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## **ARTIFICIAL INTELLIGENCE AND DIGITAL CONNECTIVITY AS CATALYSTS FOR ENHANCED ACCESS TO HIGHER EDUCATION IN NIGERIA. BENEFITS AND CHALLENGES**

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### **ABSTRACT**

Artificial Intelligence (AI) has rapidly become a cornerstone of innovation across various sectors globally, with higher education being no exception. In Nigerian higher education, AI holds the potential to revolutionize the teaching, learning, and administrative processes, offering novel solutions to long-standing challenges. AI can streamline university administration by automating routine tasks such as admissions, grading, and scheduling, thereby freeing up time for more critical academic functions. This paper aims to analyze the opportunities and threats associated with AI in Nigerian higher education by exploring its potential applications, benefits, and the challenges to its widespread adoption. Some of the benefits of AI include enhanced students experience, eliminating bias and personalized recommendations. Challenges that were identified in this paper include insufficient infrastructure, limitation of available funds etc. it was suggested among others for a significant improvement in Power supply and dependable internet connectivity, government and non-governmental organization should invest more in AI research and development and also Institutions should train staffs on the use of AI tools.

**KEYWORDS:** Artificial Intelligence, Digital connectivity, Access, higher education.

### **INTRODUCTION**

Higher education is crucial to every society. It is a necessary instrument for self-empowerment and national development. It is generally viewed as the process of acquiring knowledge and skills which enables individuals to be useful to themselves and the society at large. Education has always been linked to the quality of life of an individual. It is often believed that an

individual who possesses some level of higher education can afford the good things of life which could drive the pressure for access into higher institutions. According to Obanya (2010), Higher education is central to development and democracy, increased earned income and better working conditions. It is also very important because of its role in producing leaders in all areas such as government parasatals, Manufacturing, innovation and invention (Nwachukwu& Okoli, 2015). Higher education plays vital role in cultural transmission, social integration, selection and allocation, and personal development.

Access to higher education in Nigeria has continually been a struggle for applicants every year. Despite the increasing number of higher institutions, universities continue to struggle with challenges that have to do with limited institutional capacity and inadequate infrastructure. As global education evolve through digital transformation, higher institutions in Nigeria ought to harness the potential of Artificial Intelligence (AI) to address long standing barriers to access of higher education and strategically deploy AI tools to overcome geographic, financial and infrastructural limitations. By embracing AI, the rigorous process of access into higher institutions can be reduced and become stress free for both applicants and higher institution administrators. , AI holds the potential to revolutionize the teaching, learning, and administrative processes, offering novel solutions to long-standing challenges such as inadequate infrastructure, large class sizes, and limited access to personalized learning (Alimi et al., 2020). As the world becomes increasingly digital, universities in Nigeria are being encouraged to explore AI's capabilities in enhancing academic performance, improving student engagement, and streamlining administrative tasks (Akinyemi et al., 2021). While the promise of AI in transforming education is immense, there are considerable hurdles that must be addressed for its effective integration, particularly in the context of Nigeria's challenges, such as economic disparities, inadequate technology infrastructure, and a lack of skilled personnel to manage AI systems (Nwokolo, 2022). AI's application in education can range from intelligent tutoring systems that provide personalized learning experiences to AI-driven tools for student assessment, predictive analytics, and administrative automation (Ogunyemi et al., 2020). The introduction of AI in Nigerian tertiary institutions offers significant opportunities for improving teaching methods and addressing gaps in student learning outcomes, particularly in remote and underserved areas (Ajayi & Ogunleye, 2021) . AI tools have the potential to provide students with immediate feedback, create adaptive learning environments, and enable educators to tailor their teaching methods to individual needs.

The internet has gone beyond Google and social media platforms. Globally, AI tools are redefining how students learn, how teachers teach and also how higher institutions operate. Artificial Intelligence and digital connectivity has completely transformed administration in higher institutions. Universities can expedite administrative duties, manage vast data and also predict future trends (Olusegun, 2024).

This study aims to analyze the opportunities and threats associated with AI in Nigerian higher education by exploring its potential applications, benefits, and the challenges to its widespread adoption. This research seeks to inform policymakers, educational leaders, and technology developers on how best to navigate the complexities of AI integration in the sector.

## **Conceptual Review**

### **Artificial Intelligence**

Artificial intelligence is the programming of a computer to “think and act” smart. According to Haenlein and Kaplan (2019), artificial intelligence is the ability of system’s to interpret external data to achieve specified tasks. In other words, it is task performed by a computer with available data. These tasks include understanding language, recognizing images or voices, learning from data and making decisions. Artificial intelligence enables computers to think like humans, solve problems and can also make predictions. Examples of AI are ChatGPT, Siri/Alexa, Google translate, GitHub Copilot etc

According to Stryker and Kavlakoglu (2024), Artificial intelligence can be categorized into two. AI based on capability and AI based on functionality. The first category is grouped into three which are Artificial Narrow Intelligence, Artificial general intelligence and Super Artificial Intelligence. Some of the benefits of Artificial Intelligence are; Automation of repetitive tasks, few human errors, ability to analyze vast data etc.

### **Digital Connectivity**

Digital connectivity also means Digital Access. It is the ability of individuals to communicate and share data through the use of Information and Communication Technology (ICT). According to Aho and Eraye (2023), Digital Connectivity is the process of communication and transfer of data/information among individuals using electronic channels. Consequently, Hejimens (2019) asserted that digital connectivity is made possible through the availability of telecommunications infrastructure. It is safe to say that digital connectivity has significantly impacted individuals and the society by accomplishing complex and simple task with modern

advancement. Digital devices like mobile phones, ipad, e-books offer lightweight and convenient alternatives to large textbooks /notebooks. Shaheen and Shaikh (2024) highlighted some of the benefits of digital connectivity in education which are; Access to educational resources such as e-books, collaboration and communication (online forums, video conferencing), enhanced interaction and research.

### **Access to higher Education**

Higher education encompasses all types of education provided by universities, polytechnics, college of education, technological institutes etc which are intended for students having completed a secondary education and whose objective is the acquisition of a title, a degree, certificate or diploma of higher education. Access to higher education is an unhindered right and opportunity to enroll, attend and complete a post-secondary education in order to acquire the knowledge and skills needed for individual and societal development. According to Amaonye et al (2022), an individual has access to education when he is able to enroll in educational institutions, attend classes, complete the duration of the study and probably proceed to the next educational level. Nwogu (2015) also emphasized that for education to be considered equitably accessible; there is need for individuals from all socio-economic strata to have access to formal education. Accessibility to higher education in recent times can be seen as a struggle due to the inability of institutions to provide admission slots for applicants.

Enhanced access to higher education means improved or increased access to higher education. This is an increase in the number of individuals who would gain access into higher institution. Mahabub (2014) stated that the desire and demand for education is increasing and the need for improvement is necessary. He went further to highlight some of the challenges in accessing higher education in Nigeria which are; Economic constraint, low absorptive capacity of institutions, inadequate public funding, insufficient infrastructure and poorly equipped facilities, quota system. These according to Mahabub have hindered access to higher education in Nigeria. To make higher education a catalyst for the creation of sustainable, innovative and equitable societies, government and universities have to develop policies to make colleges and universities more accessible (UNESCO, 2017).

## **The role of Artificial Intelligence and Digital Connectivity in Expanding Access to Higher Education**

Before now, education could only be accessed within the four walls of a higher institution which were geographically bound and required physical presence, but with the rapid growth of the internet, mobile devices, and online platforms, education is no longer confined to traditional classrooms. Education can now be accessed remotely, at any time and from any location enabling greater access for learners across the globe. Artificial intelligence and digital technology has opened new avenues for learning, especially for underserved populations and regions with limited educational infrastructure by focusing on online learning platforms, Massive Open Online Courses (MOOCs), and mobile learning applications. Hushin,(2025).

Artificial intelligence (AI) is rapidly reshaping higher education, making significant improvements in teaching, learning and administrative functions. As artificial intelligence tools and technologies become more integrated into academic environments, universities can increase their operational efficiency, reduce the burden of administrative tasks, and offer students more personalized ways of learning. These developments not only improve traditional educational models, but also lead institutions to rethink their approach to teaching and learning.

Anderson, (2024) identified some of the roles of artificial intelligence in enhancing access to higher education;

- 1. Operational Efficiency:** Higher institutions can significantly enhance their operation through artificial intelligence by analyzing vast data for better strategic planning, auto-verify documents and fill repetitive forms, future predictions or resource planning etc
- 2. Automated Application Screening:** AI enables higher institutions to screen the application of thousands of applicants by quickly filtering incomplete or ineligible submissions based on the stipulated criteria.
- 3. Automated Interviews:** AI-powered chat bots can conduct interviews of applicants, allowing institutions to access candidates remotely and analyze response which would provide an insight into applicant suitability for the program.
- 4. Document Verification:** Academic transcript, recommendation letters and other documents can be verified by automatically scanning and comparing documents against a recognized template. This helps in reducing manual errors and detecting forged documents.
- 5. Predictive Analytics:** by embracing AI, higher institution can analyze past admission data and predict future applications which would enable them make adequate preparations and planning to accommodate more candidates.

### **Benefits of AI and Digital Connectivity for enhanced access to Higher Institutions**

The following are some of the benefits of Artificial intelligence and digital connectivity for enhanced access to higher institutions.

1. **Eliminating Bias:** the advent of AI could reduce or completely eliminate bias such as race, social economic background or favoritism. AI algorithm can be designed to eliminate such bias and ensuring a fair process.
2. **Personalized Recommendations:** AI algorithm can offer personalized recommendations to applicants which helps them to make informed decisions about their academic journey. AI can guide students towards the best fit.
3. **Enhanced Student Experience:** AI can guide students navigate the admission process smoothly. It can provide instant responses to common queries and alleviate the stress and uncertainties students face during this phase.

### **Challenges of Implementing Artificial Intelligence in Higher Institutions**

Nigeria has several substantial obstacles in the adoption and application of Artificial Intelligence (AI). In order to guarantee the proper integration and deployment of AI technologies in the country, it is imperative to tackle these challenges. The primary obstacles are deficiencies in infrastructure, restricted proficiency, ethical and legal considerations, data accessibility and quality, financial limitations, and public knowledge and acceptance.

#### **1 Insufficiency in infrastructure**

The insufficiency of Nigeria's infrastructure poses a significant obstacle to the deployment of AI.

In order to properly implement AI solutions, it is crucial to have dependable internet connectivity, strong data storage facilities, and the ability to utilize modern computer resources. Nevertheless, some areas in Nigeria continue to have unreliable and sluggish internet connections, frequent disruptions in power supply, and restricted availability of contemporary technology. The presence of this digital gap not only impedes the successful application of artificial intelligence, but also intensifies pre-existing socio-economic disparities. In order to take full use of AI technologies, significant expenditures in enhancing the nation's digital and physical infrastructure are required (Oyediran et al., 2021).

## **2. Limitations on available funds**

Implementing and launching AI technology need substantial financial resources. AI innovation in Nigeria faces significant obstacles due to financing restrictions. Some companies, namely startups and small firms, face difficulties in obtaining the requisite finance for artificial intelligence (AI) initiatives. Government financing for AI research and development is insufficient, necessitating more investment from both public and private sectors. Obtaining financial assistance is crucial for constructing the necessary infrastructure, procuring cutting-edge technology, and cultivating the human resources required for AI (Akinyemi et al., 2021).

## **3. Restricted Proficiency**

One significant obstacle is the limited availability of proficient experts with competence in AI and its associated domains. Nigeria is confronted with a substantial deficiency of expertise in the areas of AI development, implementation, and maintenance. Many educational institutions in the nation have incomplete AI curriculum and offer limited chances for practical training and hands-on experience. The lack of specialized knowledge hinders firms from internally developing and implementing AI solutions, as well as from outside acquiring the required personnel. In order to tackle this issue, it is necessary to implement focused educational programs and professional development activities that seek to cultivate a skilled AI workforce (Adepoju et al., 2022).

## **4. Promotion of public knowledge and approval**

The effective adoption of AI technology relies heavily on the crucial factors of public knowledge and acceptance. The Nigerian population generally lacks awareness and comprehension of artificial intelligence (AI). AI adoption might be hindered by misconceptions and anxieties, including worries about job loss and privacy concerns. It is imperative to enhance public knowledge through educational initiatives and outreach activities in order to foster confidence and embrace AI technology. Emphasizing the advantages of artificial intelligence (AI) and openly addressing any worries from the public can contribute to creating a more supportive atmosphere for the acceptance and implementation of AI (Olanrewaju et al., 2020).

## **CONCLUSION**

Artificial Intelligence and Digital technology holds immense potential to revolutionize education and empower learners worldwide. By leveraging digital and AI tools effectively, educators, students and higher education administrators and can carefully navigate the process

of a more strategic and inclusive approach to AI adoption. . However, addressing the challenges associated with digital technologies is equally important to ensure equitable access, protect privacy, and foster critical thinking skills. By navigating these challenges thoughtfully, we can harness the full benefits of Artificial Intelligence and digital technologies to enhance access to higher institutions.

### **Suggestion**

Based on the challenges above, the following suggestions were made:

1. A significant improvement in Power supply and dependable internet connectivity
2. Government and non-governmental organization should invest more in AI research and development.
3. Institutions should train staffs on the use of AI tools.
4. Sensitization of the public on the advantages of Artificial Intelligence (AI).

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