of the difference between the perception of male and female staff on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State

| Sex | *n* | Mean | *SD* | *df* | *t* | *P* | Remark |
|---|---|---|---|---|---|---|---|
| Male | 171 | 3.41 | 0.30 | 321 | 1.14 | 0.254 | Not Significant |
| Female | 152 | 3.37 | 0.31 | | | | |
| $\alpha = 0.05$ | | | | | | | |

Table 12 shows the t-test analysis of the difference between the perception of male and female staff on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State. The result shows that males ($M$ = 3.41, $SD$ = 0.30) females ($M$ = 3.37, $SD$ = 0.31); $t$ (321) = 1.14, $p > 0.05$ level of significance. Hence, the null hypothesis is accepted, meaning that there is no significant difference between the perception of male and female staff on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.

**Hypothesis 7:** There is no significant difference between the perception of male and female students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.

**Table 13:** t-test analysis of the difference between the perception of male and female students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State

| Sex | *n* | Mean | *SD* | *df* | *t* | *P* | Remark |
|---|---|---|---|---|---|---|---|
| Male | 174 | 2.90 | 0.74 | 375 | 1.05 | 0.296 | Not Significant |
| Female | 203 | 2.98 | 0.76 | | | | |
| $\alpha = 0.05$ | | | | | | | |

Table 13 shows the t-test analysis of the difference between the perception of male and female students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State. The result shows that males ($M$ = 2.90, $SD$ = 0.74) females ($M$ = 2.98, $SD$ = 0.76); $t$ (375) = 1.05, $p > 0.05$ level of significance. Hence, the null hypothesis is accepted, meaning that there is no significant difference between the perception of male and female students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.

**Hypothesis 8:** There is no significant difference between the perception of male and female staff on the level of implementation of the learning management system in tertiary institutions in Delta State.

**Table 14:** t-test analysis of the difference between the perception of male and female staff on the level of implementation of the learning management system in tertiary institutions in Delta State

| Sex | *n* | Mean | *SD* | *df* | *t* | *P* | Remark |
|---|---|---|---|---|---|---|---|
| Male | 171 | 1.97 | 0.31 | 321 | 1.63 | 0.105 | Not Significant |
| Female | 152 | 2.03 | 0.29 | | | | |
| $\alpha = 0.05$ | | | | | | | |

Table 14 shows the t-test analysis of the difference between the perception of male and female staff on the level of implementation of the learning management system in tertiary institutions in Delta State. The result shows that males ($M$ = 1.97, $SD$ = 0.31) females ($M$ = 2.03, $SD$ = 0.29); $t$ (321) = 1.63, $p > 0.05$ level of significance. Hence, the null hypothesis is accepted, meaning that there is no significant difference between the perception of male and female staff on the level of implementation of the learning management system in tertiary institutions in Delta State.

**Hypothesis 9:** There is no significant difference between the perception of male and female students on the level of implementation of the learning management system in tertiary institutions in Delta State.

**Table 15:** t-test analysis of the difference between the perception of male and female students on the level of implementation of the learning management system in tertiary institutions in Delta State

| Sex | *n* | Mean | *SD* | *df* | *t* | *P* | Remark |
|---|---|---|---|---|---|---|---|
| Male | 174 | 2.33 | 0.67 | 375 | 1.37 | 0.172 | Not Significant |
| Female | 203 | 2.23 | 0.74 | | | | |
| $\alpha = 0.05$ | | | | | | | |

Table 15 shows the t-test analysis of the difference between the perception of male and female students on the level of implementation of the learning management system in tertiary institutions in Delta State. The result shows that males ($M$ = 2.33, $SD$ = 0.67) females ($M$ = 2.23, $SD$ = 0.74); $t$ (375) = 1.37, $p > 0.05$ level of significance. Hence, the null hypothesis is accepted, meaning that there is no significant difference between the perception of male and female students on the level of implementation of the learning management system in tertiary institutions in Delta State.

## 6. Discussions

The first finding revealed that the benefits of the learning management system as perceived by academic staff of tertiary institutions in Delta State is high. The finding further showed that the benefits of the learning management system as perceived by academic staff include Using LMS would enable me to significantly improve the overall quality of my teaching helping them to develop new technological skills, allowing them greater flexibility and control over their work, helping them make efficient use of their time to increases their productivity, allowing for more meaningful student learning, making it easier to do their work and increasing interaction between students and instructor. The finding also showed that Using LMS would enable staff to use technology more innovatively in their teaching, enabling them to accomplish course management tasks, helping them improve student teaching, increasing student access to class information, encouraging student engagement with course content, allowing their students to develop greater technological skills and allowing them to reach wider audiences.

The finding also showed that there is a significant difference between the perception of staff and students on the benefits of the learning management system in tertiary institutions in Delta State. Staff appear to possess a higher perception of the benefits of the learning management system in tertiary institutions in Delta State than students. However, no significant difference was found between the perception of male and female staff on the benefits of the learning management system in tertiary institutions in Delta State.

The above finding is in line with Ashrafzadeh and Sayadian (2015), who argued that effective use of LMS enriches the learning experience for all stakeholders involved. Through the use of technology, teaching and learning can be made interactive and in turn, the instructions become more effective. The results confirm Coskuncay's (2013)

assertion that Learning Management Systems (LMS) are one type of technology that promotes e-learning initiatives. The results are in line with those of Alahmari & Kyei-Blankson (2016), who discovered that the adoption of LMS in the learning sector is driven by the desire to improve student and teacher performance outcomes, which reflects the efficient use of financial resources for education as a whole.

The second finding showed that the benefits of the learning management system as perceived by students of tertiary institutions in Delta State is high. The finding further revealed that the benefits of the learning management system as perceived by students include helping them make efficient use of their time and increasing their learning, allowing them to develop new technological skills, increasing their access to class information, encouraging them to engage with course content, enabling them to use technology more innovatively in their learning, allowing them to accomplish class activities more quickly and helping them to plan and improve learning. The finding also revealed that the learning management system makes it easier to do their studies, makes learning more interesting for the students, increases interaction between students and instructor, allows for deeper or more meaningful learning and allows students greater flexibility and control over their learning. The study also revealed that there is no significant difference between the perception of male and female students on the benefits of the learning management system in tertiary institutions in Delta State.

The above finding is consistent with Sejzi and Arisa (2013), who indicated that LMS can centralize and simplify management to use self-service and guided services; to easily compile and deliver learning materials; to integrate training programmes on a flexible web-based platform; to promote portability, standards, personalize information and reuse expertise. The finding is also in line with the assertion of Zaharias and Pappas (2016), that LMS can provide students with self-paced learning, offers unlimited access to e-Learning materials, integrates social learning experiences, tracks learner progress, and increases cost-effectiveness. The finding further agrees with Sayfouri (2016), who stated that LMS offers a variety of functions and tools such as interactive books, assignments, announcements, quizzes, forums, chat, labels, and links to learning resources.

The third finding revealed that the challenges of implementing the learning management system as perceived by academic staff of tertiary institutions in Delta State is high. The finding showed that the challenges of implementing the learning management system as perceived by academic staff include longer time to prepare for an online course, lack of time to attend online classes, Inability to cover all the course outline, lack of suitable online environment at home, difficult dividing students into subgroups for group task working, the difficulty for motivating the students in the online environment than in the traditional setting and difficult receiving student feedback in the online course versus in a traditional face-to-face class. The finding also revealed other challenges including poor network connectivity during the use of the LMS, lack of protection for the developed e-materials, lack of incentives/Non-repayment for Internet usage, inability to upload lesson notes on the LMS platform, lack of finance needed for

internet data subscription, inability to assess LMS platforms and poor power supply to power electronic gadgets needed for the LMS.

The finding also revealed that there is a significant difference between the perception of staff and students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State. Staff appear to possess a higher perception of the challenges experienced in implementing the learning management system in tertiary institutions in Delta State than students. The study, however, revealed that there is no significant difference between the perception of male and female staff on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.

The above finding is consistent with Al-Adwan and Smedley (2012), who stated that despite the many advantages of e-learning systems, the transformation of education styles presents various challenges that significantly affect the culture and the continuing need for the development of technological skills of students and staff. The results also corroborate Danner and Pessu's (2013) assertion that the use of ICT applications in institutions of higher education, such as universities, is susceptible to risks such as a lack of computer access, poor internet connectivity, and low levels of competency among students and lecturers. The results also concur with those of Ndemo (2020) and Syed, et al. (2020), who found that certain shortcomings, including a weak online teaching infrastructure, teachers' and students' lack of experience with and skill with using Moodle online, their level of ICT proficiency, and their complex home environments, among others, work against the successful implementation of technology integration in the classroom.

The fourth finding showed that the challenges of implementing the learning management system as perceived by students of tertiary institutions in Delta State is high. The finding revealed that the challenges of implementing the learning management system as perceived by students include the inability to fully participate in online teaching and learning, poor network connectivity during the use of the LMS platform, poor power supply to power electronic gadgets needed for the LMS platform, lack of finance needed for internet data subscription and unavailability of support infrastructure. Others include the inability to assess LMS platform, the inability to download lesson notes on the university LMS platform, lack of IT skills and lack of time to attend online classes. The finding also revealed that there is no significant difference between the perception of male and female students on the challenges experienced in implementing the learning management system in tertiary institutions in Delta State.

The above finding agrees with Moore, et al. (2018), who stated that there continues to be a vastly unequal digital starting point for young urban citizens, who are already held by poverty and social exclusion. According to the authors, even students with access to devices may not have the digital skills to learn effectively online. The result confirms the findings of Asampana, et al. (2018), who examined the variables influencing the post-implementation of a web-based LMS at the University of Professional Studies and determined that the level of adoption of LMS appears to be very low as a result of subpar

IT infrastructure, insufficient training, and the system's relevance to high-quality lecture delivery. The finding agrees with Almaiah et al. (2020), who studied the challenges facing E-learning systems during Covid-19 in Jordan and Saudi Arabia. Students, faculty members, IT experts, and policymakers were the participants of the study. The findings showed that Saudi Arabian and Jordanian institutes' main problems were a lack of financial assistance, problems with change management, and technological difficulties with learning management systems.

The fifth finding revealed that the level of implementation of the learning management system as perceived by academic staff of tertiary institutions in Delta State is low. The finding also showed that there is a significant difference between the perception of staff and students on the level of implementation of the learning management system in tertiary institutions in Delta State. Students appear to possess a higher perception of the implementation of the learning management system in tertiary institutions in Delta State than staff. The finding, however, revealed that there is no significant difference between the perception of male and female staff on the level of implementation of the learning management system in tertiary institutions in Delta State. The above finding is at variance with Ssekakubo et al. (2011), who found that 5 of the surveyed institutions in sub-Saharan Africa had installed an LMS of various kinds. The finding also disagrees with Mtebe and Raisamo (2014), who found half of 11 surveyed institutions had installed LMS. The finding is further at variance with Munguatosha, et al. (2011), who found that 80% of surveyed institutions in Tanzania were using LMS.

The sixth finding showed that the level of implementation of the learning management system as perceived by students of tertiary institutions in Delta State is low. The finding also reveals that there is no significant difference between the perception of male and female students on the level of implementation of the learning management system in tertiary institutions in Delta State.

The above finding is at variance with the finding of Ashrafzadeh and Sayadian (2015), which shows that in higher education, LMS integration into teaching and learning has significantly increased. The finding also disagrees with Unwin et al. (2010), Mayoka and Kyeyune (2012), Elmahadi and Osman (2013), and Chitanana et al. (2008), whose findings suggest that several institutions have installed various LMS in countries such as Kenya, Mozambique, Uganda, Sudan and Zimbabwe respectively.

## 7. Conclusion and Recommendations

According to the study's findings, both staff and students believe the learning management system to have a number of advantages. Despite the advantages, there are a number of obstacles to its implementation. Both faculty and students thought the LMS was not being used to its full potential. The benefits, difficulties, and LMS adoption were shown to differ significantly across staff and students. In terms of the advantages, difficulties, and LMS implementation, there were no appreciable differences between male and female personnel or male and female students.

On the basis of the findings and conclusion drawn, the following recommendations were made:

1) To inform students and staff about the usage of the LMS and the advantages they stand to gain from using it for their academic activities, management should hold practical seminars and workshops.
2) To improve students' use of online portals for educational purposes, courses with ICT content and context that are taught at universities should, as a matter of priority, include both theory and practical usage of online learning systems.
3) Universities should implement more comprehensive learning tools to implement all-inclusive learning portals.
4) Academic staff should undergo training on how to correctly work with LMS to make sure students receive the best experience
5) Internet connectivity and access should be available for both students and staff in institutions without such facilities.
6) The Delta State government should make huge investments in Information Technology infrastructures to support the use of LMS in tertiary institutions.
7) Power supply conditions should be addressed since without an uninterruptible power source, the LMS cannot be used successfully for teaching and learning.

**Conflict of Interest Statement**

The authors declare no conflicts of interest.

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