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# Integrating Artificial Intelligence and Digital Connectivity in the Management of Distance and Open Learning Education: A Cade Study of Open University Umudike Umuahia, Abia State

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## Abstract

The study looked at artificial intelligence and digital connectivity in the management of distance and open learning education; A case study of Open and Distance University Umudike Umuahia, Abia State. Based on the purpose of the study two research questions guided the study. The study adopted a descriptive survey research design. The population of the study was 75 students running education programme presently in National Open University, Umudike Umuahia. The entire population constitute the sample; the instrument used for data collection was a researcher rating scale which was validated by an expert in measurement and evaluation and another one in educational management. The reliability index of 0.72 was obtained. Data collected were analyzed using mean score and standard deviation. The result of the study indicated that the benefits of artificial intelligence and digital connectivity among others are; it helps to personalize learning experience and increases student's administration. Some challenges are identified as inadequate technological infrastructures, limited access to internet, shortage of personnel etc. It was recommended among others that enough funds should be given to the management of open and distance learning institutions and there should be provision of skilled personnel with expertise in artificial intelligence.

**Keywords:** *Artificial intelligence, Integrating, Digital Connectivity, Management Open and Distance Learning Education*

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**Background to the Study**

The advancement of technology and globalization have caused several changes in the society. Currently artificial intelligence has stood out due to its numerous applications, possibilities and alternatives it offers to users. Integration of artificial intelligence and digital connectivity in the management of open and distance learning education will enhance quality teaching and learning; facilitate users' access to technological resources and tools. Integrating artificial and digital connectivity is all about transforming how we live and work, thinking smart devices and intelligent systems working together seamlessly. Artificial Intelligence devices connect and adapt to user's need and digital connectivity enable data flow for smarter choices.

Artificial intelligence according to Ndalu (2025) is the simulation of human intelligence in machines that are designed to think, learn, reasons and make decisions. Artificial intelligence system is capable of performance tasks that typically require human intelligence such as visual perception, speech recognition, decision making, language translation and problem solving. The drastic expansion of artificial intelligence is really changing how people live, work, learn, engage, manage and communicate (Wuda&Adamu2024). Digital learning encompasses a wide range of technological tools and platform that facilitate both teaching and learning process. These include e-learning management system, virtual classroom, educational apps and multimedia resources (Ariguzo, Nwebo & Uchegbu-Basil, 2025)

Digital connectivity according to Kanu, Uchegbu-Basil and Abanobi (2024) is the process of involving the use of computers and internet to transmit, retrieve and manipulate data in education and other system. This has changed the traditional pattern of doing business such as in education, digital connectivity has reduced the need for physical contact and movement. Robert (2023) in agreement to the above assertions expressed that digital connectivity in the management of open and distance learning education is the backbone that enable flexible interactive and inclusive education beyond traditional classrooms through digital tools and internet-based platforms such as e-libraries, digital textbooks, on-line courses and visual classrooms etc.

Open and distance learning education is the education that gives students who are unable to attend standard classroom sessions in person to have opportunity to be educated regardless of the person's location or schedule. Chiu (2021) sees distance and open learning education as teaching carried out remotely or on-line. Also, Moran (2002) declares that open and distance learning education is associated with the teaching and learning process mediated by technologies, where teachers and students are separated spatially or temporarily to support their learning experiences and management. In Nigeria, artificial intelligence and digital connectivity brought many great opportunities in the area of education such as student's activities, lecture notes, reports and memo writings as well as project writing.

Abayomi, et al (2021) in Wuda and Adamu (2024) are of the view that artificial intelligence and digital connectivity have brought both good opportunities and challenges to open and distance learning education in Nigeria. Hussein (2018) opined that artificial intelligence and digital connectivity in the management of open and distance learning education has the

potential to transform open and distance learning education by personalizing learning experiences, improving instructional designs, ensures accountability and transparency, increasing students support services, record keeping and efficient administration. According to Attwood and Bruster (2020), Artificial intelligence and digital connectivity in open and distance learning education is the application of artificial intelligence technological tools such as chatbots, robots, intelligence tutoring systems and automated evaluation of all forms of digital artifacts that supports and enhances visual learning and fosters teachers' understanding of students learning process, offers students more personalized and adaptative learning, and provides instantaneous feedback and machine supported enquiries anywhere and anytime. Cukurova, Kent and Luckin (2029) are of the view that these features possess the potential to significant learning, teaching, assessment, record keeping, communication and administration in the management of open and distance learning education. Artificial intelligence and digital connectivity support inclusivity by addressing the diverse needs of learners including those with disabilities or from marginalized communities by availing them with artificial intelligence driven assistive technologies such as text to speech for visually impaired students and real time language transition tools (Aljarah, et al 2021). Artificial intelligence and digital connectivity in the management of open and distance learning education enhances teacher's development by providing tools for teachers training, professional development and workload management with the available artificial intelligence powered platforms for continuous learning and performance evaluation. Artificial intelligence and digital connectivity in the management of open and distance learning education have the potentials to transform the way students learn and teachers teach, however open and distance educational managers in Nigeria face several challenges when trying to maximize the potentials of artificial intelligence and digital connectivity in the management of open and distance learning education in Nigeria. Okonkwo (2021) noted that these challenges are multifaceted and are influenced by the country's socio-economic conditions, lack of infrastructures, policy environment and the state of education system. Limited access to technology poses a significant challenge. Many open and distance learning institutions in Nigeria especially Umudike lack the necessary technological infrastructures to implement artificial intelligence. effectively. Izuagba, Igwe and Abanobi (2024) agree that these challenges include insufficient access to computers, internet connectivity and reliable electricity, especially in rural areas without these fundamental elements.

Deploying artificial intelligence tools in open and distance learning institutions remains a significant hurdle. Shortage of artificial intelligence expertise to integrate and manage artificial intelligence technologies within educational setting is a great challenge. Training programmes in artificial intelligence for educational purposes are limited which hampers the ability of the educational managers to effectively implement and sustain artificial intelligences and digital connectivity initiatives. Artificial intelligence and digital connectivity require significant investment in professional development and training which is often lacking due to budget constraints and policy gaps. Many open and distance learning institutions in Nigeria face the problem of implementing artificial intelligence due to its high cost of acquiring, developing and maintaining artificial intelligence technological tools. Government funding for education is always insufficient. Given the limited resources, educational managers most

times prioritize basic needs over technological management and outcomes (Pedro, et al 2019). It has also been observed that lack of artificial intelligence integrated curriculum is another challenge in the sense that the current educational curriculum in Nigeria does not fully integrate artificial intelligence and digital connectivity concepts or digital literacy which are necessary for preparing students for future and to ensure that curriculum content aligns with open and distance learning in Nigeria.` Artificial intelligence has changed many sectors and cultures and has positively impacted people lives and well-being, therefore its present realities demand integration of artificial intelligence and digital connectivity in the educational curriculum, to prepare and reshape teachers, students and educational managers to deal with the ever changing information age for proper adjustment in the wider society.

**Statement of the Problem**

Despite the potential opportunities of artificial intelligence and digital connectivity in the management of open and distance learning education in Nigeria, there are existences of significant challenges that hinder its effective integration.; these challenges are inadequate technological infrastructures, limited access to reliable internet and electricity, digital dichotomy between urban and rural dwellers, shortage of skilled personal with expertise in artificial intelligence, high cost of implementation and policy gaps. These challenges limit the ability of Open and Distant Learning Educational Institutions especially in Open and Distance learning in Umudike Umuahia Abia State to effectively utilize artificial intelligence for personalized learning, automated assessment, improved accessibility and efficient educational management that artificial intelligence and digital technologies can offer. It is therefore pertinent to address these challenges to achieve digital divides affecting rural and under resourced areas. The full opportunities of artificial intelligence integration in the management of open and distance learning education will ensure equitable, inclusive, and quality open and distance learning education management in Nigeria.

**Purpose of the Study**

The main purpose of the study is to investigate the integration of artificial intelligence and digital connectivity in the management of open and distance learning education in Nigeria, specifically the study sets to;

1. To ascertain the benefits of artificial intelligence and digital connectivity in the management of Open and Distance Learning Education in Nigeria.
2. To ascertain the challenges faced by Educational Managers of Open and Distance Learning Education in the application of artificial intelligence and digital resources.

**Research Questions**

1. What is the benefit of integrating artificial intelligence and digital connectivity in the management of Open and Distance Learning Education?
2. What are the challenges faced by Educational Managers of Open and Distance Education in the application of artificial intelligence and digital resources?

**Methodology**

The researcher adopted descriptive research design to investigate Integration of Artificial Intelligence and Digital Connectivity in the Management of Open and Distance Learning

Education in Nigeria. The population or the study was made up of 75 student running education programs presently in National Open University Umudike. Due to the size of the population, all the students were involved in the study, hence no sampling was done. The instrument used for data collection was a researcher made rating scale titled 'Artificial Intelligence and Digital Connectivity in the Management of Open and Distance Learning Education 'AIDCMODLE'. The instrument was rated on a four-point Likert scale of strongly Agree, Agree, Disagree, strongly disagree with numerical values, 4 ,3 ,2 and 1 and face to face content validity of the instrument were established by two experts in Measurement and Evaluation and one expert from Education Management. They scrutinized the contents of the questionnaires and offered useful corrections and suggestions, which influenced the modifications. Based on such corrections and suggestions, the instrument was considered suitable for the research being conducted. The reliability of the instrument was established with an index of 0.72 Cronbach alpha and it was considered high enough and suitable for use in this study. Data collected was analyzed using mean and standard deviation. An average result of 2.50 and above considered accepted while any below 2.50 was rejected.

**Results**

**Table 1:** Mean score and standard deviation on benefits of Integrating Artificial Intelligence and Digital Connectivity in the Management of Open and Distance Learning Education.

| S/N | Item Statement | X MEAN | S/D | Remark |
|---|---|---|---|---|
| 1 | Personalized learning experience. | 3.64 | 0.52 | Agreed |
| 2 | Improving instruction design. | 3.40 | 0.88 | Agreed |
| 3 | Ensures accountability and transparency. | 3.28 | 0.57 | Agreed |
| 4 | Enhances record keeping and efficient administrations. | 3.00 | 0.82 | Agreed |
| 5 | Balances student work and education. | 3.63 | 0.34 | Agreed |
| 6 | Enhance researcher's making decisions without waiting for manual processing. | 3.33 | 0.47 | Agreed |
| 7 | Promotes creative learning environment, more engaging classroom and artificial thinking skills. | 3.67 | 0.41 | Agreed |

The result in table 1 shows that respondents agreed that the 8 items are benefits of the AI and digital connectivity in the management of open and distance learning education as all the scores are above 2.50.

**Table 2:** Mean score on the challenges faced by Educational Managers of Open and Distance Learning Education in the Integration of Artificial Intelligence and Digital Connectivity.

| S/N | Item Statement | X MEAN | SD | Remark |
|---|---|---|---|---|
| 1 | Inadequate technological infrastructures. | 3.31 | 0.52 | Agreed |
| 2 | Limited access to reliable internet and electricity. | 3.63 | 0.58 | Agreed |
| 3 | Digital divides between urban and rural areas. | 3.61 | 0.61 | Agreed |
| 4 | Shortage of skilled personnel with expertise in artificial intelligence. | 3.03 | 0.03 | Agreed |
| 5 | High cost of implementation and policy gaps. | 2.99 | 0.20 | Agreed |
| 6 | Low levels of funding of education. | 3.32 | 0.49 | Agreed |
| 7 | Lack of service training on the use of artificial intelligence and digital connectivity. | 3.33 | 0.47 | Agreed |
| 8 | Lack of artificial integrated and digital connectivity in the curriculum | 3.61 | 0.63 | Agreed |

Results in the table 2 shows that respondents agreed that all items are the challenges faced by Educational Managers of Open and Distance Learning Education in the Integration of Artificial Intelligence and Digital Connectivity as all the mean score are above 2.50

**Discussion**

The study aimed at Integrating Artificial Intelligence and Digital Connectivity in the management of Open and Distance Learning Education in Nigeria using Umudike as a case study. Data in table 1 shows some benefits or opportunities Artificial Intelligence and Digital Connectivity offer in the Management of Open and Distance Learning Education. They include personalized learning experiences, ensures accountability and transparency, and increases students' administration. This is in line with the opinion of Hussein (2018) who opined that Artificial Intelligence, and Digital Connectivity in the Management of Open and Distance Learning Education has the potential to transform open and distance learning education.

Data in table 2 revealed that Integration of Artificial Intelligence and Digital Connectivity in the Management of Open and Distance Learning Education in Nigeria has enormous challenges. Some of the challenges include inadequate technological infrastructures, limited access to internet and unreliable electricity, shortage of skilled personnel with expertise in artificial intelligence, low level of funding, high cost of implementation and policy gaps, etc. This perception agrees with Izuagba, Igwe and Abanobi (2024) who noted that these challenges include insufficient access to computers, poor internet connectivity, unreliable

electricity especially in the rural areas, without these fundamental elements, deploying artificial intelligence tools in Open and Distance Learning Institutions remains a significant hurdle.

**Conclusion**

It can be concluded that artificial intelligence and digital connectivity in the management or open and distance learning education in Nigeria has many opportunities. Educational Managers, Lecturers, Facilitators and Students need to welcome this development to ensure equitable, inclusive, and quality teaching and learning in Open and Distance Education.

**Recommendation**

For optimal integration of Artificial Intelligence and Digital Connectivity in the Management of Open and Distance Learning Education in Nigeria, funds need to be mapped out for the provision of technological tools, access to regular reliable internet and electricity, skilled personnel with expertise in artificial intelligence, in-service training programmes for Educational Managers, Lecturers, Personnel and Students to make such integration have positive impact.

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