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ASSESSING THE CHALLENGES AND SOLUTIONS OF ONLINE EDUCATION IN KADUNA STATE: A DUAL-STAKEHOLDER ANALYSIS

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Abstract

This study examines the dual-stakeholder perceptions of online education in Kaduna State, Nigeria, focusing on its challenges and potential solutions through a comprehensive review of recent literature. A primary constraint identified is the inadequate ICT infrastructure, including unreliable power and insufficient hardware, which hinders effective integration. Despite these barriers, the literature indicates that successfully leveraging ICT in e-learning can significantly enhance student academic performance and outcomes. The analysis culminates in key recommendations: fostering professional development for educators to maximize digital tools, adopting a strategic blended learning model, and implementing supportive policies and curricula. The study concludes that institutional commitment to training, resource provision, and cultural change is essential for the successful adoption of online teaching and learning in Kaduna's tertiary institutions.
Keywords: Online Education, Dual-Stakeholders, Perception, Challenges, Solution

Introduction

The swift evolution of digital technology is reshaping global education, establishing online learning as a fundamental element of modern pedagogical practice. The accelerated pace of technological advancement has precipitated the industrial revolution which is fundamentally reshaping the nature of human work. The education sector is not exempt from this transformation. This shift is evidenced by the rapid emergence of diverse online educational platforms including Teachers' Room, Our Classroom, Home Learning, Quiper, and various Learning Management Systems signaling an urgent need for classroom-based education to evolve accordingly.

In today's rapidly evolving technological landscape, the integration of digital technologies in education has become increasingly vital. Among these innovations, e-learning platforms have garnered significant attention, due to their potential to enhance learning outcomes.

E-learning could be defined as the use of digital resources to deliver educational content. This has gained prominence for its flexibility, accessibility, and capacity to support self-paced learning (Encarnacion et al., 2021). In technical fields, where hands-on skills are essential, e-learning provides innovative methods to bridge the gap between theoretical knowledge and practical application. In this context, e-learning refers to an instructional approach in which teachers and learners are separated by space, time, or both, and which leverages internet-based and digital technologies to facilitate communication and interaction (Wacas, 2024). Recent research indicates that e-learning not only improves academic performance but also increases student engagement with digital platforms (Hellin & Esteban, 2023).

E-Learning is a unifying term that describes instructional approaches delivered and facilitated through various forms of information and communication technology (ICT). This includes, but is not limited to, dedicated learning management systems (LMS), websites, personal and portable computers, mobile devices, and even broadcast media like radio. At its core, e-learning fundamentally entails the application and integration of ICT to enhance both teaching and learning processes (Zolochevskaya, etal. 2021).

A primary constraint on the effective integration of ICT in teaching and learning is the inadequate provision of essential infrastructure. This includes insufficient computer hardware and software, unreliable power supply, and limited teacher training opportunities (Zolochevskaya et al., 2021). These challenges are compounded by a lack of institutional partnerships with technical and business entities, as well as chronic underfunding of ICT services.

Such systemic barriers hinder successful pedagogical processes and contribute to the neglect of ICT expertise among educators. To counteract these issues, Zolochevskaya et al. (2021) identify two critical interventions: ensuring an adequate supply of functional ICT facilities and improving the administration of existing technological resources. The authors posit that these measures are essential for enhancing ICT utilization in tertiary institutions, thereby supporting greater student success.

Concurrently, educators struggle to adapt traditional pedagogical methods to digital platforms and to ensure academic integrity in online assessments. The compounded lack of immediate feedback mechanisms and direct teacher-student interaction has precipitated a notable decline in overall instructional quality (Karim et al., 2025).

The underlying difficulties facing online learning in Nigeria are mirrored in its limited institutional acceptability. As of 2020, tertiary institutions continued to struggle with full e-learning deployment due to ongoing infrastructural and socio-economic constraints (Egielewa et al., 2022). This tension is further entrenched by statutory limits; Ofor-Douglas (2022) asserts that, despite some private colleges offering online programs, no Nigerian university had acquired authorisation from the National Universities Commission (NUC) to operate wholly online. The breadth of recognised online learning remains modest, with only 15 out of 217 universities offering formal Open and online Learning (ODL) programs as of July 2022, the bulk of which were federal institutions.

Addressing these difficulties is crucial for boosting the quality and inclusivity of online education. Research on digital learning in disadvantaged communities underscores the necessity for government-led operations to

improve internet infrastructure, provide inexpensive digital resources, and conduct comprehensive faculty development programs (Ali, 2020). However, past research lacks a full, dual-perspective assessment of both students' and teachers' opinions regarding the challenges and feasible solutions in online education.

To solve this gap, our work employs a mixed-methods strategy. It attempts to analyse the lived experiences of students and teachers, identify the most important pedagogical and logistical challenges, and recommend context-specific methods to develop the online education ecosystem in Kaduna State. It is against this background that the researchers thought it vital to analyse tertiary students and Lecturers' perceptions regarding online learning in Kaduna state

Statement of the problem

Online education has emerged as a significant alternative mode of learning in Nigeria, particularly following the disruptions caused by the COVID-19 pandemic and the growing demand for flexible, technology-driven instructional methods. In Kaduna State, tertiary institutions and several private learning centres have increasingly adopted online and blended learning platforms to sustain academic activities. Despite this growing adoption, the effectiveness and reliability of online education remain inconsistent.

Students and instructors in Kaduna State continue to face numerous challenges that hinder the successful implementation of online learning. Students frequently experience unstable internet connectivity, high data costs, limited access to digital devices, and low levels of digital literacy, all of which negatively affect their participation and completion of coursework.

Similarly, instructors encounter challenges such as inadequate training in digital pedagogy, insufficient technical support, increased workload associated with managing virtual classes, and difficulties in effectively assessing and engaging students in remote learning environments.

These challenges have created a gap between the expected benefits of online education such as accessibility, flexibility, and improved learning outcomes and the actual experiences of its primary users. Although several studies have examined online education in Nigeria, many have focused primarily on a single stakeholder perspective (e.g., students or instructors) (Folasade et al., 2024; Balogun et al., 2023), thereby overlooking the interconnected experiences of both learners and educators. This narrow approach limits the development of comprehensive solutions capable of addressing the systemic and practical barriers confronting all stakeholders involved in online education.

Given these concerns, there is a need to critically assess the challenges of online education in Kaduna State from the perspectives of both students and instructors, while also identifying practical and context-specific solutions that can enhance the effectiveness and sustainability of online learning in the state.

Objectives of the Study

The specific objectives of this study were:

i. to examine the benefits of online learning in Kaduna state
ii. to investigate the challenges of online learning in Kaduna state
iii. To assess the perceived effectiveness of online education by both instructors and students in Kaduna state.

Research Questions

i. What are the benefits of online learning to both the students and instructors in Kaduna state

ii. What are the challenges do the students and instructors face in accessing and delivering online education in Kaduna state
iii. How effective do students and instructors perceive online education practices in Kaduna state.

Benefits of Online Learning

Online learning offers significant positive effects for teaching and learning. It is a cost-effective and highly convenient modality, enabling students to access educational resources from any location and at any time, thereby eliminating geographical barriers. A primary advantage is the ability for learners to progress at their own pace (Hurlbut, 2018). Furthermore, the digital nature of online platforms ensures access to current information. These platforms can integrate diverse interactive elements such as discussion forums, group chats, multimedia explanations, and embedded quizzes to reinforce comprehension and deepen engagement (Ayimbila et al., 2024).

Challenges of Online Learning in Nigeria

The use of online learning in Nigerian higher education is impeded by a convergence of infrastructural, socio-economic, and pedagogical obstacles. A fundamental hurdle is weak ICT infrastructure, as many institutions lack stable internet connectivity, sufficient computers, and specialized digital tools, thus limiting contact for students and professors alike (Akaeze & Akaeze, 2024). This infrastructural deficiency is accentuated by socio-economic inequality; a major percentage of the student population cannot afford the needed equipment or support the high cost of data, which limits constant access (Akaeze & Akaeze, 2024). Furthermore, a general lack of digital literacy among lecturers restricts the effective use of online platforms and the creation of pedagogically sound digital content, creating a steep adoption curve that affects educational quality. Resistance to change also provides a considerable hurdle, as a strong preference for traditional face-to-face training among educators and administrators can limit the acceptance

and perceived legitimacy of online tactics. Finally, the absence of clear government policies and persistent funding results in a lack of standardization, coordination, and strategic support necessary for scaling effective online education. Addressing these various obstacles demands a holistic strategy combining infrastructural investment, specialised digital skills training, financial incentives for learners, a mindset shift within academic communities, and the development of robust, supporting policy frameworks.

Conceptual Review

Online teaching and learning

Online learning, defined variably in the literature, fundamentally refers to the process of accessing education through information and communication technologies (ICT). It is a pedagogical model facilitated and enhanced by the strategic utilization of digital tools and networked resources (Ayimbila, et al. 2024).

Online learning, also commonly termed e-learning, refers to the acquisition of knowledge facilitated through electronic and digital technologies (Thomas et al., 2021). This broad pedagogical category encompasses various modes of delivery, including web-based, computer-mediated, and blended learning, where online elements are combined with traditional methods (Dhawan, 2020).

Operationally, it describes a process where instruction and interaction occur via internet-connected devices. This often takes place in a synchronous virtual classroom, enabling real-time engagement between instructors and students irrespective of geographical constraints.

Perceptions

Understanding students' perception involves examining the cognitive processes through which individuals select, organize, interpret, and derive meaning from information within their environment. It is a subjective, individual interpretation of stimuli (Amir et al., 2020) that transforms sensory input into conscious experience. More broadly, perception is an active and continuous process of constructing meaning from the world, allowing students to comprehend and navigate their learning contexts.

In educational settings, this cognitive process is influenced by factors such as the perceived objects, sensory attention, and neurological processing. Critically, students' perceptions have a tangible impact on the quality of interaction and communication in teaching and learning activities (Amir et al., 2020). Consequently, their perception of an online learning environment provides a vital understanding of their potential success within it (Amir et al., 2020), as these perceptions are often manifested in their expressed ideas and actions based on experience.

Empirical Review

Okoye and Chikezie (2025) conducted a quantitative descriptive survey study exploring the perceptions of lecturers and students considering online assessment inside traditionally offline scientific courses throughout higher education institutions in South-East Nigeria. The research was focused around three questions and three hypotheses. Employing a multi-stage sample technique, the study recruited 62 teachers and 379 students from three states.

Data were obtained using two validated instruments: the Lecturers' Perceptions of Online Assessment in Offline Courses Questionnaire and the Students' Perceptions of Online Assessment in Offline Courses Questionnaire which exhibited reliability coefficients of 0.771 and 0.723, respectively. These instruments were administered via Google Forms. Analysis, conducted at a 0.05 significance level, utilized descriptive statistics, independent t-tests, and ANOVA.

The results indicated no major variance in the overall perceptions between instructors and students. However, whilst lecturers' opinions did not differ much by gender or academic qualification, students' judgements suggested considerable variances based on gender and age, though not by academic level. The study discovered special challenges in assessing psychomotor skills utilising online media, a crucial topic in hands-on

scientific education. Consequently, the authors stress the significance for genuine, context-rich assessments that imitate real-world scientific processes. A primary recommendation is for institutions to adopt blended assessment models that strategically combine online tools with hands-on evaluations to accurately measure student competencies.

Karim et al. (2025) explored teacher and student perspectives on online education in Bangladesh, identifying key challenges and potential solutions. Using a convergent parallel mixed-methods design, the study integrated quantitative survey data from 130 participants with qualitative interviews. The research revealed three primary concerns: digital access disparities, especially for rural students lacking reliable internet and devices; pedagogical issues, such as low engagement and insufficient instructor preparedness; and concerns over maintaining assessment integrity. To address these, the authors recommend enhancing digital infrastructure, implementing comprehensive faculty training programs, and integrating AI-based tools to support fair evaluation.

Folasade et al. (2024) investigated undergraduate student perceptions of virtual learning platforms at two public universities in southwestern Nigeria. This research focused on the transition to digital instruction prompted by the COVID-19 pandemic. Data were obtained via a Google Forms questionnaire delivered through WhatsApp to students at both a federal and a state university. Analysis employing frequency counts and percentages found that Zoom was the most commonly used platform, mostly owing to its interactive qualities. Although virtual learning was considered as advancement for education, its efficacy was reported to be constrained by many obstacles. These included unstable network connectivity, the expensive cost of data, unengaging lecture formats, and distractions in the learning environment. The authors suggested that stakeholders must address these concerns especially, network infrastructure, data affordability, pedagogical engagement, and environmental aspects to improve the quality of virtual education in Nigerian public universities.

Salema (2023) researched the opinions of Tanzanian lecturers and students regarding online teaching and learning during the COVID-19 pandemic. Grounded in the Technology Acceptance Model, the study adopted a concurrent triangulation methodology to collect both qualitative and quantitative data. Participants comprised university lecturers, Deputy Vice Chancellors, academic staff, and students from selected fully-fledged universities in northern Tanzania. The data demonstrated that both lecturers and students held good attitudes regarding online teaching and learning, with no statistically significant difference in perception between the two groups. However, the study also identified various problems inhibiting the effective implementation of online education, including inadequate resources, poor internet access, and a lack of knowledge and abilities in utilizing online platforms. The study closes by advising that institutions expand resource availability for online education and invest in staff capacity building to encourage lecturers and improve the effectiveness of online teaching.

Osiesi et al. (2023) examined lecturers' perceptions and experiences regarding the use of computer-mediated corrective feedback (CMCF) in supervising student research projects. The study investigated factors facilitating its use, the most preferred types of CMCF, and the extent of its application in supervision. Framed by the Dialectical Theory and the Unified Theory of Acceptance and Use of Technology, the research adopted an interpretivist paradigm and a qualitative case study design. Using a multi-stage sampling procedure, the study involved twenty-four lecturers (16 male, 8 female, aged 37–61) from multiple universities. Data were collected through in-depth interviews, transcribed, and analyzed via inductive thematic analysis using ATLAS.ti (version 22).

Findings revealed that lecturers held positive perceptions of CMCF, valuing it for its flexibility, speed, and cost-effectiveness. However, its deployment was influenced by both user-related and device-related factors. Three primary CMCF types emerged as preferred tools: email, WhatsApp, and Zoom. Consequently, the study recommends that lecturers fully leverage CMCF in research supervision, aligning with the demands of the Fourth Industrial Revolution, and that universities provide enabling environments to support its effective use.

Balogun et al. (2023) examined the perceptions of undergraduate students at the University of Ilorin, Nigeria, regarding the use of e-learning systems during the COVID-19 pandemic. The study aims to identify factors driving e-learning uptake, examine student views of system quality, and analyse professor attitudes toward e-learning over this era. Using a quantitative method, the researchers adopted a three stage sample technique comprising purposive, random, and proportionate sampling to survey 333 students. Data were examined using descriptive statistics, including mean scores.

The results demonstrated a high level of e-learning engagement among students, primarily driven by the university's choice to deploy e-learning as the sole instructional mode during the epidemic. Students viewed the quality of the e-learning systems positively, and lecturers indicated a good attitude toward using e-learning technologies. The study indicated that e-learning adoption was beneficial in sustaining education at the University of Ilorin during the epidemic. However, the authors advocate a mixed learning strategy mixing virtual and face-to-face training and call for more investment from educational stakeholders to sustain and develop e-learning infrastructure beyond the COVID-19 period.

Marmoah et al. (2022) examined Lecturers and students' perceptions about online learning problems during the COVID-19 pandemic in Indonesia. The data were collected using questionnaires. This quantitative descriptive study randomly selected lecturers and students as participants. A Likert scale was used to analyze the data, with the resulting perceptions assessed through descriptive analysis. The study's results indicate that lecturer and student perceptions of online learning challenges during the pandemic cover six aspects: lesson planning, online teaching activities, recording and evaluation of online sessions, academic support services, and infrastructure for teaching and learning. Moreover, it was generally agreed that effective online learning arises from the interaction between students and lecturers, supported by well-integrated educational technology.

Haris et al. (2021) employed a mixed-methods empirical approach to investigate student perceptions of online lecture delivery at the University of Leeds, a research-intensive institution in the UK. The study polled 279 undergraduate Psychology students to assess their preferences for synchronous versus asynchronous lecture formats, their general opinions of online lectures, and their self-reported viewing behaviors. The data demonstrate that students like both the organised engagement of live lectures and the freedom given by pre-recorded sessions.

Specifically, live lectures were viewed as more successful for creating social interaction, whereas pre-recorded lectures were judged more advantageous for comprehending course material. Consequently, students reported a high preference for a hybrid learning paradigm that integrates both modes. Importantly, the study also indicated that students prioritize having enthusiastic and engaging instructors, a quality that overrides any specific choice for delivery medium.

Haji (2021) claimed that digital technologies are ready to significantly disrupt educational delivery and support systems. They further predicted that programs offering real-time student feedback would continue to bridge the gap between online and face-to-face engagement, while simultaneously increasing academic achievement in higher education institutions.

Eiriemiokhale and Idiedo (2020) did a survey study to analyse the opinions and attitudes of students about e-learning at Kwara State University, Malete, Nigeria. The study primarily aimed to analyse undergraduate students' perspectives of the university's embrace of e-learning, their attitudes toward it, and the limits affecting its use. The research followed a survey design, with a population consisting of all undergraduate students at the university, from which 240 students participated in an online survey.

Data were obtained using a self-designed questionnaire and analyzed by descriptive statistics, including frequency counts and percentages. The findings suggested that students maintained good perspectives and attitudes regarding e-learning. Additionally, the study highlighted many restrictions that prevented the efficient use of e-learning technologies by students.

Consequently, the authors proposed that the university management embrace e-learning as a strategic method to tackling obstacles posed by the COVID-19 pandemic and to extending educational access.

Theoretical Framework

This study is grounded in two interconnected theoretical perspectives that provide a comprehensive framework for analyzing the challenges and potential solutions in online education, specifically within Kaduna State, Nigeria. First, Vygotsky's sociocultural theory, which posits that cognitive development is fundamentally a social and cultural process. The theory asserts that learning originates through mediated interpersonal interactions, particularly with "more knowledgeable others" (MKOs) such as teachers, peers, or experts. Through guided participation and collaborative dialogue with these individuals, learners internalize knowledge, problem-solving strategies, and cultural tools. This process of internalization transforms social experiences into individual cognitive structures. Therefore, Vygotsky argued that social learning precedes and shapes intellectual development, with the trajectory and content of this development being deeply contingent upon one's specific cultural and social context.

Second, the Constructivist Learning Theory emphasizes the necessity of interactive, learner-centered environments, positing that knowledge is actively constructed through dialogue, collaboration, and hands-on experience (Ali, 2020). This lens is crucial for critiquing online settings that often lack the real-time interaction and structured pedagogical support needed for meaningful engagement. Together, these theories form a robust, multi-dimensional foundation for examining the technological, socioeconomic, and pedagogical dimensions of online education in Kaduna State.

Methodology

This study employs a systematic literature review methodology to conduct a rigorous secondary analysis of established academic research. The review synthesizes data from a curated corpus of peer-reviewed journals, conference proceedings, and scholarly monographs authored by experts in the intersecting fields of media communications, information technology, and security studies. Through a systematic and transparent process of knowledge synthesis a methodology widely recognized for its rigor across disciplines (Clark & Creswell, 2015). This research provides a comprehensive analysis of the complex nexus between social media and processes of radicalization.

Discussion of Findings

The literature reveals a consistent, positive perception of online education among students and lecturers globally, valued for its flexibility and accessibility, especially during crises like the COVID-19 pandemic. However, this optimism is severely hampered by continuing structural and pedagogical constraints. A key cross-cutting barrier is infrastructural inadequacy, including inconsistent internet, expensive data charges, and limited device access, notably in places like Nigeria, Bangladesh, and Tanzania. Pedagogically, effective online learning involves more than digitized content; it demands compelling instructional design, speaker digital preparation, and reliable assessment methodologies especially for practical skills. Consequently, research converges on blended or hybrid models as the ideal future approach. These methods intentionally integrate the flexibility of online resources (e.g., Zoom, LMS) with the engagement of in-person interaction for hands-on learning and assessment. Success involves on investing in solid digital infrastructure, comprehensive faculty training, and context-sensitive evaluation methodologies.

Conclusion

Based on the examined literature, the findings indicate that integrating information and communication technology (ICT) into e-learning considerably boosts student academic performance. The evidence reveals that efficiently using e-learning ICT resources acts as a significant approach for increasing students' overall academic success throughout their educational journey. A important insight is that the implementation of e-learning substantially increases student learning outcomes and, consequently, academic accomplishment.

In summary, online teaching and learning have become vital in the 21st-century tertiary institutions environment, coinciding with aspirations for digitally changed higher education. However, for its successful integration and adoption in Kaduna state higher institutions, stakeholders within tertiary institutions both instructors and students, many of whom are "digital immigrants" must get focused attention. This comprises capacity building in digital skills, systemic reorientation, and enabling institutional buy-in to fully exploit the potential of online education.

Recommendations

The outcomes of this study lead to numerous crucial suggestions.
Firstly, educators should be supported through professional development to discover and utilise successful e-learning features, tailoring tools to varied learning styles.

- ✓ Secondly, e-learning must be strategically linked with traditional methods within a blended learning framework, with institutions assuring sufficient training for its deployment.
- ✓ It is advised that rules and curricula be established to formally support crucial online education components: a strong instructor presence, excellent content, active involvement, and perceived utility.
- ✓ Finally, institutions must commit to conducting targeted seminars and providing continuous assistance to establish a culture favourable to the successful implementation of online teaching and learning in Kaduna state tertiary education.

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