

## From Myth to Reality: The Transformative Power of Online Education for Nigerian Development: Lesson for Africa

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### **Abstract**

Access to education is essential for the progress of society, fostering innovation, driving economic development, and facilitating political advancement (Hanushek, E. A, & Woessmann, L. 2015). While developed nations have successfully integrated online education into their systems, developing countries, such as Nigeria, encounter significant obstacles in transitioning to e-learning due to a limited online tutors and inadequate infrastructure. This research examines secondary data to assess the effects of online education in Nigeria and across Africa. Despite an increasing acceptance of e-learning, the findings highlight considerable challenges, including a deficiency of skilled online instructors, infrastructural shortcomings, high costs of internet access, and widespread negative attitudes among students, educators, and policymakers. Furthermore, there exists a bias from employers against graduates of online programs, a lack of sufficient investment in online educational initiatives by school administrations and the Nigerian government, and a persistent risk of misinformation and miseducation. Consequently, the study advocates for investments in digital infrastructure and teacher training initiatives, shifts in attitudes towards online education, the promotion of public-private partnerships to optimize resources, expertise, and funding for online education projects, the establishment of quality assurance measures to uphold the integrity of e-learning, and the encouragement of international collaborations to share best practices, resources, and expertise in online education. These steps are vital for transforming online education into a powerful tool for development.

**Keywords:** Online-education, sustainable development, miseducation, attitudinal barrier, internet connectivity, Nigeria

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## Introduction

The transformative power of online education in development has been widely acknowledged as a fundamental pillar for social, political, and economic advancement worldwide, yet its adoption in developing nations like Nigeria remains limited (see UNESCO. 2019; Singh, A K, & Thurston, T. 2019; Adeyemo, A.O.. 2020; ITU. 2020; Oyedun, O.A, & Adewale, O.S. 2019). Research has highlighted the critical role of education in driving societal advancement, innovation, economic growth, and political progress (UNESCO, 2019). However, the scarcity of qualified online tutors, inadequate infrastructure, and high costs of internet connectivity hinder the adoption of e-learning in Nigeria and Africa (Adebayo & Olaniyi, 2020).

Additionally, a significant obstacle faced by Nigeria and numerous other developing nations is the limited access to internet connectivity and other Information Communication Technologies (ICT) infrastructure for both educators and students, hindering their ability to engage effectively in the learning process (Badmus. B.G, & Badmus, T.A, 2020; ITU. 2020; Ekeh, J. C., & Onyinyechi, N. C. 2019; World Bank. 2018; UNDP. 2020).

Put differently, despite Africa enormous potential, the advancement of e-learning in Nigeria and throughout Africa is hindered by several challenges, including a shortage of qualified online instructors, inadequate information communication technologies infrastructure, and the prohibitive costs of internet broadband. Furthermore, the prevailing negative perceptions among educators, students, and employers regarding the integration of e-learning exacerbate these challenges. The risk of misinformation and miseducation that can be easily spread through e-learning also threatens the credibility of online education (Kirkpatrick, 2013). As a result, Nigeria and the wider African continent are unable to fully leverage online education for sustainable development, which in turn deepens the digital divide and restricts the region's competitiveness within the global knowledge economy (OECD, 2019).

The reviewed literature presents valuable insights into the challenges facing Nigeria and Africa in leveraging online education opportunities. However, it's important to note the limitations within these studies. For example, Adebayo & Olaniyi's 2020 research focused primarily on urban areas, overlooking rural perspectives. Similarly, Adeyemo, A.O. (2020) and Singh, A K, & Thurston, T. (2019) placed excessive emphasis on technological determinism, neglecting social and cultural contexts. Additionally, there is a lack of consideration for the influence of power dynamics and historical factors, such as colonialism, on the adoption of online education in Nigeria and Africa.

In essence, the scarcity of qualified online tutors, inadequate infrastructure, and high costs of internet connectivity hinder the adoption of e-learning, while attitudinal barriers and the risk of misinformation and miseducation further exacerbate the challenge. As a result, Nigeria and Africa at large are unable to fully leverage online education to achieve sustainable development, perpetuating the digital divide and hindering the continent's ability to compete in the global knowledge economy.

Therefore, for any countries in Africa, and particularly Nigeria, to achieve self-sufficiency and make significant contributions to the global digital economy, its educational framework must be designed to cultivate a skilled workforce proficient in the effective use of information and communication technologies (ICTs). This proficiency is essential for enhancing competitiveness and ensuring the prudent management of both human and natural resources, which is vital for sustainable development.

This research is organized into five distinct sections to facilitate focused discussion and analysis. These sections encompass: an introduction that outlines the problem statement, study objectives, significance of the research, and methodology; a literature review accompanied by a theoretical framework; an examination of the rise of online education in Africa; an exploration of the transformative impact of online education on development, specifically through the Nigerian experience; and finally, a conclusion that includes recommendations.

### **The Statement of Problem**

Existing studies have explored various obstacles such as the scarcity of qualified online tutors, inadequate infrastructure, high costs of internet connectivity, and the threat posed by risk of misinformation and miseducation via online education, to explained inability of developing nations like Nigeria, and Africa as a whole to harness the opportunities presented by online education for developmental purposes when compared to their counterpart nations from developed world. Despite the critical role of education in driving societal advancement, innovation, economic growth, and political progress, developing nations like Nigeria face significant barriers in harnessing the potential of online education. The scarcity of qualified online tutors, inadequate infrastructure, and high costs of internet connectivity hinder the adoption of e-learning, while attitudinal barriers and the risk of misinformation and miseducation further exacerbate the challenge. As a result, Nigeria and Africa at large are unable to fully leverage online education to achieve sustainable development, perpetuating the digital divide and hindering the continent's ability to compete in the global knowledge economy.

This study seeks to build on existing research by investigating the impact of both informal (loosely regulated online resources for various learning purposes like e-commerce/online trading, social engagements, security & defense among others which can expose the learners/users to data breaches, identity theft, corrupted social technical systems, and death), and formal online education (structured and moderately regulated tools for conventional learning purposes such as learner management system (LMS), Google-Classroom, Zoom, Blackboard Learn, Google Meet, Skype, and Classkick among others) in Nigeria and Africa, with a focus on identifying solutions to address the challenges hindering its adoption. By exploring the transformative power of online education, this research aims to contribute to the development of sustainable and inclusive online education models that can drive societal advancement, innovation, economic growth, and political progress in Nigeria and Africa.

This study seeks to investigate the impact of online education in Nigeria and Africa, with a focus on identifying solutions to address some of the earlier identified challenges, in order to unlock the transformative power of online education for sustainable development in Nigeria.

### **Study Objectives**

Despite the growing adoption of online education globally, its transformative power in Africa's development remains uncertain. Thus, to unlock the potential transformative power of online education for sustainable development in Nigeria, the following research objectives needed to be achieved:

1. To examine the impact of online education on societal advancement, innovation, economic growth, and political progress in Nigeria, with a focus on identifying the benefits and addressing the challenges to online education adoption.
2. To investigate the impact of scarcity of qualified online tutors, and inadequate digital infrastructure in Nigeria.
3. To analyze attitudinal barriers among stakeholders (educators, learners, employers, policymakers) towards online education in Nigeria; and analyze factors influencing these attitudes.
4. To develop targeted recommendations for fostering positive attitudes and informing policy reforms that support widespread adoption of online education.
5. To evaluate how the high cost and poor access to internet connectivity have hindered widespread implementation of online education in Nigeria, and to explore innovative solutions for improving access to affordable and reliable internet connectivity for online learning in Nigeria.

The foregoing research objectives provide a clear direction for the study, focusing on the impact, challenges, attitudes, and infrastructure related to online education in Nigeria and Africa.

### **Research Questions**

1. What is the impact of online education on societal advancement, innovation, economic growth, and political progress in Nigeria, and what are the benefits and challenges associated with its adoption?
2. How does the scarcity of qualified online tutors and inadequate digital infrastructure affect the effectiveness of online education in Nigeria?
3. What attitudinal barriers exist among stakeholders (educators, learners, employers, policymakers) towards online education in Nigeria, and what factors influence these attitudes?
4. What targeted strategies and policy reforms can foster positive attitudes and support the widespread adoption of online education in Nigeria?

5. How do high internet costs and poor access to internet connectivity hinder online education implementation in Nigeria, and what innovative solutions can improve access to affordable and reliable internet connectivity for online learning?

### **Significance of the Research**

The concept of online education, commonly referred to as e-learning, has gained significant attention, with its integration into traditional educational frameworks increasing at an unprecedented pace. Nevertheless, despite the rapid expansion of this sector, the existing research regarding its effectiveness remains limited and lacks thoroughness. Bowen, W. G., and Lack, K. A. (2012) noted that, despite the swift advancement of online education, there is a notable scarcity of scholarly literature on the subject, and the current research landscape concerning online learning, particularly in postsecondary education, has largely been established on uncertain foundations.

This lack of comprehensive literature underscores the critical importance of this research, as it seeks to address the digital divide. By tackling the obstacles to online education, this study can contribute to narrowing the disparity in access to quality education between Nigeria/Africa and the global community. Facilitate sustainable development: By leveraging the advantages of online education, Nigeria/Africa can attain sustainable development, stimulate economic growth, and enhance political advancement. Empower disadvantaged communities: Online education has the capacity to reach remote and underserved regions, thereby empowering marginalized groups and fostering inclusivity. Strengthen competitiveness: By utilizing online education, Nigeria/Africa can effectively compete in the global knowledge economy. Inform policy and practice:

The insights derived from this study can guide policymakers and practitioners in formulating effective strategies for the adoption of online education. Promote digital literacy: The research can underscore the significance of digital literacy, equipping individuals with the necessary skills to navigate and benefit from online educational opportunities. Encourage collaboration: By examining solutions to shared challenges, the study can promote collaboration among stakeholders, fostering a cohesive approach to the advancement of online education. Establish a framework for evaluation: The study can create a framework for assessing the impact of online education initiatives, ensuring that these efforts are both effective and sustainable.

In summary, by exploring the effects of online education in Nigeria and Africa, this research can transform the potential of online education from a mere concept into a tangible reality, facilitating significant change and development.

### **Methodology**

This study follows a structured and systematic approach, which guided the research process. It encompasses the strategies used for research design, data collection, data analysis, and subsequent discussion.

### **Research Design**

A comparative case study approach was adopted to examine the utilization of online education for development in both developed and developing nations, with a particular focus on Nigeria. Qualitative data were gathered by reviewing existing literature, internal documents, and official publications from governmental and non-governmental organizations.

### **Data Sources**

This research primarily depends on secondary data sources. These include academic literature, news articles, and reports that provide insights into internet connectivity in specific countries, among other relevant information.

### **Data Analysis**

The collected data were subjected to descriptive and content analysis to evaluate the transformative impact of online education on development in Nigeria and across Africa as a whole.

### **Literature Review**

The significant impact of online education on development has been widely recognized; however, its implementation in developing countries such as Nigeria remains constrained. Research indicates that education plays a vital role in fostering societal progress, innovation, economic development, and political advancement (UNESCO, 2019). Nevertheless, challenges such as a lack of qualified online instructors, insufficient infrastructure, and the high costs associated with internet access impede the growth of e-learning in Nigeria and across Africa (Adebayo & Olaniyi, 2020). Additionally, negative attitudes among educators, students, and employers towards the adoption of e-learning further complicate the situation (Igbineweka & Oyedeji, 2018). The potential for misinformation and miseducation also poses a risk, undermining the reliability of online education (Kirkpatrick, 2013). Consequently, Nigeria and the broader African continent are unable to fully harness online education for sustainable development, thereby exacerbating the digital divide and limiting the region's competitiveness in the global knowledge economy (OECD, 2019).

Research has underscored the necessity for innovative approaches to tackle these issues, which include creating contextually relevant online education frameworks, enhancing digital infrastructure, and providing training for online educators (Mkandawire, 2019). Additionally, implementing effective strategies to foster positive perceptions and behaviors towards online education is essential (Ilori, 2020). This study seeks to build on existing research by investigating the impact of online education in Nigeria and Africa, with a focus on identifying solutions to address the challenges hindering its adoption. By exploring the transformative power of online education, this research aims to contribute to the development of sustainable and inclusive online education models that can drive societal advancement, innovation, economic growth, and political progress in Nigeria and Africa.

Economic, social, and technological dynamics are persistently reshaping the global exchange of ideas and influencing organizational practices and lifestyles worldwide. Specifically, these dynamics have significantly transformed the landscape of teaching and learning within organizations. Urdan and Weggen (2000) noted that advancements in technology, the swift obsolescence of knowledge and skills, the demand for just-in-time training solutions, and the pursuit of cost-effective methods to address the learning requirements of a globally dispersed workforce have fundamentally altered the design, development, and delivery of training and education in professional settings. In this evolution of teaching and learning, various terms have emerged to describe the innovations taking place, including e-learning, distributed learning, online learning, web-based learning, and distance learning.

As articulated by Anna Sun and Xiufang Chen (2016), education can achieve transformative potential when educators and learners integrate information across diverse subjects and experiences, critically evaluate significantly differing viewpoints, and engage in various inquiries. Research conducted by the Pew Research Center (2011) indicates that during the 2010-11 academic year, 89 percent of four-year colleges and universities provided courses that were either fully online, hybrid/blended, or utilized other forms of distance/non-face-to-face instruction (Parker, Lenhart, & Moore, 2011). Furthermore, in 2013, 32 percent of students enrolled in higher education participated in at least one online course (Allen & Seaman, 2013). This data reflects a substantial increase in the number of individuals embracing online education as a prominent trend in learning and teaching methodologies.

In addition to the pressures of globalization, which manifest as heightened competition for limited resources both domestically and internationally, as well as advancements in social, economic, political, and technological spheres, the National Center for Educational Statistics (NCES) identified several key factors influencing higher education institutions to provide online courses in their 2008 study. These factors include the necessity to accommodate students' requests for flexible scheduling (68%), the aim to grant access to college for individuals who would otherwise be unable to attend (67%), the desire to expand the availability of courses (46%), and the objective of increasing student enrollment (45%) (Parsad, Lewis, & Tice, 2008).

Zahm (2000) characterized computer-based training (CBT) as typically delivered through CD-ROMs or online downloads, emphasizing its multimedia nature. Karon (2000) highlighted the convenience of well-structured computer-based training, asserting that such training—whether networked or internet-based—offers greater convenience compared to traditional instructor-led sessions or seminars. Karon further noted that self-paced CBT courses are accessible to learners at their convenience, rather than being restricted to scheduled seminars or instructor availability. Hall (1997) synthesized the definitions provided by Zahm (2000) and Karon (2000), defining computer-based training as a comprehensive term that encompasses all forms of computer-delivered training, including CD-ROM and web-based formats. Hall also pointed out that some individuals restrict the term CBT to refer solely to older, text-based training methods.

The NCSA e-Learning group defines e-learning as the process of acquiring and utilizing knowledge that is primarily distributed and facilitated through electronic means. Currently, this mode of learning relies on networks and computers; however, it is anticipated that it will evolve to incorporate a variety of channels, such as wireless and satellite technologies, as well as devices like cellular phones and PDAs as they become available and widely adopted. E-learning can manifest in various forms, including courses, modules, and smaller learning objects. It may offer synchronous or asynchronous access and can be geographically distributed with differing time constraints. In the same vein, the United States Distance Learning Association (USDLA 1996) defines open distance learning/education as a process through which individuals acquire knowledge and skills, specifically through mediated information and instruction, utilizing a wide array of technological tools and various methods of distance education.

There is a keen interest among researchers, educators, and educational policymakers to determine which learning format yields the most favorable outcomes for students and educational institutions. For example, the face-to-face (F2F) learning format is often labeled as “traditional” by numerous authors, highlighting its long-standing history compared to online and blended learning, which are viewed as modern or innovative approaches (Adams, Randall, and Traustadóttir, 2015; González-Gómez et al., 2016). This format is generally understood to involve a physical classroom where all participants, including teachers and students, are present simultaneously. One study notes that the incorporation of computers and educational technology within the classroom does not alter the definition of the F2F format, preventing it from being classified as blended learning (Bernard et al., 2014).

Ryan et al. (2016) stressed further that, online learning is often characterized in contrast to face-to-face (F2F) learning. The most distinguishing aspect of online learning is the lack of a physical classroom, which is supplanted by web-based technologies that facilitate out-of-class learning, independent of time, location, and pace (Bernard et al., 2014; Chigeza and Halbert, 2014; Northey et al., 2015; Potter, 2015). Similarly, as noted in an article from the University of the Potomac regarding Online Learning versus Traditional Learning, online learning is described as education conducted over the Internet (University of the Potomac). This format provides an accessible avenue for all students to engage in learning. Furthermore, online teaching and learning are defined as an “electronic means of distributing and engaging with learning – typically via the related electronic media services”.

The landscape of online education has significantly transformed over time as a result of transition from face-to-face classes to online courses, driven by factors such as student convenience, financial considerations for institutions, and the flexibility offered by online formats. Furthermore, it serves the needs of students from various backgrounds and age ranges. Students may find online learning advantageous as it allows them to progress at their own pace. This mode of education also fosters increased responsibility and the development of skills beneficial for learners’ future endeavors. However, it is important to recognize that

students who face challenges in traditional classroom settings may encounter even greater difficulties in an online environment as noted by some researchers.

The freedom afforded by online learning undoubtedly places a heightened level of responsibility on the student (Andrey Koptelov & Stephen Turner 2020). It is essential for students to possess strong organizational skills and a high degree of self-management. Consequently, online learning may not be suitable for younger students in elementary or middle school. However, when applied in the right context, online learning can serve as a powerful educational tool. Recent studies indicate that students engaged in blended learning courses tend to outperform their peers in traditional face-to-face settings. This finding underscores the notion that technology and online learning yield positive results only when implemented appropriately. To ensure student success and enhance the online learning experience, educators must also strive to cultivate a supportive online classroom environment.

The extensive definition and supporting arguments surrounding online learning suggest that web-based training can be classified as a form of online learning. Hall (1997) characterized web-based training as educational content delivered via the Internet or a company's intranet. According to Hall, access to this training is facilitated through web browsers such as Netscape Navigator. Furthermore, Hall and Snider (2000) described e-learning as the process of acquiring knowledge through computers connected to the Internet and intranets. They further elaborated that e-learning is synonymous with web-based training, online training, distributed learning, or technology-enhanced learning. Hall (2000) asserted that e-learning represents a lifelong learning journey, accessible at any time and from any location to fulfill specific needs or desires. Consequently, the evolving definitions indicate that terms such as web-based training, online learning, e-learning, distributed learning, internet-based learning, and net-based learning are interconnected (Hall & Snider, 2000; Urdan & Weggen, 2000).

Jaggars and Bailey (2010) found that online education demonstrates a modest advantage over traditional education regarding student outcomes. However, these enhancements were primarily observed in contexts where online instruction was combined with face-to-face interaction, suggesting that other instructional components may have contributed to the observed improvements rather than the mode of instruction alone (Means, Toyama, Murphy, Bakia, Jones, 2010).

In the same vein, Omotosho (2015) argues that online education has revolutionized the way people access knowledge, bridging geographical and socio-economic gaps, and making global learning more accessible. He further reiterates that online education has increased access to quality education, especially for marginalized groups, by providing equal access to educational resources, regardless of geographical location or socio-economic status.

Certain media outlets took advantage of this situation to highlight the benefits of web-based learning and advocated for its broader implementation (Figlio, D. N., Rush, M., Yin, L. (2010). In contrast, three additional research organizations—the National Bureau of Economic Research (June 2010, Cambridge, MA) and the Community College Research Center at

Teachers College–Columbia University (July 2010, New York, NY)—determined that the current body of research on online learning is notably insufficient: the field has yielded very few rigorously conducted experimental studies, and even fewer have been both meticulously designed and tested in relevant contexts (Bowen, W. G, 2012). This indicates that institutional decisions to transition classes online have primarily been driven by economic factors rather than evidence of enhanced student outcomes.

Despite some disagreements among the authors, they reached consensus on two key findings: Firstly, there is no definitive evidence to assert that fully online instruction, in a standard full-term-length, for-credit college course, is either superior to or inferior to traditional in-person instruction (Means et al. 2009; Jaggars & Bailey, 2010).

### **Theoretical Framework**

This research is anchored in several theoretical frameworks, including the Diffusion of Innovations (DOI) Theory proposed by Rogers in 1962, the Technology Acceptance Model (TAM) developed by Davis in 1989, the Social Cognitive Theory (SCT) introduced by Bandura in 1986, the Modernization Theory (MT) articulated by Lerner in 1958, and the Human Capital Theory (HCT) posited by Becker in 1964.

- The Diffusion of Innovations (DOI) Theory (Rogers, 1962) serves as a foundational element for examining the subject of this study, titled “From Myth to Reality: The Transformative Power of Online Education in Development.” This theory elucidates the mechanisms through which new ideas, technologies, or innovations are disseminated and embraced by individuals and communities. In this context, online education represents the innovation that is being adopted and propagated within developing nations. The theory provides insights into the transition of online education from a perceived myth to an established reality, as well as its acceptance and integration within the educational framework. In other words, the theory elaborates on the processes through which new ideas, technologies, or innovations are disseminated and embraced by individuals and societies, with online education being the focal innovation in Nigeria and across Africa.
- The Technology Acceptance Model (TAM) (Davis, 1989) offers a framework for understanding how users develop attitudes and intentions regarding the use of technology. Within the scope of this study, TAM is instrumental in identifying the attitudinal obstacles that hinder the adoption of online education particularly in Nigeria.
- Social Cognitive Theory (SCT) (Bandura, 1986) elucidates the mechanisms through which individuals learn and acquire new behaviors via observation, imitation, and reinforcement. Within this framework, SCT offers valuable insights into how educators, learners, and employers can be motivated to embrace online education as equal to conventional mode of learning that can equally help Nigeria, and Africa at large drive developmental agenda.

- Modernization Theory (MT), as articulated by Lerner in 1958, outlines the transformation of societies from traditional to modern or from non-industrialized to industrialized structures, driven by improvements in technology and education. This research highlights how MT contributes to a deeper comprehension of the essential function of online education in promoting societal advancement and sustainable development, as it facilitates widespread access to education for all interested individuals at a more convenient and cost-effective rate compared to traditional in-person classroom settings.
- Human Capital Theory (HCT) (Becker, 1964) posits that investments in education and training are crucial for economic growth and development. In this regard, HCT underscores the significance of online education in cultivating human capital essential for sustainable development.

The aforementioned theoretical frameworks collectively offer a comprehensive perspective on the challenges and opportunities related to the adoption of online education in Nigeria and Africa. They serve as a foundation for exploring solutions that can harness the transformative potential of online education for sustainable development. Consequently, an understanding of these five theories can yield critical insights into the adoption, acceptance, and impact of online education in developing nations, illustrating its capacity to drive transformative change for development.

### **An Examination of the Rise of Online Education in Africa**

The rise of online education in Africa is a phenomenon that has gained significant momentum in recent years, driven by factors such as increasing internet penetration, mobile technology adoption, and government initiatives (Adebara, 2018; UNESCO, 2020). This essay examines the rise of online education in Africa, drawing on relevant literature to explore the benefits, challenges, and future prospects of this emerging trend. According to a report by the International Finance Corporation (IFC), online education has the potential to increase access to quality education for millions of Africans, particularly in underserved communities (IFC, 2019). This is supported by the work of Oyeleke and Oyekale (2017), who found that online education can reduce barriers to education, such as geographical distance and financial constraints.

The historical development of open and distance education in Nigeria can be traced back to the era of correspondence education, which aimed to prepare individuals for the General Certificate in Education, a prerequisite for the London Matriculation Examination. Omolewa (1982) emphasized that since 1925, numerous prominent Nigerian leaders, including Eyo-Ita and H.O. Davies, successfully completed the London Matriculation Examination through correspondence education. This mode of education also enabled notable figures such as E.O. Ajayi, Alvan Ikoku, and J.S. Ogunlesi to earn University of London degrees in philosophy in the years 1927, 1929, and 1933, respectively.

In the contemporary Nigerian university landscape, the year 1974 marked the formal introduction of distance education. During this time, the University of Lagos established the Correspondence and Open Studies Units (COSU), which is now known as the Distance Learning Institute. Four years later, in 1978, Ahmadu Bello University initiated the Correspondence and Teachers' In-service Programmes (TISEP), providing specialized training for mid-level educators. Additionally, in 1988, the University of Ibadan, through its Department of Adult Education, founded the Centre for External Studies (CES), which has since been renamed the Distance Learning Centre (DLC).

These developments have been mirrored by several other universities in Nigeria, including the University of Abuja, which established the Centre for Distance Learning and Continuing Education. Furthermore, the National Open University of Nigeria (NOUN) was founded in 1988, although it was closed for 16 years before being reopened in 2001 during the administration of former President Olusegun Obasanjo. The recent advancements in the establishment of open and distance education have gained significant traction in nearly all tertiary institutions in Nigeria, encompassing both public and private higher education establishments.

However, challenges persist, including infrastructure limitations (Adebara, 2018), digital literacy gaps (UNESCO, 2017), and concerns around quality assurance (Materu, 2019), coupled with inadequate financial resources. Despite these challenges, the literature suggests that online education can enhance the quality of education in Africa, particularly in areas such as teacher training and professional development (Kwame, 2017). Put differently, Africa's education sector has long faced numerous challenges, including inadequate infrastructure, shortage of qualified teachers, and limited access to quality educational resources. However, the advent of online education has revolutionized the way Africans access knowledge, offering a beacon of hope for the continent's education landscape.

The global Internet is experiencing exponential growth, driven by innovative approaches to thinking, learning, communication, and social interaction, significantly transforming various facets of human life on a daily basis. Nevertheless, the advantages of the Internet are not uniformly distributed across African nations or within individual countries on the continent. It is noteworthy that, although Africa initially faced challenges in leveraging cyber-technology, the usage of the Internet is now expanding rapidly, making its transformative effects increasingly available to both educators and students in Africa (Towela and Tesfaye, 2015). Clearly, technology plays a pivotal role in the development, planning, and implementation of online education. It is not surprising that technology has enabled individuals to access educational opportunities, overcome information barriers, and utilize remote resources across geographical boundaries. Consequently, the effective and judicious application of technology in facilitating learning will not only lead to significant changes in the teaching and learning processes but will also promote active engagement in educational interventions, fostering a constructive and inquisitive mindset (Brimoh, 2015).

Numerous factors have played a significant role in the expansion of online education in Nigeria and across Africa. Key contributors include the rising internet penetration, which has markedly increased access to online educational materials; the proliferation of mobile technology, which has rendered online learning more accessible and user-friendly; and various government initiatives aimed at promoting online education, acknowledging its potential to tackle challenges within the education sector. Notably, online education has brought both advantages and obstacles to Nigeria and the African continent as a whole. The future potential of online education in Africa is substantial. If effectively leveraged, the prospects for online education include: sustained growth, propelled by enhanced internet access and the widespread use of mobile devices; innovation, as emerging technologies such as artificial intelligence and virtual reality improve online learning experiences and foster development; and collaboration, where partnerships among governments, private sector entities, educational institutions, and international stakeholders will be essential in overcoming challenges and ensuring the longevity of online education initiatives, thereby contributing to broader social, economic, and political advancement.

At the onset of this millennium, African nations have witnessed a consistent increase in Internet penetration, rising from 0.78% in the year 2000 to 20.71% by 2014, as reported by the International Telecommunications Union (ITU) in 2014. It is crucial to recognize that this progress is not uniformly experienced across the continent. Nations such as Botswana, Egypt, Kenya, Morocco, Rwanda, Senegal, South Africa, Nigeria, and Tunisia have made notable strides in broadband connectivity, thereby fostering greater citizen participation in political discourse, economic endeavors, educational progress, and the reduction of socio-cultural barriers. However, certain regions in Nigeria still encounter difficulties due to limited Internet access, which undermines the effectiveness of open distance education.

The potential for leveraging the Internet as an educational resource in Africa is substantial. The ITU reported in 2016 that over a quarter of the African population, approximately 341 million people, had access to the Internet, with a considerable number being potential learners. Furthermore, more than half of the population owns mobile phones. There has been significant progress in broadband connectivity at both national and international levels, driven by the development of national backbone networks and various submarine cables along the continent's western and eastern coasts over the last decade. Recently, there is adequate broadband capacity to support the initiatives of these countries in achieving the Sustainable Development Goals, particularly in fostering interactive and equitable learning opportunities.

As per the data from the International Telecommunication Union (ITU) in 2016, over one-third of the population in Africa has access to the Internet. This presents a considerable opportunity for the Internet to transform the traditionally rigid educational system in Africa into a more interactive and learner-focused model. Significant progress has been made in areas such as digital classrooms, cloud computing, massive open online courses (MOOCs), social media learning, one-to-one computing, and mobile learning, which have collectively

improved the prospects for Internet-based education that can overcome geographical disability, gender, and other social and economic barriers. Moreover, existing literature emphasizes the necessity for collaboration among governments, private sector entities, and educational institutions to tackle the challenges associated with online education in Africa (IFC, 2019; Materu, 2019). A prime example is the African Virtual University (AVU), which has effectively utilized partnerships to broaden access to quality education throughout the continent (AVU, 2020).

Unfortunately, Africa, and Nigeria in particular, faces considerable challenges in harnessing cyber technologies to improve educational outcomes. These challenges include a shortage of qualified educators capable of effectively using and adapting to new technological tools for teaching and delivering various educational services, a lack of modern equipment essential for facilitating open and distance learning, an inadequate supply of compliant reading materials for online education, and insufficient personnel to cater to the growing number of learners on online platforms.

Conclusively, the emergence of online education in Africa offers a significant opportunity for transformation within the continent's educational framework. Despite the existing challenges, the advantages of online learning, when paired with ongoing innovation and collaboration, are poised to propel the advancement of this burgeoning trend, thereby improving the educational environment in Africa and promoting widespread development.

### **The Exploration of the Transformative Impact of Online Education on Development: the Nigerian Experience**

The transformative impact of online education on development has been a subject of increasing interest globally, with Nigeria being no exception. This essay explores the transformative impact of online education on development in Nigeria, examining its effects on access, quality, and economic growth, and supporting arguments with relevant examples and literature.

Access to education is a significant challenge in Nigeria, with over 10 million children out of school (UNICEF, 2020). Online education has bridged this gap, providing access to quality educational resources, particularly in underserved communities (Adebara, 2018). For instance, the Nigerian government's adoption of online education has increased access to education, especially for girls and women, promoting gender equality (The National Digital Economy Policy and Strategy 2020). The example of the Nigerian Virtual University (NVU) illustrates this, with its online programs reaching over 10,000 students across the country (NVU, 2020), and the National Open University Nigeria (NOUN) with over 70,000 enrollments in 2018.

Online education has also enhanced the quality of education in Nigeria. The use of digital resources and multimedia content has improved student engagement and learning outcomes (Oyeleke & Oyekale, 2017). Furthermore, online education has enabled Nigerian universities to collaborate with international institutions, promoting global standards and best practices (African Virtual University, 2020). The University of Lagos's online degree program is a

notable example, with its interactive online platform and virtual classrooms enhancing the learning experience. Likewise, the online degree programs at the University of Ibadan, Obafemi University, among others in Nigeria.

The economic impact of online education in Nigeria has been significant. Online education has created new job opportunities in the education sector, contributing to economic growth (World Bank, 2019). Additionally, online education has equipped Nigerians with skills relevant to the digital economy, enhancing their employability and entrepreneurship prospects (The National Digital Economy Policy and Strategy 2020). The example of Andela, a Nigerian online learning platform, illustrates this, with its graduates employed by top tech companies globally (Andela, 2020).

The absence of a standardized code of conduct presents a significant challenge in ensuring quality engagement and commitment levels among tutors and teachers towards learners in online platforms. If this issue is not adequately addressed, it may exacerbate the disparity in the quality of teaching and learning experiences between online students and those in traditional face-to-face classrooms. Furthermore, the lack of support and commitment from government and policymakers, particularly in subsidizing internet access for tertiary institutions operating in an online mode, hinders both teachers and learners from effectively utilizing the internet for educational and research purposes.

Moreover, there exists a concerning trend of suppressing the right to freedom of information, particularly by governmental authorities. Such suppression poses serious risks to the sustainability of open and distance education, as access to information is crucial for quality education, effective governance, and sustainable development. Similarly, Materu, (2019), observed various challenges, including infrastructure limitations, digital literacy gaps, and quality assurance concerns (Materu, 2019). Addressing these challenges requires a collaborative effort from government, private sector players, and educational institutions. The Nigerian government's National Digital Economy Policy is a step in the right direction, aiming to address infrastructure and digital literacy gaps (The National Digital Economy Policy and Strategy 2020)).

Despite the numerous challenges facing online education, it holds significant potential to cultivate a workforce adept in utilizing information and communication technology (ICT) and other technological tools, thereby contributing positively to the development of the 21st-century digital economy and transforming their communities. As noted by Sharma and Mishra (2007), the ongoing increase in demand for higher education and human development training, alongside a transition from labor-intensive to knowledge-intensive global workforces, has led to the rapid growth and expansion of e-learning, which in turn has fostered the advancement of open distance education.

In conclusion, online education has had a transformative impact on development in Nigeria, enhancing access, quality, and economic growth. Continued innovation, investment, and collaboration are necessary to fully harness the potential of online education in driving sustainable development in Nigeria.

The transformative influence of online education on Nigeria's development has produced considerable advantages, notwithstanding certain challenges. Societal Advancement and Innovation: Online education has expanded access to high-quality educational resources, effectively narrowing the gap for marginalized communities (Adebara, 2018) and fostering gender equality (The National Digital Economy Policy and Strategy 2020). Institutions such as the Nigerian Virtual University and the National Open University Nigeria serve as prime examples of this achievement. Economic Growth: Online education has generated employment opportunities, bolstered economic growth (World Bank, 2019), and equipped Nigerians with essential skills for the digital economy, thereby improving employability and entrepreneurial prospects (The National Digital Economy Policy and Strategy 2020), among other benefits.

It is clear that online education has significantly reshaped Nigeria's development landscape by improving access, quality, and economic growth. To fully realize the potential of online education for sustainable development, it is crucial to address existing challenges through innovation, investment, and collaborative efforts.

### **Discussion of Findings/Results, Conclusion, and Recommendations**

#### **Findings:**

Drawing from the theoretical frameworks and literature review, the following conclusions and results have been established: Significant obstacles to the adoption of online education are present in Nigeria and Africa. These include a shortage of qualified online instructors, persistent infrastructural inadequacies, high internet connectivity costs, and ongoing attitudinal barriers among learners who often view themselves as inferior to their peers in traditional classroom settings. Additionally, there is employer bias against graduates of online education, insufficient investment in online educational modes by school management and owners in Nigeria, and the risk of misinformation and miseducation.

Furthermore, there is a limited awareness and understanding of the benefits of online education among educators, learners, and employers in Nigeria and Africa. The prevalence of inadequate digital literacy skills among both educators and learners further impedes the effective adoption of online education. Additionally, systemic inequities in access to online educational opportunities contribute to the digital divide, thereby obstructing sustainable development.

Similarly, this research indicates that there are considerable obstacles to the adoption of online education in Nigeria and across Africa, which include:

1. A lack of qualified online instructors
2. Inadequate infrastructure (such as unreliable internet and insufficient technology)
3. High costs associated with internet access
4. Learners' perceptions of inferiority compared to traditional classroom students
5. Employers' prejudice against graduates of online education
6. Limited financial investment in online education by educational institutions

7. The potential for misinformation and miseducation
8. Low levels of awareness regarding the benefits of online education among educators, learners, and employers
9. Insufficient digital literacy skills among both educators and learners
10. Systemic disparities in access to online education

The findings also revealed positive correlations as follows:

The adoption of online education is associated with:

1. Enhanced educational outcomes
2. Greater access to quality education
3. Economic growth and development
4. Improved political progress and governance
5. Effective and widespread educational initiatives

### **Summary**

While online education encounters significant challenges in Nigeria and Africa, its successful implementation can result in better educational outcomes, economic development, and political progress. It is essential to address these barriers to fully realize the potential of online education.

### **Recommendations.**

It is essential to implement effective strategies to tackle the challenges faced in online education. These strategies include enhancing the skills of online tutors, investing in digital infrastructure, providing affordable internet access, promoting positive attitudes towards e-learning to alleviate technological fears, and reinforcing quality assurance mechanisms to ensure high standards in online education while reducing the risks of misinformation and miseducation.

The outcomes of this research offer significant insights into the challenges and opportunities related to the adoption of online education in Nigeria and across Africa. They provide a foundation for evidence-based solutions aimed at leveraging the transformative potential of online education for sustainable development. Furthermore, these findings serve as a guide for policymakers, educators, and stakeholders to advance the promotion of e-learning in Africa through various initiatives.

### **Policy Recommendations:**

- Formulate and execute a thorough online education policy framework that encompasses infrastructure, accessibility, quality, and affordability.
- Create a national online education platform aimed at ensuring equitable access to high-quality educational resources and opportunities.
- Allocate resources towards the enhancement of digital infrastructure, including internet connectivity and device availability, to serve underserved communities.

- Initiate capacity-building initiatives for online tutors and educators to improve their digital literacy and teaching methodologies.
- Encourage public-private partnerships to maximize resources, expertise, and funding for online education projects.
- Establish and enforce quality assurance protocols to maintain the integrity and effectiveness of online education programs.
- Initiate a nationwide awareness campaign to overcome attitudinal barriers and highlight the advantages of online education.
- Launch a national digital literacy initiative to equip citizens with vital skills necessary for the digital era.
- Offer incentives for the adoption of online education, including scholarships, grants, and tax incentives.
- Promote regional and international collaborations to exchange best practices, resources, and expertise in online education.
- Create tailored online education models that address the specific needs and challenges faced by Nigeria and Africa.
- Set up a research and development fund to foster innovation and entrepreneurship within the realm of online education.

### **Conclusion**

This study clearly demonstrates that online education has the capacity to significantly contribute to sustainable development in Nigeria and across Africa, despite facing substantial challenges. It is essential to tackle issues such as the shortage of qualified instructors, inadequate infrastructure, and the high costs of internet access. Collaborative initiatives among various stakeholders, including government entities, the private sector, and educational institutions, are vital to: Implement targeted strategies that address attitudinal barriers; Enhance digital literacy competencies; Raise awareness of the advantages of online education; and Improve infrastructure and internet accessibility.

By leveraging technology, promoting innovation, and fostering collaboration, Nigeria and Africa can realize the full potential of online education, bridge the digital divide, and advance societal development.

In summary, this research has illustrated that online education possesses the capacity to serve as a transformative catalyst for sustainable development in Nigeria and across Africa; however, its implementation faces considerable obstacles. Notwithstanding these difficulties, the advantages of online education—such as greater accessibility, enhanced quality, and stimulated economic growth—render it a vital instrument for promoting societal progress. To fully capitalize on the potential of online education, it is essential to tackle the shortage of qualified online instructors, insufficient infrastructure, and the prohibitive costs associated with

internet access. Furthermore, it is necessary to address attitudinal challenges and the dangers of misinformation and miseducation through focused interventions.

This study advances the existing knowledge of online education in relation to development, highlighting the importance of customized approaches that address the unique challenges faced by developing nations. Moving from misunderstandings to concrete results, online education can act as a crucial tool for transforming the lives of individuals, communities, and countries, thus fostering sustainable development in Nigeria and throughout Africa.

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