Original Paper

Exploring the Challenges of Online Learning in Nigerian Higher Education

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Abstract

This study examines the challenges faced by lecturers in Nigerian higher education institutions when adopting and using e-learning platforms. Through virtual interviews conducted with 12 university lecturers across six regions, the research identifies several key obstacles: unreliable internet connectivity, frequent power outages, and limited access to technological resources. Additionally, inadequate training and institutional support are noted as significant barriers. Thematic analysis was employed to analyze the qualitative data, revealing patterns and common themes related to these challenges. The study suggests that improving internet and power infrastructure, along with enhancing training and technical support, are crucial strategies for overcoming these issues. The findings emphasize the need for targeted interventions to create a more supportive environment for e-learning, aiming to improve the educational experience for both lecturers and students.

Keywords

E-learning challenges, ICT infrastructure, Nigerian higher education, Online learning adoption, Developing economies

1. Introduction

Online learning has dramatically influenced how knowledge is stored, shared, and transferred, how skills are practiced, and how teachers and other stakeholders interact (Anderson & Hajhashemi, 2013). Online learning requires students to manage their learning more than traditional education because it offers less external control and more freedom and flexibility (Wong et al., 2019). Developing countries, including Nigeria, face significant challenges in fully benefiting from e-learning due to the high costs of building infrastructure and expanding internet and Information and Communication Technology

(ICT) access. In Nigerian tertiary institutions, e-learning implementation is still problematic because of inadequate ICT infrastructure and various socio-economic factors. Many universities and colleges do not have enough computers and specialized reading devices for students, and they have not yet integrated technologies like television conferencing (Nwabufo et al., 2012). The growing use of technology in education has transformed traditional learning, making online learning a key part of higher education. Recently, online learning has become a powerful tool for improving educational access, flexibility, and interaction (Kamraju et al., 2024). However, the success of online learning depends largely on the willingness and ability of students and educators to use these digital resources effectively (Alyoussef, 2023).

Understanding the factors that influence the use of online learning platforms by lecturers and students is vital for higher education institutions, particularly in developing economies like Nigeria, where access to technology and digital skills can vary greatly (Eze et al., 2020). Despite the global trend towards digital learning, there is limited research on adopting online learning in Nigerian higher education. Most studies have focused on technological infrastructure and institutional readiness, often neglecting the individual factors that impact engagement with online platforms. Furthermore, there is little research on strategies to enhance online learning adoption among lecturers and the main challenges they face in using online facilities in Nigerian higher education. This gap in the literature highlights the need for a deeper understanding of the various factors influencing the use of online learning tools, especially in the context of Nigerian higher education.

Eze et al. (2020) explored the factors influencing e-learning use in Nigeria, focusing on students from a private higher education institution, and pointed out the need for further research involving lecturers to provide a fuller perspective. Falola et al. (2022) recommended expanding future studies to include universities across Nigeria's six geo-political zones. This study addresses these gaps by examining lecturers' challenges in using online learning resources in Nigerian higher education institutions. This research uses a basic qualitative design to focus on the experiences and perceptions of 12 lecturers selected from six universities across Nigeria's major regions. Data were collected through qualitative questionnaires to investigate technological and infrastructural challenges and the impact of individual attitudes, perceived ease of use, and cultural influences on online learning adoption. The findings from this study aim to offer valuable insights for educators, policymakers, and technology providers to enhance the effectiveness of online learning strategies in similar contexts.

1.1 Online Learning in Nigerian Higher Education

Online or remote teaching is a form of distance education where students receive learning and assessments without physically attending a university campus (Imran et al., 2023). Although remote education has existed for a long time, it was initially conducted through postal communication before the Internet era (Imran et al., 2023). With technological advancements, remote education was modernized, and online courses became feasible for the first time in the early 1990s. Online education has become vital to higher education (McKenna et al., 2022). Online learning in higher education involves delivering

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educational content and instruction through online digital platforms. This mode allows students to access courses, lectures, and resources remotely, usually through Learning Management Systems (LMS) such as Blackboard and Moodle. Formats of online learning can include fully online courses, hybrid or blended learning (a mix of online and face-to-face instruction), and Massive Open Online Courses (Al-Kahtani et al., 2022). The flexibility of online learning allows students to study at their own pace and from any location, making it especially advantageous for non-traditional students, such as working professionals, parents, or those with geographical or mobility constraints. Interactive features like discussion forums, video conferencing, quizzes, and multimedia content enhance student engagement and learning outcomes. However, online learning in higher education also faces challenges, such as maintaining student engagement, ensuring academic integrity, providing adequate technological support, and guaranteeing equitable access for all students. The success of online learning depends on the quality of course design, the digital literacy of students and faculty, the availability of technological infrastructure, and the teaching strategies used (Meylani, 2023).

In Nigerian higher education, online learning encounters specific challenges that limit its effectiveness. A significant issue is inadequate ICT infrastructure; many universities and colleges lack essential technological resources, such as computers, reliable internet, and digital learning tools, which hampers the ability of both students and lecturers to engage fully with online platforms (Nwabufo et al., 2012). Socio-economic factors also play a critical role, as many students come from economically disadvantaged backgrounds, limiting their access to the devices and internet services needed for online education (Nwabufo et al., 2012). High data costs further exacerbate these challenges, making consistent participation in online learning difficult. Moreover, digital literacy among lecturers is often insufficient, impacting their ability to use online platforms and engage with digital content effectively. This skills gap results in a steep learning curve, which can reduce the effectiveness of online education. Resistance to online learning, where traditional face-to-face education is preferred, presents a significant challenge. Many lecturers in Nigeria view online learning as less effective, which affects their willingness to adopt digital methods. Additionally, inadequate government policies and support impede the standardization and coordination needed for effective online education. Addressing these challenges involves enhancing infrastructure, improving digital skills, providing financial support, encouraging a cultural shift towards online learning, and developing comprehensive policies to guide online education in Nigerian higher education institutions.

1.2 Additional Literature Related to Online Learning Challenges

To provide a comprehensive understanding of the challenges associated with online learning in Nigerian higher education, it is crucial to consider findings from studies conducted in other contexts. Karakose et al. (2022) examined digital addiction, which includes dependencies on the internet, social media, smartphones, and other digital technologies, and its effects on user experiences and academic productivity. Their bibliometric and science mapping analysis highlighted a shift in research focus from general addictive behaviors to more specific issues such as smartphone and social media addiction. These

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findings emphasize the need to address technological constraints and their impact on online learning, an issue that resonates with the challenges faced by Nigerian institutions, including unreliable internet and limited technological resources.

In the realm of digital transformation and leadership, Karakose and Tülübaş (2023) explored the role of digital leadership in facilitating structural and pedagogical changes within educational institutions. They argue that leadership models integrating digital technologies are crucial for improving educational outcomes. This perspective is particularly relevant for Nigerian higher education, where strengthening digital leadership could enhance the integration and effectiveness of e-learning platforms, addressing infrastructure and support challenges. Papadakis (2023) discussed the effectiveness and ongoing challenges of Massive Open Online Courses (MOOCs), such as high dropout rates and reduced user engagement. Although MOOCs provide flexible learning opportunities, they face persistent issues that must be addressed to improve implementation. This insight is pertinent to Nigerian higher education, where similar challenges may hinder the adoption and success of online learning platforms.

Lavidas et al. (2023) investigated factors influencing the use of e-learning systems, focusing on Moodle from the perspective of academic personnel. They identified perceived usefulness and ease of use as significant factors affecting lecturers' intention to use e-learning systems. Their findings suggest that enhancing training and technical support is crucial for the successful adoption of e-learning platforms, aligning with the needs identified in Nigerian higher education. Additionally, Lavidas et al. (2022) examined web survey response rates, highlighting factors such as incentives, survey structure, and reminders. Understanding these factors is essential for designing more effective surveys to assess online learning challenges in Nigerian higher education, ensuring higher response rates and more reliable data. These studies collectively provide valuable insights into the various challenges and considerations related to online learning, offering a broad perspective that can help inform strategies and interventions in the Nigerian context.

1.3 Research Gap

Current research on e-learning in Nigerian higher education has predominantly concentrated on students' experiences and challenges, often overlooking the critical perspectives of lecturers. This research gap is significant, as understanding lecturers' viewpoints is crucial for a comprehensive analysis of e-learning adoption. Lecturers play a pivotal role in the implementation and success of online learning systems, and their insights can reveal unique challenges and needs that are not captured through student-focused studies alone.

Addressing this gap by incorporating lecturers' perspectives will offer a more nuanced and balanced view of e-learning implementation. It will provide valuable insights into the barriers and facilitators they encounter, including technological constraints, infrastructural limitations, and support deficiencies. The study aims to contribute to a more holistic understanding of e-learning challenges in Nigerian higher education by filling this gap. This, in turn, will inform targeted interventions and strategies better aligned

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with the realities of lecturers and students, ultimately enhancing the effectiveness of e-learning practices across diverse educational contexts in Nigeria.

1.4 Research Problem: Problem Statement

Despite the increasing significance of online learning in higher education, there is a notable lack of understanding regarding the challenges lecturers face when using e-learning platforms in Nigerian universities. Existing literature has not adequately explored the opportunities for e-learning and faculty engagement within Nigerian institutions (Falola et al., 2022). Studies like that of Eze et al. (2020) have primarily focused on student experiences in private universities that have invested heavily in e-learning infrastructure.

However, there is insufficient research on the difficulties lecturers encounter in private and public higher education institutions across Nigeria's diverse geopolitical regions. This gap in knowledge is crucial because understanding lecturers' challenges can provide essential insights into the infrastructural, technological, and pedagogical barriers that hinder effective online learning. Addressing these gaps is vital for developing strategies to improve online education in private and public institutions throughout Nigeria.

As of 2020, Nigerian tertiary institutions struggled to fully implement e-learning due to inadequate ICT infrastructure and various socio-economic barriers (Egielewa et al., 2022). Furthermore, Ofor-Douglas (2022) noted that, aside from a few private institutions offering some online classes, no Nigerian university has been authorized by the National Universities Commission to operate entirely online. As of July 2022, out of 217 universities in Nigeria, only 15 offered Open and Distance Learning (ODL), with 11 being federal, two state-run, and two privately owned (Adamu, 2022).

2. Method

This basic qualitative study investigates lecturers' challenges with online learning in Nigerian higher education institutions. Qualitative research is particularly suitable for this inquiry as it focuses on understanding how individuals interpret and make sense of their experiences and environments (Creswell, 2013). This approach effectively explores participants' perspectives in a detailed and descriptive manner, allowing for a deeper understanding of lecturers' difficulties with e-learning platforms.

Given the complexity of the issues involved, a qualitative research method is ideal for capturing lecturers' diverse experiences and insights across private and public universities in Nigeria. This study involves conducting one-on-one virtual interviews with administrators and faculty members, enabling a thorough exploration of the infrastructural, technological, and pedagogical barriers that hinder effective online learning (Neuman, 2000). The research aims to uncover the nuanced challenges often overlooked in quantitative studies by engaging directly with participants.

2.1 Research Design

The Basic Qualitative Design was chosen because it allows for an in-depth examination of participants' experiences within a manageable timeframe, ensuring a comprehensive understanding of the issues while maintaining flexibility in data collection and analysis. This design is particularly effective for studies focused on understanding the complex, real-world issues educators face, such as the obstacles to fully implementing e-learning in Nigeria due to inadequate ICT infrastructure and socio-economic challenges (Egielewa et al., 2022).

Unlike more rigid research designs, the Basic Qualitative Design offers the flexibility to adjust methods as new insights emerge. It is well-suited for capturing the evolving nature of online learning in a diverse context like Nigeria. It enables us to systematically explore lecturers' perspectives and better understand the factors affecting their engagement with e-learning platforms. This approach also supports the development of targeted strategies to improve online education in Nigerian higher education institutions, addressing both the technological limitations and the socio-cultural resistance that currently impede progress. The study employed a purposive sampling technique to select participants. Purposive sampling involves selecting participants based on their attributes (Bernard, 2002). For this research, 12 lecturers were carefully chosen to provide insights into the challenges of online learning in Nigerian higher education.

2.2 Research Question

This study is guided by the primary qualitative research question: What are the challenges faced by lecturers in adopting and utilizing e-learning platforms in Nigerian higher education institutions across different geopolitical contexts? The research question aims to explore lecturers' perspectives on the specific obstacles they encounter with e-learning, such as technological limitations, infrastructure challenges, and pedagogical issues. According to Agee (2009), a general question can be a starting point for developing more specific sub-questions as the research progresses. To provide a more focused exploration of different aspects of the topic, the primary research question was separated into three distinct sub-questions including:

> 1) What are the key challenges lecturers face in adopting and using online learning facilities in Nigerian higher education institutions?
>
> 2) Why do lecturers in Nigerian higher education institutions face difficulties adopting and utilizing e-learning platforms across geopolitical contexts?
>
> 3) What strategies can be developed and implemented to improve the adoption and effective use of e-learning platforms among lecturers and students in Nigerian higher education?

By focusing on lecturers across various regions and types of universities, the study seeks to provide a more comprehensive understanding of the factors affecting the successful implementation of online learning in Nigeria. By addressing these questions, the study seeks to contribute to the broader

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discourse on digital learning and offer practical recommendations for fostering an inclusive and effective online learning environment in higher education.

2.3 Data Collection Methods

Participants were invited through emails to join a virtual interview on Zoom interview guide with the same set of questions to maintain focus and consistency across the multiple interviews. For this study, semi-structured interviews were used to gather data on the challenges of online learning in Nigerian higher education. This method was chosen because it is more cost-effective and time-efficient than in-person interviews (Krouwel et al., 2019). Semi-structured interviews provide flexibility while ensuring key topics are addressed, enabling a deeper understanding of faculty members' experiences and the difficulties they encounter with online teaching.

A purposeful sampling strategy was used to select 12 university lecturers (two from each major region) with diverse backgrounds from universities in the six major regions of Nigeria, all of whom have significant experience of up to five years in higher education. According to Gore et al. (2024), teachers with at least five years of experience are considered knowledgeable enough to provide valuable insights across their career span. This approach ensures that participants can offer meaningful perspectives on the challenges of implementing e-learning in Nigerian universities. Interviews, based on a semi-structured interview guide, are a simplified display of questions or topics that will be explored by the interviewer (DiCicco-Bloom & Crabtree, 2006).

For this study, an interview guide with open-ended questions was developed to explore participants' experiences with online learning, including technological, infrastructural, and pedagogical challenges. The guide ensures that each interview covers the same core topics while allowing in-depth discussions. Interviews were conducted individually, based on participant availability and preference, in a setting that ensures comfort and confidentiality to encourage open sharing. Informed consent was obtained before recording, and interviews were audio-recorded with notes taken to accurately capture responses. Participants were contacted via email for the option to schedule interviews. The data collection providing detailed insights into the challenges of online learning in Nigerian higher education was completed within two weeks.

2.4 Data Analysis

A thematic analysis was conducted following Braun and Clarke's (2006) six-step approach to understand the data and identify key themes. These steps include (1) becoming familiar with the data, (2) creating initial codes, (3) looking for themes, (4) reviewing the themes, (5) defining and naming the themes, and (6) writing the final report. Thematic analysis is a trusted qualitative method that helps researchers find, analyze, and report patterns (themes) within data (Creswell, 2013). This analysis revealed Five main themes: (a) Technological and Infrastructural Challenges, (b) Lack of Training and Institutional Support, (c) Improving Internet and Power Infrastructure, (d) Enhancing Training and Technical Support, and (e) Technological and Infrastructural Challenges.

2.5 Conceptual Framework

The conceptual framework for this study is the Community of Inquiry (CoI) framework, developed by Garrison et al. (2000). This framework is ideal for understanding online learning in higher education. It focuses on three essential components: cognitive presence, social presence, and teaching presence. Cognitive Presence: This refers to the learners' ability to actively engage and make meaning through discussions and activities. Social Presence: This is about feeling connected to others in the online learning environment, which helps in building a supportive learning community. Teaching Presence: This involves the instructor's role in guiding and facilitating the learning process. The CoI framework helps analyze how these three components interact to create an effective online learning experience and is crucial for identifying and addressing challenges in online education.

2.6 Aligning Conceptual Framework with Study Topic

The CoI framework is well-aligned with this study as it provides a comprehensive approach to examining the complexities of online education in Nigerian higher education. It aligns with the study's focus on identifying challenges, understanding context-specific difficulties, and developing strategies to improve online learning adoption and effectiveness.

Research Question 1: The CoI framework's elements of cognitive, social, and teaching presences help pinpoint the challenges lecturers encounter when using online learning tools. Lecturers might find it hard to create a cognitive presence because of limited technology or lack of training. They may also struggle with social presence due to a shortage of engagement tools, and teaching presence can be difficult because of inadequate support in delivering content.

Research Question 2: The CoI framework helps analyze how different geopolitical contexts, such as infrastructure and internet accessibility, affect online learning adoption. For example, poor connectivity may hinder cognitive presence, leading to varied experiences and challenges for lecturers.

Research Question 3: The CoI framework guides the development of strategies to enhance online learning adoption, such as training to improve teaching presence, tools to enhance social presence, and resources to support cognitive presence tailored to the Nigerian context.

3. Result

Responses from online questionnaires and Zoom interviews with participants having at least five years at their institutions were analyzed using Braun and Clarke's thematic analysis and NVivo 14 software. Emergent open coding revealed 121 code segments, organized into 12 sub-themes and synthesized into five major themes: Technological and Infrastructural Challenges; Lack of Training and Institutional Support; Improving Internet and Power Infrastructure; Enhancing Training and Technical Support; and Technological and Infrastructural Challenges. Findings, supported by direct participant quotes, address challenges of online learning, guided by three sub-questions. The Community of Inquiry (CoI) framework (Garrison et al., 2000) underpinned the analysis, highlighting the challenges faced by

lecturers in using online learning resources and identifying effective leadership strategies. Research Questions include:

> 1) What are the key challenges lecturers face in adopting and using online learning facilities in Nigerian higher education institutions?
>
> 2) Why do lecturers in Nigerian higher education institutions face difficulties in adopting and utilizing e-learning platforms across different geopolitical contexts?
>
> 3) What strategies can be developed and implemented to improve the adoption and effective use of e-learning platforms among lecturers and students in Nigerian higher education?

3.1 Findings

This section will present the study's findings, organized by research questions, themes, and sub-themes. Thematic analysis using NVivo 14 is detailed here, supported by participant quotes to enhance the report's credibility and provide insights into their experiences. The basic qualitative study design was a helpful approach to exploring participant's professional experiences (Bailey, 2018). The basic qualitative study design was effective in exploring these experiences. Interviews responses from Nigerian lecturers, offer a thorough understanding of the challenges they face with online learning. Participant quotes enhanced the narrative, making the findings more relatable. The integration of theoretical frameworks and literature review helps contextualize these findings and makes the results more relatable. The major themes covered in this study include Technological and Infrastructural Challenges; Lack of Training and Institutional Support; Improving Internet and Power Infrastructure; Enhancing Training and Technical Support and Technological and Infrastructural Challenges.

3.2 R1: Lecturers Key Challenges in Nigerian E-learning

Two major themes emerged from research question one: Technological and Infrastructural Challenges and Lack of Training and Institutional Support. These two major themes that address the challenges lecturers face in adopting and using online learning facilities in Nigerian higher education institutions include:

3.2.1 Major Theme: Technological and Infrastructural Challenges

Participants reported that lecturers face significant technological and infrastructural barriers in adopting online learning, including unreliable internet connectivity, inconsistent power supply, and inadequate access to technology and resources.

3.2.2 Internet Connectivity

Internet connectivity is the key to successful online learning (Ogolodom et al., 2023). The challenges encountered in online learning included internet access (Ofori Atakorah et al., 2022; Ogolodom et al., 2023). Despite the positive guidelines from the National University Commission (NUC), many university libraries in Nigeria still lack internet connectivity (Baro & Oyinnuah Asaba, 2010). Poor connectivity infrastructure is evident in the lack of affordable access to PCs, internet devices, modems, telephone lines, and internet connections, with internet use further limited by structural and cost factors

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(Oyelaran-Oyeyinka & Adeya, 2004). For example, one participant from the Northern Nigeria commented, "*The lack of reliable internet connectivity is a major issue. Many areas have poor network coverage, making it difficult for both lecturers and students to access online platforms consistently",* and another from Eastern Nigeria said, "*Unstable internet connectivity... hampers our ability to deliver lectures and engage with students effectively".*

3.2.3 Power Supply

Electricity supply situation in Nigeria can be best described as a total failure (Ikenga et al., 2023). The poor electricity situation in Nigeria makes it difficult to implement eLearning systems effectively, as Information and Communication Technologies (ICTs) rely heavily on electricity (Bubou & Job, 2021). Several participants in this study noted that poor power supply in Nigeria seriously hinders online learning in universities. For example, one lecturer from Western Nigeria said, "*Frequent power outages disrupt online classes and make it difficult for both lecturers and students to rely on digital platforms for learning".* Another from Eastern Nigeria argued that "*Frequent power outages disrupt online teaching sessions, making it challenging to rely on digital platforms for lectures and assessments".* In Nigeria, the challenges of implementing e-learning in universities include irregular power supply (Bubou & Job, 2021).

3.2.4 Access to Technology

Technology is crucial in modern education, and schools are expected to use it to improve student learning. However, challenges exist, especially when teachers haven't received enough training, leaving them without the skills to effectively use technology in the classroom (Winter et al., 2021). Teachers must understand how and when to use technology, as it can be a valuable tool when applied correctly. The success of integrating technology in education depends on teachers' technological skills and their ability to adjust both the quality and quantity of the curriculum (Winter et al., 2021). For example, one participant from Northern Nigeria said, "*Not all lecturers and students have laptops or smartphones capable of running online learning applications effectively".* Another participant, South-South Nigeria, "*There is limited access to necessary technological infrastructure. Some universities in the region lack modern digital tools, up-to-date software, and reliable online learning management systems".*

3.3 Major Theme: Lack of Training and Institutional Support

Participants generally agreed that there is a shortage of training for lecturers on how to effectively use online learning tools and platforms, compounded by limited institutional support and resources, making it challenging for lecturers to adopt online learning effectively.

3.3.1 Lack of Training

Teachers in Sub-Saharan Africa, including Nigeria, face challenges like insufficient training and resources (Adebayo et al., 2023). In this study, participants argued that obstacles which challenge the effective implementation of online learning include lack of teacher training. According to a participant from Northern Nigeria "*There is often a lack of technical support and training on how to use these tools for effective teaching and learning".* Another participant from a western Nigerian university said "*There*

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is a lack of adequate training and support for lecturers. Many of us are not fully equipped with the skills needed to effectively use online teaching tools and platforms". In Nigeria the challenges of implementing e-learning in universities include inadequate trained human resources (Bubou & Job, 2021).

3.3.2 Limited Institutional Support

Institutional support is closely connected to the quality of education (Nur Ullah et al., 2021). Providing strong institutional support for quality online teaching can enhance the online learning experience (Khong et al., 2023). One participant from Northern Nigeria suggested that "*Many universities... do not have the necessary infrastructure or funding to fully support online learning"*. Additionally, one participant from Eastern Nigeria said, "*Universities in the region may not have the necessary infrastructure, such as digital libraries or software licenses, to support online learning effectively"*.

3.4 R2: Challenges in Adopting E-Learning in Nigeria

A common theme from the responses provided by lecturers across different regions in Nigeria is that lecturers experience Technological and Infrastructural Challenges.

3.4.1 Major Theme: Technological and Infrastructural Challenges

Online education in its various forms has been growing steadily worldwide for various reasons including new technologies (Palvia et al., 2018). In Nigeria the challenges of implementing e-learning in universities include insufficient instructional technologies (Bubou & Job, 2021). Participants in this study argued that lecturers across various regions in Nigeria face significant difficulties in adopting and utilizing e-learning platforms due to unreliable internet connectivity, frequent power outages, and limited access to necessary technological resources.

3.4.2 Unreliable Internet Connectivity

Many participating lecturers mention poor internet quality as a major barrier to effective e-learning. For instance, a lecturer from Eastern Nigeria states, "*The main issue is unstable internet connectivity, which makes it difficult to conduct and attend online classes smoothly"*. Similarly, a lecturer from North-Western Nigeria highlights, "*A major issue is poor internet connectivity, which affects the ability to consistently access online resources and participate in virtual classes*".

3.4.3 Frequent Power Outages

In addition, participants argued that power supply issues are a common challenge. A Western Nigeria lecturer pointed out, "*Inconsistent power supply... leads to frequent disruptions in online classes"*. Similarly, a lecturer from South-South Nigeria notes, "*Frequent power outages further disrupt online sessions and make it challenging to maintain a consistent teaching schedule*".

3.4.4 Lack of Adequate Training and Institutional Support

Participants argued that there is a shared concern about the lack of sufficient training and institutional support for e-learning across the regions. A lecturer from North-Eastern Nigeria states, "*There is often a lack of institutional support and training, which hinders the effective integration of e-learning into the educational process*". In Eastern Nigeria, another lecturer mentions, "*There is insufficient training and technical support for lecturers on how to use e-learning tools effectively*". According to participants,

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these technological and infrastructural issues collectively hinder the ability of lecturers in Nigerian higher education institutions to effectively adopt and utilize e-learning platforms across different geopolitical contexts.

3.5 R3: Strategies to Enhance E-Learning Adoption and Use

Two major themes from the responses to research question 3 include Improving Internet and Power Infrastructure and Enhancing Training and Technical Support. The themes highlight the importance of addressing foundational infrastructure issues and enhancing support systems to improve the adoption and effectiveness of e-learning platforms.

3.5.1 Major Theme: Improving Internet and Power Infrastructure

Improving Internet connectivity would increase students' engagement in online learning (Salas-Pilco et al., 2022). Most participants in this study suggested that to enhance e-learning adoption and use among lecturers and students, the authorities should endeavor to improve internet and power infrastructure by expanding network coverage, investing in reliable technology, promoting renewable energy, upgrading electrical systems, establishing maintenance programs, etc. According to them, by addressing these areas, Nigerian higher education institutions can create a more reliable and effective environment for e-learning, ultimately enhancing the educational experience for lecturers and students. One participant said, "*Enhance infrastructure to ensure more reliable and faster internet access*" and "*Work on solutions to stabilize the power supply, such as investing in backup generators or solar power systems*". Another suggested, "Invest in improving internet connectivity by enhancing network coverage and increasing bandwidth", and "*Implement measures to address frequent power outages, such as providing backup generators or solar power solutions*". Additional submissions by study participants include "*Invest in improving both internet connectivity and power supply to reduce disruptions" and "Provide backup power solutions to ensure reliable access to e-learning platforms*". And "*Implement reliable backup power solutions and invest in alternative energy sources" and "Partner with internet service providers to improve the quality and reliability of internet connections*".

3.5.2 Major Theme: Enhancing Training and Technical Support

Supporting the development of skills needed for online study may enhance the learning experience (Rotar, 2022). Regarding the strategies to enhance e-learning adoption and use among lecturers and students in Nigerian higher education, our study participants recommended enhancing the training and technical support. One participant from North-Western Nigeria argued that "*Implement comprehensive training programs for lecturers on how to use e-learning tools effectively*". She also suggested that "*Establish dedicated technical support teams to assist with troubleshooting and resolving issues*". Two other participants from North-Eastern Nigeria suggested that "*Develop and provide targeted training programs for lecturers and students on using e-learning tools effectively*" and "*Expand Technical Support*". Two participants from South-South Nigeria said that "*Offer comprehensive training programs for both lecturers and students to ensure they are proficient in using e-learning tools*" and "*Provide ongoing support to address technical issues*". From the Western Nigeria two participants suggest that

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authorities "*Develop and offer training programs to help lecturers and students become proficient in using e-learning tools*" and "*Establish dedicated technical support teams to assist with troubleshooting and resolving issues related to e-learning platforms*".

4. Discussion

The study reveals critical challenges Nigerian lecturers face in online learning, reflecting broader issues within the country's educational infrastructure. Key themes include technological and infrastructural barriers, such as unreliable internet connectivity, frequent power outages, and limited access to essential technology. These challenges significantly impact the ability of lecturers to engage with e-learning platforms. The findings underscore the need for robust internet and power infrastructure improvements to ensure a more stable e-learning environment. Enhanced connectivity and reliable electricity are fundamental to minimizing disruptions and facilitating consistent online education.

Moreover, the study highlights a substantial gap in training and institutional support, exacerbating the difficulties lecturers face. Comprehensive training programs and dedicated technical support are critical to equipping lecturers with the skills to navigate online teaching tools effectively. Addressing these issues requires a multifaceted approach, including investing in technology infrastructure, promoting renewable energy solutions, and expanding training and support systems. By implementing these strategies, Nigerian higher education institutions can enhance the effectiveness of e-learning platforms and provide a more conducive environment for both lecturers and students.

5. Conclusion

This study highlights significant challenges faced by lecturers in Nigerian higher education institutions when adopting and using online learning platforms. Key issues identified include unreliable internet connectivity, inconsistent power supply, and inadequate access to technology, which disrupt the continuity and quality of online education. These challenges are exacerbated by insufficient training and a lack of institutional support, hindering the effective integration of e-learning. Insights from related research provide valuable context for understanding these issues. Karakose et al. (2022) emphasize the shift in digital addiction research towards smartphone and social media addiction, which underscores the broader need to address technological constraints impacting online learning. Similarly, Karakose and Tülübaş (2023) highlight the importance of digital leadership in driving educational improvements, a concept that is highly relevant for enhancing e-learning in Nigeria. The persistent challenges with MOOCs, such as high dropout rates and reduced user engagement noted by Papadakis (2023), align with the issues observed in Nigeria and suggest that addressing these challenges is crucial for effective online learning.

Furthermore, Lavidas et al. (2023) identify perceived usefulness and ease of use as critical factors for the adoption of e-learning systems like Moodle, suggesting that enhanced training and technical support are necessary. Lavidas et al. (2022) also highlight factors affecting web survey response rates, which are

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important for designing effective surveys to assess online learning challenges. To address these issues, this study recommends several strategies: enhancing internet and power infrastructure, expanding training programs, and improving technical support for lecturers. Developing a comprehensive support system that includes regular training, and robust technical assistance is essential for improving the adoption and effective use of e-learning platforms. The findings underscore the urgent need for targeted interventions to overcome these barriers. By implementing these strategies and drawing on insights from relevant research, Nigerian higher education institutions can better support their lecturers and students, ultimately fostering a more resilient and impactful educational framework.

6. Implications of the Study

The study's findings underscore critical implications for e-learning adoption in Nigerian higher education. Key challenges include unreliable internet connectivity, frequent power outages, and limited resource access, which hinder teaching quality and student engagement. Addressing these infrastructural issues is essential for successful e-learning integration. Additionally, the lack of adequate training and institutional support highlights the need for ongoing professional development and stronger backing for lecturers. Targeted interventions, such as improving internet infrastructure, investing in renewable energy, and enhancing training programs, are vital for creating a more reliable and effective e-learning environment. Policymakers should consider these factors when designing inclusive and sustainable e-learning policies.

7. Recommendations for Further Research

Further research could explore the long-term effectiveness of interventions to improve e-learning infrastructure and support in Nigerian higher education institutions. Comparative studies across different regions in Nigeria may also provide deeper insights into how local contexts influence e-learning adoption. Additionally, future research could examine the role of government policy in mitigating e-learning challenges and how collaboration between universities and private sector organizations can enhance access to technology and resources. Finally, expanding research to include student-teacher interactions in online environments would contribute to a more comprehensive understanding of e-learning dynamics.

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References

Adamu, A. U. (2022). *Status of open and distance learning in Nigeria*. https://doi.org/10.56059/11599/4070

Adebayo, S. B., Quadri, G., Igah, S., & Azubuike, O. B. (2023). Teaching in a lockdown: The impact of COVID-19 on teachers' capacity to teach across different school types in Nigeria. *Heliyon*, *9*(3), e13781. https://doi.org/10.1016/j.heliyon.2023.e13781

Agee, J. (2009). Developing qualitative research questions: A reflective process. *International Journal of Qualitative Studies in Education*, *22*(4), 431-447. https://doi.org/10.1080/09518390902736512

Al-Kahtani, N., Almurayh, A., Subbarayalu, A. V., Sebastian, T., Alkahtani, H., & Aljabri, D. (2022). Sustaining blended and online learning during the normal and new normal conditions in a Saudi higher education institution: health science students' perspectives. *Heliyon*, *8*(10), e10898. https://doi.org/10.1016/j.heliyon.2022.e10898

Alyoussef, I. Y. (2023). Acceptance of e-learning in higher education: The role of task-technology fit with the information systems success model. *Heliyon*, *9*(3), e13751. https://doi.org/10.1016/j.heliyon.2023.e13751

Anderson, N., & Hajhashemi, K. (2013). Online learning: From a specialized distance education paradigm to a ubiquitous element of contemporary education. In *4th International Conference on e-Learning and e-Teaching (ICELET 2013)* (pp. 91-94). IEEE. https://doi.org/10.1109/ICELET.2013.6681652

Baro, E. E., & Oyinnuah Asaba, J. (2010). Internet connectivity in university libraries in Nigeria: The present state. *Library Hi Tech News*, 27(9/10), 13-19. https://doi.org/10.1108/07419051011110603

Bernard, R. (2002). *Research methods in anthropology: Qualitative and quantitative approaches*. 3rd Alta Mira Press; Walnut Creek, CA.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Bubou, G., & Job, G. (2021). Benefits, challenges, and prospects of integrating e-learning into Nigerian tertiary institutions: A mini review. *International Journal of Education and Development using Information and Communication Technology*, *17*(3), 6-18.

Creswell, J. W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). SAGE Publications, Inc., London.

Egielewa, P., Idogho, P. O., Iyalomhe, F. O., & Cirella, G. T. (2022). COVID-19 and digitized education: Analysis of online learning in Nigerian higher education. *E-Learning and Digital Media*, *19*(1), 19-35. https://doi.org/10.1177/20427530211022808

Eze, S. C., Chinedu-Eze, V. C. A., Okike, C. K., & Bello, A. O. (2020). Factors influencing the use of e-learning facilities by students in a private Higher Education Institution (HEI) in a developing economy. *Humanities and Social Sciences Communications*, *7*(1), Article 133. https://doi.org/10.1057/s41599-020-00624-6

Falola, H. O., Ogueyungbo, O. O., Salau, O. P., & Olokundun, M. A. (2022). Empirical investigation of e-learning opportunities and faculty engagement in Nigerian universities: Moderating role of demographic characteristics. *Cogent Arts & Humanities*, *9*(1). https://doi.org/10.1080/23311983.2022.2118741

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, *2*(2-3), 87-105. https://doi.org/10.1016/S1096-7516(00)00016-6

Gore, J., Rosser, B., Jaremus, F., Miller, A., & Harris, J. (2024). Fresh evidence on the relationship between years of experience and teaching quality. *Australian Educational Researcher*, *51*(3), 547-570. https://doi.org/10.1007/s13384-023-00612-0

Ikenga, F. A., & Ogidigben, E. A. (2023). Electricity supply and management challenges in Nigeria: A study of BEDC. *Jurnal Transparansi Publik*, *3*(2).

Imran, R., Fatima, A., Elbayoumi Salem, I., & Allil, K. (2023). Teaching and learning delivery modes in higher education: Looking back to move forward post-COVID-19 era. *The International Journal of Management Education*, *21*(2), 100805. https://doi.org/10.1016/j.ijme.2023.100805

Kamraju, M., Krishnaiah, J., Durgesham, G., Shaba, N., Begum, S., Fatima, N., & Madhuri, Y. (2024). Exploring the impact of online education on higher education. *ASEAN Journal on Science and Technology for Development*, *3*(1), 27-36.

Karakose, T., & Tülübaş, T. (2023). Digital leadership and sustainable school improvement—A conceptual analysis and implications for future research. *Education and Development in the 21st Century*, *12*(1), 7-18. https://doi.org/10.22521/edupij.2023.121.1

Karakose, T., Tülübaş, T., & Papadakis, S. (2022). Revealing the intellectual structure and evolution of digital addiction research: An integrated bibliometric and science mapping approach. *International Journal of Environmental Research and Public Health*, *19*(22), 14883. https://doi.org/10.3390/ijerph192214883

Khong, E. M., Seow, A. N., & Lam, S. Y. (2023). Students' perception of higher institutional support towards online learning satisfaction: The mediating effect of self-regulated learning. In *Proceedings of the 10th International Conference on Business, Accounting, Finance and Economics (BAFE 2022)* (pp. 414-433). Atlantis Press. https://doi.org/10.2991/978-2-494069-99-2_31

Lavidas, K., Papadakis, S., Filippidi, A., Karachristos, C., Misirli, A., Tzavara, A., ... & Karacapilidis, N. (2023). Predicting the behavioral intention of Greek University faculty members to use Moodle. *Sustainability*, *15*(7), 6290. https://doi.org/10.3390/su15076290

Lavidas, K., Papadakis, S., Manesis, D., Grigoriadou, A. S., & Gialamas, V. (2022). The effects of social desirability on students' self-reports in two social contexts: Lectures vs. lectures and lab classes. *Information*, *13*(10), 491. https://doi.org/10.3390/info13100491

Lavidas, K., Petropoulou, A., Papadakis, S., Apostolou, Z., Komis, V., Jimoyiannis, A., & Gialamas, V. (2022). Factors affecting response rates of the web survey with teachers. *Computers*, *11*(9), 127. https://doi.org/10.3390/computers11090127

McKenna, B. A., Horton, C., & Kopittke, P. M. (2022). Online engagement during COVID-19: Comparing a course previously delivered traditionally with emergency online delivery. *Human Behavior and Emerging Technologies*. https://doi.org/10.1155/2022/6813033

Meylani, R. (2023). *What really determines the success of an online learning environment*. https://doi.org/10.21125/iceri.2023.1907

Neuman, W. L. (2000). *Social research methods qualitative and quantitative approaches* (4th ed.). Allyn & Bacon, Needham Heights.

Nur Ullah, M., Biswas, B., & Mamun Miah, M. (2021). *Assessing institutional support to online education at tertiary level in Bangladesh coping with COVID-19 pandemic: An empirical study*. Preprints, 2021040001. https://doi.org/10.20944/preprints202104.0001.v1

Nwabufo, B. N., Umoru, T. A., & Olukotun, J. O. (2012). *The challenges of e-learning in tertiary institutions in Nigeria*. In *International Conference: The Future of Education* (2nd ed.). Retrieved from https://conference.pixel-online.net/conferences/edu_future2012/common/download/Paper_pdf/76-EL04-FP-Nwabufo-FOE2012.pdf

Ofor-Douglas, S. (2022). University Education, Good Governance and Challenges of Insecurity in Nigeria. *East African Journal of Education Studies*, *5*(1), 54-65. https://doi.org/10.37284/eajes.5.1.555

Ofori Atakorah, P., Honlah, E., Atta Poku Jnr, P., Frimpong, E., & Achem, G. (2022). Challenges to online studies during COVID-19: The perspective of Seventh-day Adventist College of Education students in Ghana. *Cogent Education*, *10*(1). https://doi.org/10.1080/2331186X.2022.2162680

Ogolodom, M. P., Mbaba, A. N., Okpaleke, M. S., Chukwueze, I. O., Okankwu, E. A., Joseph, D. Z., Alazigha, N., Orevaoghene, O. E., & Brownson, E. E. (2023). Online Learning in Nigerian Universities during COVID-19 Pandemic: The Experiences of Nursing and Radiography Undergraduate Students. *Journal of radiology nursing*, *42*(1), 128-135. https://doi.org/10.1016/j.jradnu.2022.08.012

Oyelaran-Oyeyinka, B., & Adeya, C. N. (2004). Internet access in Africa: Empirical evidence from Kenya and Nigeria. *Telematics and Informatics*, *21*(1), 67-81. https://doi.org/10.1016/S0736-5853(03)00023-6

Palvia, S., Aeron, P., Gupta, P., Mahapatra, D., Parida, R., Rosner, R., & Sindhi, S. (2018). Online Education: Worldwide Status, Challenges, Trends, and Implications. *Journal of Global Information Technology Management*, *21*(4), 233-241. https://doi.org/10.1080/1097198X.2018.1542262

Papadakis, S. (2023). MOOCs 2012-2022: An overview. *Advances in Mobile Learning Educational Research*, *3*(1), 682-693. https://doi.org/10.25082/AMLER.2023.01.017

Rotar, O. (2022). Online student support: A framework for embedding support interventions into the online learning cycle. *Research and Practice in Technology Enhanced Learning*, *17*(2). https://doi.org/10.1186/s41039-021-00178-4

Salas-Pilco, S. Z., Yang, Y., & Zhang, Z. (2022). Student engagement in online learning in Latin American higher education during the COVID-19 pandemic: a systematic review. *Br. J. Educ. Technol.*, *53*, 593-619. https://doi.org/10.1111/bjet.13190

Winter, E., Costello, A., O'Brien, M., & Hickey, G. (2021). Teachers' use of technology and the impact of Covid-19. *Irish Educational Studies*, *40*(2), 235-246. https://doi.org/10.1080/03323315.2021.1916559

Wong, J., Baars, M., Davis, D., Van Der Zee, T., Houben, G. J., & Paas, F. (2019). Supporting self-regulated learning in online learning environments and MOOCs: A systematic review. *International Journal of Human–Computer Interaction*, *35*(4), 356-373. https://doi.org/10.1080/10447318.2018.1543084