



THE USE OF ARTIFICIAL INTELLIGENCE FOR EFFECTIVE ADMINISTRATION OF TERTIARY INSTITUTIONS AND THE RESOURCES IN AKWA IBOM STATE.

By

Usen Godwin IKPE, Ph.D
Department of Curriculum Studies, Educational Management and Planning
Faculty of Education, University of Uyo, Uyo

ABSTRACT

This paper investigates the application of Artificial Intelligence (AI) in enhancing the administration of tertiary institutions in Akwa Ibom State. It explores how AI tools streamline processes such as admissions, staffing, finance, and resource allocation. The study highlights improvements in administrative efficiency and decision-making through AI adoption. Digital libraries and academic support systems have also benefited from AI-driven innovations. However, infrastructural deficits and limited technical skills pose significant challenges. The study concluded that AI enhances efficiency by automating routine tasks, improving data management, and supporting strategic decision-making. Its application in resource management ensures optimal allocation and transparency in operations. The study also recommended that tertiary institutions should invest in modern AI infrastructure to support automation and data management.

KEYWORDS: Artificial Intelligence, Administration, Tertiary Institutions, Resources and Akwa Ibom State

INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative tool in the administration of tertiary institutions, offering robust solutions for enhancing decision-making, resource management, and administrative efficiency. In Akwa Ibom State, Nigeria, AI integration into higher education institutions has gained increasing attention, particularly with the aim of automating routine tasks, optimizing resource allocation, and improving service delivery. Studies such as those by Nwachukwu and Ohalete (2024) highlight how AI-driven platforms can streamline institutional operations, minimize redundancy, and enhance transparency across administrative units, thus promoting governance effectiveness in tertiary institutions within the state. More specifically, AI applications in Akwa Ibom's tertiary institutions—such as Akwa Ibom State University—have been utilized in managing digital records, predicting enrollment trends, and even supporting academic planning. Research by Ibanga et al. (2024) emphasizes the role of AI and Fourth Industrial Revolution (4IR) technologies in transforming administrative workflows, enabling real-time data analytics for policy evaluation and curriculum development. Similarly, Udoh and Jimmy (2024) examined how AI tools assist librarians in academic libraries, improving cataloging systems, user behavior analysis, and library resource personalization, which collectively strengthen institutional knowledge systems and enhance student support services.

In the context of resource management, AI has proven instrumental in optimizing material and human resources. Akpan et al. (2024) advocate for the deployment of AI in budget forecasting and inventory tracking in Akwa Ibom's educational institutions. Moreover, Epelle and Muruwei (2024) link AI adoption to improved academic staff performance, citing its utility in workload balancing, professional development, and personalized learning environments. According to Inyang (2025), AI technologies have significantly improved technical education by enabling adaptive learning environments and dynamic assessment tools, especially in under-resourced programs within Akwa Ibom.





Nevertheless, challenges persist in fully leveraging AI across tertiary institutions in the state. These include insufficient infrastructure, limited digital literacy among staff, and resistance to technological change. However, these obstacles are increasingly being addressed through targeted training programs and public-private partnerships. As emphasized by Akidi and Jimmy (2024), strategic implementation and continuous capacity building remain crucial to sustainable AI integration. In summary, the effective use of AI in the administration and resource management of tertiary institutions in Akwa Ibom State is not just a possibility but an emerging reality with the potential to revolutionize higher education in Nigeria.

CONCEPT OF ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience (Copeland 2025). Artificial intelligence (AI) involves creating machines that can think like humans and imitate their actions. According to (Coursera, 2024). Artificial intelligence (AI) refers to computer systems capable of performing complex tasks that historically only a human could do, such as reasoning, making decisions, or solving problems.

Artificial intelligence is a field of science concerned with building computers and machines that can reason, learn, and act in such a way that would normally require human intelligence or that involves data whose scale exceeds what humans can analyse. It is a technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy (Stryker 2025). Artificial Intelligence (AI) can also be seen as a concept of creating machines, particularly computer systems that can perform tasks that typically require human intelligence. This includes things like learning, problem-solving, decision-making, and recognizing patterns.

Furthermore, Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. Examples of AI applications include expert systems, natural language processing (NLP), and speech recognition and machine vision. (Craig et al 2024). Artificial intelligence (AI) refers to the capability of computational systems to perform tasks typically associated with human intelligence, such as learning, reasoning, problem-solving, perception, and decision-making. It is a field of research in computer science that develops and studies methods and software that enable machines to perceive their environment and use learning and intelligence to take actions that maximize their chances of achieving defined goals (Russell et al 2021).

CONCEPT OF EFFECTIVE ADMINISTRATION OF TERTIARY INSTITUTION

Achieving educational goals and promoting institutional growth at postsecondary institutions depend heavily on efficient administration. It includes managing resources, implementing policies, engaging stakeholders, and strategically coordinating academic programs to make sure the institution runs well. According to Ategwu et al. (2023), effective administration involves the application of management principles to organize and harmonize resources towards achieving the goals of higher education institutions. This includes planning, organizing, directing, and controlling institutional activities to enhance academic excellence and operational efficiency.

At its foundation, successful administration emphasizes goal-oriented operations in a manner that promotes performance, fulfills the demands of stakeholders, and conforms with national or global educational standards. It is not restricted to handling paperwork or bureaucratic activities, but rather entails coordinating systems, promoting institutional culture, and managing institutional affairs in ways that assure best outcomes. As noted by Ige and Pius (2022), effective administration entails the full realization of an institution's mandate through coordinated efforts



that are deliberate, accountable, and systemically organized. It fosters an environment where teaching, learning, research, and community service can flourish seamlessly.

Furthermore, effective administration is seen as a framework for maintaining order and ensuring progress in a dynamic and often complex educational setting. Tertiary institutions are typically large, multifunctional bodies requiring structured and responsive administrative systems. According to Ogunode et al. (2023), effective administration in such institutions means "the ability to maintain administrative coherence while ensuring that resources, human capital, and academic activities are all directed toward the attainment of institutional excellence." This suggests that the effectiveness of administration is judged not only by structure but also by its impact on institutional quality and sustainability.

CONCEPT OF RESOURCES

A resource is something that can be used for some benefit or to make a profit. Resources can be natural materials (such as gold or water), wealth (money, property, financial assets), or support (workers, informal networks). The resources needed to run a business can include land, capital, raw materials, machines, time, energy, manpower, management, knowledge, expertise, and information. (Safeopedia, 2024). Resource is the means of attainment of given ends. The ends being satisfaction of individual wants and attainment of social objectives." Traditionally a resource was defined as a product of biological, ecological or geological processes (natural resources) that satisfies human wants. In more modern times the concept resources has come to refer to processes of capitalism and specifically to notions of development and state formation (Gregory et al., 2009). Resources are anything that can be used to produce goods and services that satisfy human wants and needs. They can be tangible, such as raw materials and equipment, or intangible, such as skills and knowledge.

Resources in economics refer to the inputs used to produce goods and services, including natural resources, human resources, capital, and entrepreneurship. In economics, resources, also known as factors of production, are the inputs used to produce goods and services. These resources are essential for creating the products and services that fulfills human needs and wants. In general, a resource is anything that can be used to satisfy human needs or wants, whether tangible or intangible, and can be classified as natural, man-made, renewable, or non-renewable.

TYPES OF RESOURCES IN TERTIARY INSTITUTIONS

Tertiary institutions such as universities and colleges rely on a wide range of resources to ensure smooth academic, administrative, and developmental operations. These resources are commonly classified into the following categories:

- **Human Resources**

Human resources are the cornerstone of any tertiary institution, encompassing academic staff (lecturers, researchers), administrative personnel, and support staff. Their expertise, commitment, and innovation drive the institution's core functions of teaching, research, and community service. Effective human resource management involves strategic recruitment, continuous professional development, and retention strategies to maintain a motivated and competent workforce. Ngare (2023) emphasizes the importance of proactive human resource management, including hiring top talent, fostering professional growth, and retaining faculty, as essential for institutional excellence and sustainability in higher education. Investing in human capital not only enhances academic outcomes but also fortifies institutional resilience against external challenges.

- **Financial Resources**



Financial resources are vital for the sustainability and growth of tertiary institutions. They fund infrastructural development, academic programs, research initiatives, and staff remuneration. Efficient financial management entails transparent budgeting, exploring diverse funding sources, and implementing cost-effective measures. Diversifying income streams through partnerships, grants, and alumni contributions can also bolster financial stability. Ultimately, sound financial stewardship ensures that institutions can fulfill their mandates and adapt to changing educational landscapes.

- **Material Resources**

Material resources encompass the physical infrastructure and facilities that support the academic and administrative functions of tertiary institutions. This includes lecture halls, laboratories, libraries, student hostels, and recreational centers. The quality and adequacy of these facilities directly impact the learning environment and overall student experience.

- **Technological Resources**

Technological resources have become integral to modern tertiary education, facilitating teaching, research, and administration. These include computers, internet connectivity, learning management systems, and specialized software. Jabo et al. (2021) investigated the utilization of ICT resources among tertiary institutions in Sokoto State, Nigeria, revealing that while many institutions possess ICT facilities, the performance of ICT training for students is negligible.

- **Information Resources**

Informational resources, such as electronic journals, databases, and digital libraries, are crucial for academic research and learning. They provide students and faculty with access to a vast array of scholarly materials. Agbasi and Onugu (2019) examined the availability and utilization of electronic resources among students at Nnamdi Azikiwe University, Awka, finding that while e-books and e-theses are highly available and utilized, other resources like e-journals and e-databases are less so.

- **Security Resources**

Security resources are essential for safeguarding the lives and property within tertiary institutions. They include physical security measures like CCTV cameras, alarm systems, and trained personnel. The absence of such equipment exposes institutions to various security challenges. Hence, the provision of modern security technologies is important to enhance campus safety and effective administration. Investing in comprehensive security systems ensures a conducive environment for learning and research.

THE USE OF AI FOR EFFECTIVE ADMINISTRATION OF TERTIARY INSTITUTIONS

Artificial Intelligence (AI) is increasingly transforming the administrative landscape of tertiary institutions, offering innovative solutions to enhance efficiency, decision-making, and overall institutional effectiveness. Below is an in-depth exploration of how AI is being utilized for effective administration in higher education:

- **Automation of Routine Administrative Tasks**

AI technologies are streamlining routine administrative functions such as admissions processing, scheduling, and student record management. Institutions can decrease human error,



speed up procedures, and reallocate human resources to more important responsibilities by automating these duties. AI-driven solutions, for example, can more quickly and accurately handle course registrations, schedule scheduling, and document verification. By delivering timely services, this automation not only increases operational efficiency but also enriches the educational experience for students.

- **Enhancement of Decision-Making through Predictive Analytics**

AI's capability to analyze vast datasets enables institutions to make informed decisions regarding student admissions, resource allocation, and academic planning. Predictive analytics can forecast enrollment trends, identify at-risk students, and optimize course offerings based on demand. This data-driven approach allows administrators to proactively address challenges and tailor strategies to meet institutional goals. Edung (2024) emphasizes that AI applications in tertiary education facilitate the attainment of educational objectives by enhancing management effectiveness through informed decision-making.

- **Improvement of Student Support Services via AI Chatbots**

AI-powered chatbots are revolutionizing student support services by providing instant responses to inquiries related to admissions, financial aid, and academic advising. These virtual assistants operate 24/7, ensuring that students receive timely information without the constraints of office hours. The implementation of chatbots reduces the workload on administrative staff and enhances the student experience. Majorana et al. (2022) discuss how chatbot solutions in higher education improve administrative efficiency by handling common student requests, thereby allowing staff to focus on more complex tasks.

- **Facilitation of Curriculum Development and Implementation**

AI tools aid in curriculum design by analyzing educational trends, student performance data, and labor market demands. This ensures that academic programs remain relevant and aligned with industry needs. AI also supports personalized learning pathways, catering to diverse student needs.

- **Strengthening of Security and Surveillance Systems**

AI-enhanced security technologies, including facial recognition and behavior analysis, are being used to maintain campus safety. These systems have the ability to regulate access, keep an eye out for odd activity, and react quickly to security breaches. A safer learning environment is facilitated by the proactive nature of AI in monitoring. Ogunode et al. (2023) highlight that AI is important in improving security measures within tertiary institutions.

THE USE OF AI FOR EFFECTIVE CONTROL OF RESOURCES IN TERTIARY INSTITUTIONS

Artificial Intelligence (AI) is increasingly being utilized in tertiary institutions to enhance the management and control of resources. By integrating AI technologies, these institutions can optimize operations, improve efficiency, and make data-driven decisions. Below is an extensive exploration of how AI contributes to effective resource control in tertiary education:

- **Optimizing Financial Management**

By facilitating precise budget planning, real-time spending tracking, and effective resource allocation, artificial intelligence (AI) technologies are transforming financial management at



postsecondary institutions. AI can forecast future budgetary requirements, spot expenditure trends, and spot irregularities that can point to fraud or poor management by examining past financial data. By taking a proactive stance, organizations may make well-informed financial decisions that guarantee sustainability and fiscal responsibility. By simplifying budget planning and increasing resource allocation clarity, artificial intelligence helps to improve financial management.

- **Enhancing Human Resources Management**

Effective hiring procedures, performance reviews, and staff development programs are made possible by AI applications in human resource management. AI can forecast turnover patterns, find skill shortages, and suggest individualised training plans by evaluating employee data. This data-driven strategy guarantees that institutions can effectively manage their personnel, boosting productivity and worker satisfaction. AI helps tertiary institutions manage their human resources more effectively and increase employee attendance.

- **Streamlining Facility and Infrastructure Management**

AI technologies are instrumental in managing campus facilities and infrastructure efficiently. Through the use of sensors and IoT devices, AI can monitor building occupancy, energy consumption, and maintenance needs in real-time. This enables institutions to optimize space utilization, reduce energy costs, and proactively address maintenance issues. George & Wooden (2023) highlights that smart monitoring systems, powered by AI, can refine operational strategies and ensure a conducive learning environment.

- **Improving Academic Resource Allocation**

AI assists in the effective allocation of academic resources by analyzing course enrollment data, student performance metrics, and faculty availability. This ensures that courses are scheduled efficiently, classrooms are utilized optimally, and teaching resources are distributed appropriately. AI-driven scheduling systems can minimize conflicts, enhance student satisfaction, and improve overall academic planning.

- **Advancing Sustainability Initiatives**

AI is essential to advancing sustainability in higher education since it maximizes resource conservation, waste reduction, and energy use. AI-powered solutions may effectively manage waste disposal procedures, dynamically modify heating and cooling systems, and track trends in energy use. In addition to saving money, these technologies help organizations lessen their environmental impact. Khan et al. (2025) confirms that AI technologies can enhance operational efficiency and align with sustainability objectives by optimizing energy management and waste reduction.

CONCLUSION

Akwa Ibom State's tertiary institutions have enormous potential for administrative reform through the incorporation of artificial intelligence. By automating repetitive processes, enhancing data management, and assisting in strategic decision-making, artificial intelligence (AI) increases efficiency. Its use in resource management guarantees efficient distribution and operational transparency. Progress is visible in a number of institutions, despite obstacles such as inadequate infrastructure and low levels of computer literacy. AI acceptance and efficacy will be further accelerated by ongoing training and investment. It is imperative that the public, corporate, and academic sectors work together. AI in higher education is more than simply a tool; it's a driving force



behind creativity and responsibility. AI has the potential to completely transform Akwa Ibom State's educational administration in the future with the correct backing.

RECOMMENDATIONS

- 1. Tertiary institutions should invest in modern AI infrastructure to support automation and data management.**
- 2. State government should develop clear policies to guide ethical and effective AI integration.**
- 3. Institutions must adopt AI-driven monitoring systems to track academic and administrative performance.**



REFERENCES

- Agbasi O. & Onugu C. (2019). The Availability and Utilization of Electronic Resources among Students in Tertiary Institutions in Nigeria: A Study of NnamdiAzikiwe University, Awka. *IJARS International Journal of Economics and Commerce*, 7(9): 476-487.
- Akidi, J.O., & Jimmy, K.J. (2024). AI Potentials and Skills for Librarians. ResearchGate PDF
- Akpan, A.E. (2025). Challenges of ICT Usage among Academic Staff in University of Uyo. Link to PDF
- Akwang, N.S.E., & Etim, I.A. (2024). Planning Tools and Information Resources in Tertiary Institutions. PDF Link
- Ategwu P., Okon R., Amadi J. & Chinyere N. (2023). Management of higher institution in the 21st century. *Global Journal of Educational Research*, 22(1).
- Copeland B.J (2025). Artificial intelligence. Available At: <https://www.britannica.com/technology/artificial-intelligence>.
- Coursera. S (2024). What Is Artificial Intelligence? Definition, Uses, and Types. Available At: <https://www.coursera.org/articles/what-is-artificial-intelligence>.
- Craig L; Laskowski N & Tucci L (2024). What is AI? Artificial Intelligence explained. Available At: <https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-Intelligence>.
- Edung E. E. (2024). Application of Artificial Intelligence and Attainment of Tertiary Education Goals: Towards Effective Management of Tertiary Education in Cross River State, Nigeria. *Global Journal of Artificial Intelligence and Technology Development*, 2(2), 31-40.
- Epelle, P.A., & Muruwei, M. (2024). AI for Sustainable Academic Staff Job Performance. Link to PDF
- George B. & Wooden O. (2023). Managing the Strategic Transformation of Higher Education through Artificial Intelligence. *Administrative Science*, 13(9): 196.
- Gregory et al, (2009). What are Resource. [https://socialsci.libretexts.org/Bookshelves/Geography_\(Human\)/British_Columbia_in_a_Global_Context/04%3A_Resources_in_British_Columbia/4.02%3A_What_are_Resources](https://socialsci.libretexts.org/Bookshelves/Geography_(Human)/British_Columbia_in_a_Global_Context/04%3A_Resources_in_British_Columbia/4.02%3A_What_are_Resources)
- Ibanga, S.E., Ataire, A.C., & Atakpa, O.E. (2024). Fourth Industrial Revolution Technologies and Service Delivery in Akwalbom State University, Nigeria. Link to PDF
- Ige N. & Pius G. (2022). Leadership Challenges Facing Tertiary Institutions: A Case Study of Lagos State, Nigeria. *Isu Dalam Pendidikan*, 44, 2022
- Inyang, M.A. (2025). Role of AI in Technical Education in Akwalbom State. Link to PDF
- Jabo A., Idris M., Yahaya I. & Ibrahim B. (2021). Utilizations' of ICT Resources among Tertiary Institutions in Sokoto State, Nigeria. *International Journal of Research and Innovation in Social Science (IJRISS)*, 5(2).
- Khan S., Mazhar T., Shahzad T., Khan M., Ur Rehman A., Saeed M. & Hama H. (2025). Harnessing AI for sustainable higher education: ethical considerations, operational efficiency, and future directions. *Discov Sustain* 6, 23 (2025). <https://doi.org/10.1007/s43621-025-00809-6>



Majorana C., Goncalves R., Neto F. & Camargo R. (2022). Enhancing Administrative Efficiency in Higher Education with AI: A Chatbot Solution. *Review of Artificial Intelligence in Education*. <http://dx.doi.org/10.37497/rev.artif.intell.educ.v3i00.23>

Ngare R. (2023). Maximizing University Resources: Strategic Mobilization and Utilization of Human, Financial, and Material Resources in Higher Education. *Greener Journal of Social Sciences*, 143(1): 133-143.

Nwachukwu, C.M., &Ohalete, I.V. (2024). Innovative methods of managing tertiary institutions. Link to PDF

Ogunode N., Edinoh K. &Chinedu O. (2023). Artificial intelligence and Tertiary Education Management. *Electronic Journal of Social Sciences and Humanities*, 5(4): 18-31.

Ogunode N., Edinoh K. &Chinedu O. (2023). Artificial intelligence and Tertiary Education Management. *Electronic Journal Research of Social Sciences and Humanities*, 5(4).

Russell &Norvig (2021). Available At: https://en.wikipedia.org/wiki/Stuart_J._Russell.

Safeopedia . S (2024). Resource. Available At: <https://www.safeopedia.com/definition/2945/resource>.

Stryker C. (2025). What is AI? Available At: <https://www.ibm.com/think/topics/artificial-intelligence>.

Udoh, I., & Jimmy, K. (2024). AI Potentials and Skills for Adoption by Librarians in University Libraries in Akwalbom State.