
Artificial Intelligence (AI) in Educational Administration

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Abstract

This paper examined application of Artificial Intelligence in educational administration and problems that may likely face the application of AI in educational administration in Nigeria. Using secondary data collected from both print and online publications the paper concluded that application of Artificial Intelligence in educational administration can lead to effective data analysis and decision making, effective school administrative, resource optimization, student support and intervention, streamlined communication and engagement and enhanced security and safety. The paper also identified bias and discrimination, lack of transparency and interpretability, data privacy and security breaches, problem of ethical and legal guidelines, inadequate technical expertise and resources, job displacement and lack of interoperability and compatibility, high cost of maintenance, power problem and unstable internet services as problems that may likely affected application of Artificial Intelligence in educational administration in Nigeria. Based on this problems identified, the paper recommended increment in investment to educational sector in Nigeria by the government.

Keyword: Artificial Intelligence, Educational administration.

Introduction

Administration is the task of overseeing an organization with the optimum use of all the available resources (human and nonhuman) for achieving its goals and objectives. Administration involves processes such as; planning, organizing, directing, coordinating, controlling and evaluating performance against the stated objectives of the organization (Akinwumi, Yemisi & Alegbeleye, 2021). Ogunode, & Abashi, (2020) defined Administration in education as dealing with systematic organization, arrangement, integration, evaluation and co-ordination of both materials and human resources in an effective and efficient ways to realize the general educational objectives. Mohammed, Ogunode, & Yahaya (2021) and Ogbonnaya (2003) defined administration as the utilization of institutional resources to actualize the institutional objectives. Administration is the application of organization human and material resources to realize the organizational goals within a set time. Administration deals with arrangement of institutional resources to coordinate and actualize the institutional goals. Administration in its totality is a process which entails the utilization of human, financial and material resources in maximizing the realization of goals and objectives. Akpakwu (2012) submitted that administration is defined as that function of industry which is concerned with the determination of the corporate policy, the co-ordination of finance, production and distribution and the settlement of the structure of the organization under the ultimate control of the executive.

Administration take different forms such as educational administration and educational administration is subdivided into educational administration and schools administration. Ogunode (2020a) stated that educational administration is the application of educational resources to achieve educational goals. Educational administration is the act and process of using resources in an effective and efficiency ways to attain the various objectives of

educational institutions. Educational administration deals with the planning and organizing human and materials resources to realize the goals of educational institutions. Educational administration is the systematic arrangement of educational input in an operational means to achieve the set goals of educational institution. Nwiyi (2018) viewed educational administration as concerned with integrating the appropriate human and material resources that are made available and made effective for achieving the purposes of a program of an educational institution.

Gift (2018) is of the opinion that the features of Educational Administration includes the following: (1). Educational administration doesn't refer to any single process rather different processes or aspects constitute administration. These are planning, organizing, directing, coordinating, controlling, staffing and evaluation. (2). Educational administration is a non-profit making task. (3). Educational administration is primarily a social enterprise as it is more concerned with human resources than with material resources. (4). Educational administration is more of an art than a science. The reason is that human relationship prevailed here can't be maintained by any set of formulae. (5). Educational administration is similar to general administration in many ways, but it is also dissimilar to general administration in many more ways. (6). Educational administration is a complex affair. Kalagbor (2017) stated that the following activities and programmes come under the scope of educational administration at the institutional level: (a) Deciding the purposes of the institution or school, (b) Planning for academic or curricular and co-curricular activities, (c) Preparing the time table and the time schedules for various activities, (d) Assigning duties and responsibilities to the staff members, (e) Organizing curricular and co-curricular programmes, (f) Directing and motivating the staff of the institution, (g) Coordinating by efforts of people to achieve the purpose. h. Exercising control over the staff, (i) Conducting periodical reviews about the progress, achievements and failures of the institution, (j) Taking measures for staff development, (k) Maintaining order and discipline, (l) Management of materials, (m) Management of finance, (n) Maintaining records and registers up to date, (o) Maintaining human relationships, (p) Supervision of the work of teachers and other employees, (q) Giving feedback to the teachers performing well and taking remedial measures for teachers not performing well. School administration is the internal arrangement of school resources to the implementation of school programme.

School administration look at education from the specific educational institutions. School administration is the internal activities that deal with coordinating of school programme for optimum Okereke (2008) stated that school administration involves managing, administering the curriculum, teaching, pastoral care, discipline, assessment, evaluation, and examinations. He added as part of school administration: resource allocation, costing and forward planning, staff appraisal, relationship with the community, use of the practical skills necessary for surviving the policies of organization such as decision-making, negotiation, bargaining, communication, conflict handling, and running meetings. These functions are complex and to efficiently and effectively perform them requires the appropriate tools and resources. Akinwumi and Jayeoba (2004) defined school administration as the scientific organization of human and material resources and programs available for education and using them systematically and meticulously to achieve educational goals. School administration is the process by which principles, methods and practices of administration are applied in educational institutions to establish, maintain and develop such institutions in line with the goals of the institutions. School administration specifically deal with coordination of all activities and programme in the institutions towards realization of school goals. School administration is the use of school resources for the achievement of school objectives.

The objectives of school administration according to Ogunode and Emmanuel (2020) include to: realize the goals of the educational institutions, coordinate the activities and programme of the schools, reduce educational wastage within the educational institution, effectively allocate the limited educational resource for the actualization of the school objective, coordinate the students' extra-curriculum programme in the school, and enhance the professional development of teachers and the non-teaching staff. The major objective of school

administration is to ensure that the various educational institutions are implemented as planned. School administration ensures that all teaching and non-teaching staff are well supervised to do their works effectively. School administration covers the following; school planning, organizing, controlling, coordinating and evaluating performance, decision making, curriculum development and planning, school plant management, students activities, teachers' programme, human capacity development, school-community relationship, academic calendar planning, extra-curriculum programme, school discipline programme, school sport, school examination and school security. School administration involves practical organization and arrangement of school work schedules in effective ways using administrative structures to implement school programme and realize the school objectives whereby posts are created and assigned for the optimal performance of the school.

School administration include; decisions making, forecasting, school objectives, programming school activities, budgeting, establishing and interpreting policies, examination, sporting activities, prize-giving/graduation ceremony, maintenance of school plants, time-tabling, distribution of functions to teachers, disciplinary procedure for both teachers and students, acquisition and distribution of instructional materials for the school among others. AI is an advanced computer controlled system with likely human Intelligence. Artificial Intelligence is being used in educational management to enhance the learning process, improve student outcomes, and streamline administrative tasks.

Concept of Artificial Intelligence

Artificial Intelligence refers to the development of computer systems capable of performing tasks that typically require human intelligence (AFSA 2022). These tasks include learning, reasoning, problem solving, perception and natural language understanding. Artificial Intelligence technologies encompass various techniques and approaches, such as machine learning, deep learning, natural language processing, computer vision and robotics. These technologies enable computers to analyze vast amounts of data, recognize patterns, make predictions and automate complex processes. Artificial Intelligence has applications across numerous fields, including health care, finance, transportation, customer service and education. It has the potential to transform industries, improve efficiency and create new opportunities (AFSA 2022). Alagbe (2023) viewed AI as the ability of a computer or machine to mimic the capabilities of the human mind – learning from examples and experience, recognising objects, understanding and responding to language, making decisions, solving problems – and combining these and other capabilities to perform functions a human might perform, such as greeting a hotel guest or driving a car. American technology giant International Business Machines Corporation defined Artificial Intelligence as referring to any human-like intelligence exhibited by a computer, robot, or other machines.

Artificial intelligence (A.I), defined as intelligence exhibited by machines, has many applications in today's society.

AI are programs developed to perform specific tasks that are being utilized for a wide range of activities including medical diagnosis, electronic trading platforms, robot control, and remote sensing. AI has been used to develop and advance numerous fields and industries, including finance, healthcare, education, transportation, and more (Wikipedia.com). 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 is an application or program constructed to carry out tasks with human like intelligence. Ogunode also viewed Artificial Intelligence as collections system, packages and application designed into digital computer or computer-controlled robot to carry out assignments and tasks with human-like intelligence.

Application of Artificial Intelligence (AI) in Educational Administration

Deployment of Artificial Intelligence in educational administration can lead to effective data analysis and decision making, effective school administrative, resource optimization, student support and intervention, streamlined communication and engagement and enhanced security and safety.

Data Analysis and Decision Making

One of the major function of school administrators is to make policies and take decision on school issues. Decision-making involves the process of choosing from alternative course of action. Many issues arising in the educational institutions demand decision-making because there is more than a single option of action. Many alternatives are generated out of which one is taken for implementation. The manager must have an adequate knowledge of alternative actions available on an issue, who should be involved in decision-making and mode of implementation of the decision (Fasasi, 2011). Right decision at appropriate time and place will enhance achievement of organizational goals. As much as possible, subordinates should be allowed to participate in decision-making. Decision taking in the level of administration is very crucial for the development of the school. AI can be used to making effective decision in educational institutions. AI has the capacity to help school administrator makes right decisions. AFSA (2022) noted that AI can assist administrators in analyzing large volumes of data, such as student performance data, attendance records and resource allocation. AI-powered systems can identify patterns, trends and insights that can inform decision-making processes. Administrators can use this information to develop data-driven strategies for improving student outcomes, allocating resources effectively, and evaluating programs and initiatives.

Effective School Administrative

Administration of school is saddled with the responsibility of ensuring stable academic calendar and implementation of programmes as planned. Administrators are to ensure full supervision and implementation of teaching programme. Administrators are saddled with responsibilities of planning school tables table, teacher's schedules and school calendar. AFSA (2022) observed that AI can automate routine administrative tasks, such as managing student records, generating reports, scheduling and handling routine inquiries. By automating these processes, administrators can save time and allocate their efforts to more strategic and value-added tasks. AI can be used to improve the efficiency of administrative tasks in educational institutions. AI-powered systems can automate routine tasks, such as grading, scheduling, and record-keeping, freeing up educators' time to focus on more impactful work, such as lesson planning and student engagement (Oztok & Zingaro, 2019). Educational institutions have to deal with a lot of administrative tasks, such as scheduling, grading, and record-keeping. AI can automate many of these tasks, freeing up educators' time to focus on teaching and supporting students.

Resource Optimization

Resources allocation is another fundamental functions of school administrators. Educational resources are divided into two. Human and materials resources. It is the responsibilities of schools administrators to ensure these resources are effectively and efficiently allocated to realize the schools goals and programme. AFSA (2022) asserted that AI can help administrators optimize the allocation of resources, such as staff, classrooms and materials. By analyzing data on student enrollment, class sizes and scheduling, AI systems can suggest efficient resource allocation strategies to optimize learning environments and support student needs.

Student Support and Intervention

It is also the duties of schools administrators to ensure students support services are fully implemented in the schools. AFSA (2022) opined that AI can assist administrators in identifying students who may require additional support or intervention. By analyzing various data points, such as academic performance, attendance and

behavior, AI systems can flag students who may be at risk of falling behind or facing challenges. This allows administrators to proactively implement interventions and provide targeted support to improve student outcomes.

Streamlined Communication and Engagement

Communication in school involves passing of information from one staff to another staff or students, parents. School administrators must ensure free flow of information among all members of his organization. Information on school activities must be relayed at the right time, to the right people and in clear language. Communication could be verbal, written, electronic or any other means. The manager serves as a link between his educational institution and the government, the community and the international bodies (Fasasi, 2011). He should give correct and up to date information about the school. Information emanating from these bodies should be passed to all staff members without delay. The School administrators should communicate and allow free communication in order to guide against rumour, misunderstanding and misrepresentation. AI can aid effective communication in schools between school administrators, teachers, students and parents. AFSA (2022) concluded that AI-powered communication systems can streamline communication between administrators, teachers, students and parents. Chatbots and virtual assistants can handle routine inquiries, provide information and direct individuals to the appropriate resources. This can improve efficiency and accessibility in communication, freeing up administrators' time for more complex interactions and strategic decision making.

Enhanced Security and Safety

School administrators are saddled with the responsibilities of ensure safety of lives and properties within the school environment. School administrators can deploy AI facilities to enhance school security. AFSA (2022) maintained that AI can contribute to school security and safety measures. Teaching and learning can only take place in a peaceful, secured and conducive environment. Facial recognition systems and video analytics can help monitor school premises, detect potential security threats, and ensure the safety of students and staff. AI-powered systems can also analyze social media or online platforms to identify potential risks and proactively address them. Artificial intelligence (AI) can help to improve school security. Security cameras in school environment from school gate to classrooms. (AI) security cameras can identify people, suspicious behavior and guns and gather large amounts of information. The images show what people are wearing, how they walk and other physical mannerisms. If the cameras capture an image of someone who is banned from a building, the system can immediately inform school officials if the person returns. Deployment of advanced AI-based gun detection, perimeter protection, and intrusion detection systems. Embracing intelligent school security systems can help to leverage the power of AI and machine learning to detect and report anomalies. Such technologies create a security infrastructure capable of thwarting criminal attempts effectively. AI-powered cameras don't just record threats but analyze the video streams as soon as the footage is captured. If an anomaly is detected, it tracks and reports that in real-time by sending notifications and alerts. Unlike humans, these technologies do not have limitations such as short attention spans, fatigue, and confusion. We shall now delve deeper into some of the common school security challenges and figure out how AI video analytics can solve them

Challenges of Artificial Intelligence in Educational Management

Bias and discrimination lack of transparency and interpretability data privacy and security breaches lack of ethical and legal guidelines lack of technical expertise and resources job displacement lack of interoperability and compatibility

Bias and Discrimination

One of the significant limitations of AI in educational administration is the potential for bias and discrimination. Igbokwe, (2023) and Mason and Rennie (2018), asserted that AI algorithms may replicate and

amplify existing biases and discrimination in educational systems, leading to further inequality and injustice. For example, AI may perpetuate gender or racial biases in student evaluations or admissions decisions. Educational managers need to be aware of these limitations and work to ensure that AI is used in a fair and equitable manner.

Lack of Transparency and Interpretability

Another significant limitation of AI in educational administration is the lack of transparency and interpretability. As noted by Veletsianos (2019) and Igbokwe, (2023) that AI algorithms can be complex and difficult to understand, making it challenging for educational managers to evaluate their effectiveness and identify potential errors or biases. This lack of transparency and interpretability can make it difficult for educational managers to make informed decisions and improve their institutions' performance.

Data Privacy and Security Breaches

A third significant limitation of AI in educational management is the potential for data privacy and security breaches. As argued by Igbokwe, (2023) and Akkaya-Kalayci & Yildirim (2020), the use of AI in educational management requires access to large amounts of data, including personal information about students, faculty, and staff. This data is vulnerable to cyberattacks and other security breaches, potentially exposing sensitive information and undermining the trust and confidence of stakeholders.

Lack of Ethical and Legal Guidelines

One of the primary challenges of AI in educational management is the lack of ethical and legal guidelines. AI algorithms can produce biased and discriminatory results, and it is essential to ensure that AI is used ethically and transparently. It is crucial to have guidelines that protect student privacy, ensure data security, and prevent AI from being used for surveillance purposes (Igbokwe, 2023).

Lack of Technical Expertise and Resources

The shortage of AI teachers and experts is another problem that hinders the deployment of AI for educational administration in Nigeria. Attah (2021) lamented that about “90 percent of our primary schools do not have computer teachers. Therefore, the government needs to redefine our educational system. We cannot depend on an analogue age. As the world is changing, we need to change too,” she said. Igbokwe, (2023) noted that another challenge is the lack of technical expertise and resources. AI requires specialized skills and knowledge, and educational institutions may lack the necessary resources to implement AI effectively. Training and professional development opportunities must be provided to ensure that educators and administrators have the skills to use AI effectively.

Job Displacement

AI in educational management also raises concerns about job displacement. AI can automate administrative tasks, and there is a fear that this will lead to job losses for educators and administrators. It is essential to ensure that the use of AI does not lead to job displacement but rather supports educators in their work (Igbokwe, 2023).

Lack of Interoperability and Compatibility

Another challenge is the lack of interoperability and compatibility between different AI systems. Educational institutions use several different systems, such as learning management systems, student information systems, and assessment tools. It is essential to ensure that these systems can work together seamlessly to provide a cohesive and efficient educational experience (Igbokwe, 2023).

High Cost of Maintenance

The high cost of Maintaining AI facilities in educational institutions has limited many school administrators to adopt the platform for school administration. AI facilities are very expensive and capital intensive in term of maintenance. Due to poor funding of educational institutions, heads of schools cannot procure guarantee effective maintenance of theses AI facilities in schools.

Power Problem

Many cities and communities today in Nigeria do not have access to a stable power supply. This problem is also affect AI deployment for educational administration in Nigeria especially public educational institutions across the country. The problem of unstable power supply is hindering the students and teachers from integrating digital technologies into their teaching and learning program. Recently, Thisday (2022) cited the (2022) Energy Progress Report by Tracking SDG 7 (sustainable development goal number 7) and said that Nigeria has the lowest access to electricity globally, with about 92 million persons lacking access to power which is stifling the country's industrial growth and causing other problems. The report also noted that West Africa has one of the lowest rates of electricity access in the world with only about 42% of the total population and 8% of rural residents, having access to electricity, yet only three countries are on track to provide access to electricity by 2030. "At this slow pace, 263 million people in the region will be left without electricity in ten years," the World Bank said in its „Putting Africa on the path to universal electricity access“ report. The educational system is faced with the problem of unstable power (Yaya & Adeeko 2016; Ogunode, Okwelogu. &Yahaya 2021; Ogunode, Ayoko & Orifah 2023).

Unstable Internet Services

Another problem that may hinder effective application AI in educational administration in Nigeria is the problem of poor internet services. Many public educational institutions are in rural areas where there are no internet facilities and many public schools cannot afford to provide constant internet services in their respective institutions. Internet services are still very expensive in the country. To access the services in the schools by school administrators is on the high side in terms of cost implication. Attah (2021) and Jegede & Abashi (2019) expressed regret that access to technology has remained a major challenge facing Nigeria, noting that Internet penetration stands at 42.06 percent in Nigeria where most of the population lives in rural areas. Recently, (Guardian, 2022) reported that only 12.1 per cent of the Nigerian population currently enjoys quality Internet services (Meaningful Connectivity) in the country. This is according to detailed research by the Alliance for Affordable Internet (A4AI). The findings explained that an 81 percent meaningful connectivity gap exists in Nigeria, it claimed that only 6.6 percent of the rural population and 16.4 percent of the urban areas have good Internet service. This is coming as broadband penetration in Nigeria hits 42.3 per cent, while users increased to 80.7 million. The Nigerian Communications Commission (NCC) statistics, which revealed this, also informed that Internet users via the narrow band also rose to 145.8 million within the same period. But A4AI explained that meaningful connectivity is a policy framework and Internet access metric to understand the quality of Internet access someone has. This poor internet accessibility in Nigeria has affected the development of digitalization of education in the Post-Basic Education and Career Development (PBECD) in Nigeria. The problem of internet connectivity is a challenge in schools in Nigeria (Ogunode, Lawal & Olubunmi, 2021; Ogunode, Dahir, Yahaya & Jegede 2021; Ogunode, Abdulrazak, Abubakar 2023).

Conclusion and Recommendations

In conclusion, this paper discussed the application of AI in educational administration and problems that may likely face the application of AI in educational administration in Nigeria. The paper concluded that application of AI in educational administration can lead to effective data analysis and decision making, effective school administrative, resource optimization, student support and intervention, streamlined communication and engagement and enhanced security and safety. The paper also identified some problems that may likely affect

application of AI in educational administration in Nigeria to include bias and discrimination, lack of transparency and interpretability, data privacy and security breaches, problem of ethical and legal guidelines, inadequate technical expertise and resources, job displacement and lack of interoperability and compatibility, high cost of maintenance, power problem and unstable internet services. To address these problems, the following were suggested:

- i. The government should increase the funding of the educational institutions. This will make funds available for school administrators to procure and to maintain AI facilities for effective school administration.
- ii. The government should ensure training and retraining programme for administrative staff for effective usage of the AI facilities.
- iii. The government should ensure that internet services providers are providing quality internet services across the country and that more rural and communities are covered with internet services.
- iv. The government should ensure that the power supply is stable and available to all educational institutions.
- v. The government should subsidize the high cost of AI facilities for the students and educational institutions. This will make many schools and students afford the AI facilities for personal use.
- vi. The government should employ more AI teachers and professionals and deploy them to schools.

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