

MANAGING ARTIFICIAL INTELLIGENCE IN NIGERIA'S TERTIARY INSTITUTIONS FOR NATIONAL DEVELOPMENT

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Abstract

Tertiary education is the pivot of manpower training and national development in any country and it is expected that the integration of artificial intelligence (AI) in higher education would not only boost teaching and learning but also enhance administrative efficiency in Nigeria's higher institutions of learning. However, the challenges in reaping the benefits inherent in its adoption in a developing nation like Nigeria are quite enormous. Adopting a comprehensive review of existing literature this paper is a qualitative research which explored the relevance of artificial intelligence in Nigeria's tertiary institutions with respect to national development objectives. Specifically, this paper explored the impact of artificial intelligence on effective students learning, implementation of quality instruction and administrative efficiency. It also examined the hurdles in the adoption of artificial intelligence and how they can be managed to promote national development. The paper concluded that the adoption of AI platform in tertiary institutions of learning would act as a catalyst to national development in Nigeria. Finally, the paper recommended that Nigerian governments at state and federal levels should ensure adequate funding of tertiary institutions for the integration of artificial intelligence in all public tertiary institutions in Nigeria.

Keywords: Artificial Intelligence (AI), tertiary education, administrative efficiency and national development.

Introduction

Tertiary education is crucial for the socioeconomic development of any nation. The introduction and integration of AI applications at this level of education has often been referred to as a game changer in facilitating the objectives of higher education. It is therefore not surprising that most countries invest significant financial resources to ensure that tertiary institutions are well managed to fulfill their objectives to the society. But in a developing country like Nigeria, the management of tertiary institutions is faced with many challenges which often lead to their suboptimal performance in the implementation of their mandate. Some of these challenges include inadequate infrastructural facilities, shortage of experienced and skilled lecturers to implement the curriculum, inefficiencies in administration and poor management of resources. There appears to be a general believe that the adoption and integration of artificial intelligence could be used as a leverage to ameliorate or even solve some of the identified challenges facing our tertiary institutions of learning. The relevance of AI in increasing productivity and fostering administrative efficiency was buttressed by Mure?an (2023) who observed that AI has revolutionized administrative processes, increasing productivity and capabilities. In the same vein, Federal Ministry of Communication, Innovation and Digital Economy (2025) acknowledged that artificial intelligence (AI) is a tool for national development and Nigeria is making concerted efforts to foster sustainable growth, innovation, national productivity, and human well-being through AI solutions. The importance of AI in Nigeria's development was also emphasized by Ogunleye (2021) who observed that artificial intelligence (AI) has been identified as a potentially less costly and far-reaching tool to eradicate poverty and achieve the UN Sustainable Development Goals. Nevertheless, Nigeria is a developing country which needs to leverage on the immense benefits inherent in AI adoption to overcome some the challenges it is currently facing in managing tertiary education .Furthermore, Ughenu, Ukandu Okeke, Akpulue

& Ughamadu (2025) asserted that AI is crucial for educational institutions which are confronted with increasing demands for efficiency and quality, especially in the spheres of educational management and pedagogy. Tertiary education is important for the realization of Nigeria's developmental goals in terms of training the manpower that will harness her human and natural resources. Nevertheless, Nigeria's tertiary institutions are still grappling with enormous challenges in effective students learning ,implementation of quality instruction and administrative efficiency. The teaching and learning processes are still largely based on the traditional methods of face-to-face contact with students in academic delivery. In terms of data-driven decision making and administration, the processes are often based on manual and human efforts. These traditional approaches to teaching and learning and administration are quite slow and are fraught with a lot of challenges which militate against effective teaching and learning and administrative efficiency.

Artificial Intelligence has been described as a cutting -edge technology which can provide adequate solutions to these challenges through the incorporation of digital processes to aid teaching and learning and improve administrative efficiency in the management of human/material resources and timely decision making. However, the integration of AI in Nigeria's tertiary institutions has not been given adequate consideration due to many inherent challenges facing Nigeria's educational system. AI in Nigeria has the potential to provide a new frontier of economic opportunity as well as social development and sustainable growth. However, AI adoption in Nigeria is still in its infancy despite the growing number of tertiary institutions using AI solutions in education planning and management.. The Concept of Artificial intelligence

The 21st century can be rightly referred to as the century of artificial intelligence because of its widespread utilization and adoption in virtually all facets of human activities. Globally, artificial intelligence has taken the centre stage in every sphere of human activities due to its multiplier effects in enhancing productivity and providing solutions to diverse human challenges in education , finance ,administration, engineering, health etc. In education planning and management the ability of artificial intelligence to bring about tremendous changes has been recognized and conscious efforts are been made to widen the scope of its incorporation and integration in educational processes in tertiary institutions of learning . In a developing country like Nigeria, the potential of artificial intelligence as an important tool to overcome national development challenges could be quite daunting. It is therefore imperative to manage artificial intelligence as an innovative tool not only to overcome the numerous challenges in tertiary institutions but to also expand the opportunities inherent in it.

Artificial intelligence can be referred to as a potent tool to provide dynamic solutions to existing challenges in the educational sector. Ogunode (2023) defined AI as programs designed with human-like intelligence and structured in forms of computer, robot, or other machines to aid in provision of any kind of service or tasks to improve social economic and political development of the society. Artificial Intelligence technologies encompass various techniques and approaches, such as machine learning, deep learning, natural language processing, computer vision and robotics. Thus, AI can be referred to as the development of computer platforms and applications which could be used to provide robust solutions to tasks like learning, reasoning and decision making that require human intelligence (Igbokwe,2023).

In the academic space AI platforms and tools have greatly impacted pedagogy and administrative processes and procedures in tertiary institutions of learning. This fact was noted by the World Bank (2023) when it observed that AI-powered tools and platforms have led to profound changes in the mode of teaching and learning globally through the adoption of personalised learning software, the application of intelligent tutoring systems, and automated administrative processes. the implication of this for Nigeria's higher institutions of learning is increased awareness and mastery of its application in teaching methodologies, learning experiences, and administrative operations. Artificial Intelligence and tertiary education management

Artificial Intelligence (AI) has emerged as a robust platform to push back the frontiers of knowledge and innovation in teaching and learning processes. According to Wang and Chew (2024) artificial intelligence has inherent abilities to rejig, revolutionize and re-chart new roadmaps for learning methodologies by introducing

new paradigms on how information is delivered and processed. These dialogue-based systems not only optimize teaching efficiency and quality but also serve as catalysts for learner creativity and engagement, offering personalized learning experiences that adapt to individual needs. The importance of AI in teaching and learning was buttressed by Hasanein & Sobaih, (2023) and Yasmin & Mazhar, (2023) when they argued that the incorporation of AI into education has led to a tremendous change in the teaching and learning processes and school administration across various levels of the education system in all countries.

AI and students

AI applications can assist in managing students bio-metrics, class schedules like lecture timetable, tests, assignments, exam grades and class attendance records(Arya, 2024). Through personalized learning systems AI enable students to learn at their own pace with or without the active participation of the lecturer. AI therefore enables students in far flung places to meet their diverse academic needs such as personalized assignments, access to research materials and online assistance. The integration of AI in tertiary education can be rightly referred to as a paradigm shift in pedagogy because it offers innovative solutions which enhance student's learning unlike the traditional classroom method which is rooted in face-to face contact. This was buttressed by Hakimi and Fazil,(2024) when they noted that AI adaptive technologies offer individualized pathways for students, enabling them to work at their own pace and reducing dropout rates. Students are beneficiaries of AI when the environment for its application are conducive and practicable. AI and lecturers

Lecturers can take advantage of AI applications to teach repetitive and monotonous tasks thereby reducing the boredom and fatigue associated with classroom tasks. This could make more productive time available for student-lecturer interaction. In addition AI can be used by lecturers in the assessment of their students' performance in various ways. This view was buttressed by Opesemowo & Adekomaya (2024) when they noted that automated grading and intelligent analytics can lower teachers' administrative loads, freeing time for more nuanced instruction. In addition, the teacher can interact with students who are in remote places and those who cannot be conveniently accommodated in a traditional classroom setting. Using AI enabled platforms lectures and assignments can be relayed to students in real time through internet connectivity. Thus, AI solutions can be used to bridge the physical barriers between lecturers and students in a convenient and easy way.

AI and administrative efficiency

AI can be used to enhance administrative efficiency through the adoption of automated systems in handling routine tasks such as response to student inquiries, the analysis of students bio-metrics, class attendance, request for transcripts by students and inquiries by third parties, academic progress and timely decision making. This can reduce the work-load associated with responding to repetitive questions and demand for services from students, lecturers and those who need salient information from the administration (Nwaokugha & Abiakwu 2024). The implication of this is that AI solutions can be leveraged in the planning and management of tertiary institutions in Nigeria through the application of smart tutoring systems and adaptive learning platforms to improve productivity in the teaching and learning processes.

Tertiary education and Manpower Development

Nigeria is a developing nation and the most populous country in Africa with an estimated population of 200 million people out of which a significant number (about 40%) live under poverty.

Despite her numerous social and economic challenges which militate against the realization of her full potentials as a sovereign nation, Nigeria has a very audacious ambition to be among the top 20 economies in the world. In order to achieve this ambition, opportunities exist in the adoption of AI to expand access to tertiary institutions and improve the quality of teaching and learning in order to produce high quality manpower to enable her compete with other economies in the world.

One of the cardinal objectives of tertiary education is to ensure the training of individuals to acquire the necessary skills and knowledge that will enable them to fulfill the manpower needs of the nation. According to

Uwakwe & Igbokwe (2010) in Anukam, et. al., (2010) tertiary education is the terminal stage of formal education. It is a level of education received after secondary school education in institutions such as universities, colleges of education, polytechnic/monotechnics. In the same vein, the Federal Republic of Nigeria. (2014) defined tertiary education as the education given after secondary education in Universities, Polytechnics, Colleges of Education, Monotechnics, including institutions offering corresponding courses.

Therefore, tertiary education is the level of education structured to contribute to national development through high level relevant manpower training and to develop the intellectual capacity of individuals to understand their immediate and external environment. This view was buttressed by Gbasoevi (2019) that the major role of tertiary education through its institutions is that of manpower development, which involves the task of inculcating the skills, aptitude, attitude, knowledge, morals, values, creative ability which enable the individual to become useful members of the society.

AI is a useful tool that can be utilized by tertiary institutions to impart relevant skills for selfadvancement and national development as well as transmit required knowledge and positive attitudes to her citizens. The adoption of AI by institutions of higher learning can therefore facilitate a more robust means of exposing individuals to various advanced skills and training which can improve the society through the harnessing of available resources and opportunities. More importantly, AI can facilitate access to a larger audience in the acquisition of the special skills needed to drive Nigeria's national development goals. AI can also help in addressing shortages in trainers who will impart the necessary skills on potential students. This can be done through AI tutoring platforms, automated assessment systems and smart feedback channels to monitor student academic progress to enhance personalized learning. Challenges of AI in Education planning and management

AI has been identified as an effective tool in facilitating the management of tertiary education and invariably contribute to the manpower development of Nigeria. and achieve the UN Sustainable Development Goals. However, a great deal of work needs to be done to take advantage of the opportunities provided by AI in order to realize the goals of national development. Thus, the level of AI adoption in Nigeria and most developing countries is quite low. This low penetration of AI was observed by Aderibigbe et al., (2023) when they asserted that while developed nations forge ahead in leveraging the potential of AI, the adoption and effective implementation of these technologies in developing countries present a unique set of challenges and opportunities.

In Nigeria, AI is still in the embryonic stage and it is still confronted by challenges such as lack of digital consciousness and digital infrastructural deficits. Similarly, Nigeria's tertiary institutions are currently facing many challenges like chronic under-funding, extremely low research productivity, inadequate infrastructural facilities and a disconnect between learning and national development, resistance to change, rising population of admission seekers, shortage of lecturers to cater for the diverse needs of an ever-increasing student population etc. All these challenges directly and indirectly constrain the adoption of AI systems in tertiary institutions. Application of AI could be used in solving or ameliorating some of these challenges confronting tertiary institutions in Nigeria (Ogunleye, 2021, Aderibigbe et al., 2023). Nigeria's tertiary institutions of learning are set up to provide the needed manpower that will drive the Nigerian development. In order to fulfil these noble objectives, there is a compelling need for these institutions to be abreast of emerging technologies which can enhance their productivity and at the same time make their graduates competitive in the global labour market. Consequently, adequate planning and coordination of efforts by all stakeholders in our tertiary institutions are required to ensure that artificial intelligence is well integrated in the teaching and learning process to facilitate a positive educational outcome and invariably facilitate the goals of national development especially as it concerns the availability of the nation's manpower needs.

Conclusion

Globally, there has been strong tendency for the incorporation of AI technologies in many facets of human activities. This has been evident in the integration and adoption of artificial intelligence in the field of tertiary education. This new trend has a broad implication not only for the educational system but for other sectors of the nation's economy. More importantly, our ability to cope with the new technological trend could have a positive impact on Nigeria's competitiveness in the global economy. It is imperative that our future workforce must be able to compete for job opportunities thrown up by the emerging technologies in line with Nigeria's national development plans. In Nigeria's educational sector, artificial intelligence has been recognized as a revolutionary tool in educational administration and management by offering solutions to address existing challenges militating against the core objectives of tertiary education. AI has made positive impact in tertiary education by automating administrative processes, providing data-based decision making and enhancing personalized learning, reducing workload associated with routine tasks etc. Nevertheless, AI still faces numerous challenges such as digital infrastructural deficits, under-funding, lack of digital consciousness, and resistance to change. All these challenges should be addressed through appropriate policies, and gradual AI adoption strategies to enable Nigeria's tertiary education fulfill its goals and objectives in consonance with stated national development objectives of manpower training and development. Suggestions

Nigerian governments at state and federal levels should ensure adequate funding of tertiary institutions to enable the integration of artificial intelligence in all public tertiary institutions in Nigeria.

Educational administrators in tertiary institutions should find innovative ways to address the peculiar challenges associated with AI utilization in their institutions in order to be compliant with AI driven decision making process in monitoring and implementing the academic performance of students and ensuring efficient school administration

Students should adopt AI-powered platforms to enrich their learning experiences and use personalized channels to solve their academic requirements' and inquiries from their institutions.

Lecturers should also adopt AI-driven tutoring systems to provide personalized learning and feedback to students in order to reduce the stress and boredom associated with repetitive tasks in the academic delivery process.

References

- Aderibigbe, A.O., Ohenhen, P.E, Nwaobia, N.K, Gidiagba, J.O & Ani, E.C. (2023). Artificial intelligence in developing countries: Bridging the gap between potential and implementation. *Computer Science & IT Research Journal*, 4, 3, 185-199.
- Arya, S. (2024). Adoptions of AI in education: A systematic literature review. DOI: <https://doi.org/10.21203/rs.3.rs-3978368/v1>
- Federal Republic of Nigeria. (2014). National policy on education (4th ed.). Lagos: Nigerian Educational Research and Development Council.
<https://doi.org/10.1201/9781003184157-1>
- Federal Ministry of Communication Innovation and Digital Economy (2025). National Artificial Intelligence Strategy <https://ncair.nitda.gov.ng/uploads/>
- Gbesoevi, E.S (2019). The Role of Tertiary Education in Manpower Development in Nigeria. *Global Academic Journal of Linguistics and Literature*, 1(1) 17-19 DO I: 10.36346. [.Http://gajrc.com/gajll](http://gajrc.com/gajll).
- Hakimi, M., Katebzadah, S., & Fazil, A. W. (2024). Comprehensive Insights into E-Learning in Contemporary Education: Analyzing Trends, Challenges, and Best Practices. *Journal of Education and Teaching Learning*, 6(1), 86-105.

- Hasanein, A.M. & Sobaih, A.E.E (2023). Drivers and consequences of ChatGPT use in higher education: key stakeholder perspectives. *European Journal of Investigation in Health Psychology and Education*, 13, 2599-2614. <https://doi.org/10.3390/ejihpe1311018>.
- Igbokwe, I. C. (2023). Application of Artificial Intelligence (AI) in Educational Management. *International Journal of Scientific and Research Publications*, 13(3), 300-307.
- Mure?an, M. (2023). Impact of Artificial Intelligence on Education. *Research Association for Association for Interdisciplinary Studies*, 2(1), 24-34. DOI:10.5281/zenodo.8132828
- Nwaokugha, D.O & Abiakwu, O.F. (2024). Prospects Of Using Artificial Intelligence In Teaching And Learning In Educational Institutions In Nigeria. *International Journal of Innovative Social & Science Education Research* 12(4):182192,doi:10.5281/zenodo.14171074
- Ogunleye, I. (2021, December). Artificial intelligence for economic development in Nigeria. CITRIS Policy Lab.<https://citrispolicylab.org/wp-content/uploads/>
- Ogunode N. J. (2023). AI education in Nigerian Schools. *Central Asian Journal of Social Sciences and History*, 2(12), 104-112.
- Opesemowo, O. A. G., & Adekomaya, V. (2024). Harnessing Artificial Intelligence for Advancing Sustainable Development Goals in South Africa's Higher Education System. A Qualitative Study. *International Journal of Learning, Teaching and Educational Research*, 23(3), 67-86.
- Ughenu, N.P, Ukandu, C.J; Okeke, U.C; Akpulue, C.E; Ughamadu, U. (2025) Leveraging Artificial Intelligence in Educational Planning and Management of Secondary Schools in Nigeria. *World Journal of Innovation and Modern Technology* 9.(4) www.iiardjournals.org.
- Uwakwe, O, &Igbokwe;, C.I (2010). The Nigerian education system. In I.L. Anukam., P.O. Okunamiri, & R.N.O. Ogbonna (eds.), *Basic text on educational management*. (299 - 323). EeHech Versatile.
- Wang, W. & Chew, F. (2024). The role of generative artificial intelligence in promoting creative thinking skills. *Advances in Social Sciences, Education and Humanities Research*, 866, https://doi.org/10.2991/978-2-38476-291-0_83.
- World Bank (2023). *Bridging the digital divide in African higher education*. Washington, DC: World Bank Publications.
- Yasmin, H., & Mazhar, R. (2023). AI in education. In P. P. Churi, S. Joshi, M. Elhoseny, & A. Omrane (Eds.), *Artificial intelligence in higher education* (pp. 1-30). CRC Press eBooks.