

LEVERAGING ARTIFICIAL INTELLIGENCE APPLICATION FOR EFFICIENT EDUCATIONAL MANAGEMENT AND PLANNING IN NIGERIA

¹ESENJOR, L. M.; ²OKODUWA, A. O.; & ³OBOZUWA, J.

Public Complaint Commission by Benin-Owena River Basin Development Authority,
Maryam Babangida Way, Asaba, Delta State;

² & ³Department of Educational Foundation and Management, Faculty of Education,
Ambrose Alli University, Ekpoma, Edo State, Nigeria.

Tel: +2348033821084; ²+2347054804262; & ³+2348139947461

Email: ¹lucyesenior@gmail.com; & ³jossy.zuwa@aauekpoma.edu.ng

Abstract

The integration of artificial intelligence (AI) into educational management and planning in Nigeria has the potential to result in good improvements. The goal of the study was to analyse the ways in which technologies that are driven by artificial intelligence can possibly enhance decision-making processes, automate administrative activities, and give aid for planning that is based on data. Specifically, the researchers' interest on how these technologies may improve decision-making procedures. The review was based on AI Applications in Educational Management; Challenges of AI Adoption in Nigeria; Educational Planning; and Educational Management. It has been demonstrated that the implementation of artificial intelligence (AI) technologies, which encompass machine learning, natural language processing, and predictive analytics, has the potential to significantly enhance administrative efficiency, the monitoring of student performance, and the distribution of institutional resources. The implementation of these technologies has provided evidence that demonstrates this principle. In industrialised countries, one of the most common applications of artificial intelligence is for the purpose of learning analytics and providing automated decision assistance. This is one of the most often used applications of this technology. In order to facilitate the incorporation of artificial intelligence, the paper suggested that the government should make investments in dependable digital infrastructure, such as consistent energy and internet access at educational institutions.

Keywords: Artificial Intelligence, Educational Management, Educational Planning and Digital Transformation.

Introduction

The cultivation of human capital is critical to the transformation of the economy and the maintenance of sustainable growth in developing countries like Nigeria, where education continues to be an essential component of national development. It is also crucial to the preservation of sustainable growth. Countries such as Nigeria are a prime example of this phenomenon. When determining the efficacy of an educational system, one of the most essential aspects to take into consideration is the effectiveness of the administrative and planning structures that are in place within the system. It is the responsibility of these structures to ensure that the allocation of human, financial, and material resources is coordinated in order to meet the goals of the organization.

The administration and planning of educational institutions need the implementation of regular procedures in order to guarantee that educational services are delivered in an efficient manner. The following processes are included in these procedures: forecasting, budgeting, staffing, scheduling, monitoring, and evaluation. With the implementation of these processes, the objective is to guarantee that the supply of educational services is carried out in an effective way. In many developing countries, such as Nigeria, these procedures are still predominantly reliant on manual or semi-digital systems, which are often characterised by inefficiencies, delayed decision-making, poor data management, and human error (Olanrewaju et al., 2021). Nigeria is one of the countries that is experiencing this situation. As an example, the majority of

these processes are still carried out manually in Nigeria. In spite of this, these systems are nevertheless used in a number of key ways in Nigeria.

Artificial intelligence (AI) has emerged as a game-changing technical innovation over the course of the last few years, and it has the potential to bring about significant changes in educational institutions all over the world. This technology has the potential to completely transform the educational system. According to Russell and Norvig (2021), it is the process of duplicating human intellect in computers that are anticipated to carry out cognitive processes such as learning, reasoning, problem-solving, and decision-making suitably. This is the process that is being referred to as artificial intelligence. The technique of mimicking human intelligence is referred to as artificial intelligence technology (AI). There are many applications of artificial intelligence that are utilised in the field of educational management. Some of these applications include machine learning algorithms for predictive analytics, natural language processing systems for administrative communication, intelligent scheduling systems, and data-driven dashboards that assist with institutional planning. Each and every one of these applications requires artificial intelligence in order to operate effectively. Administrators are able to quickly review massive datasets, increase the accuracy of forecasting, and give assistance for decision-making that is based on facts thanks to the utilisation of these advancements in technology. According to the findings of studies carried out by Zawacki-Richter et al. (2019) and Dwivedi et al. (2021), artificial intelligence has been shown to greatly increase administrative efficiency, decrease workload, and boost institutional performance. This is achieved by the use of technology that is capable of automation and prediction. These benefits have been shown to be advantageous via the use of empirical research and findings.

The inclusion of artificial intelligence into the planning and administration frameworks of a number of highly developed educational institutions everywhere in the world has been done with the purpose of boosting the organization's capacity for efficiency and decision-making. This has been done in order to improve the organization's overall performance. There have been a number of countries, including the United States of America, China, Finland, and Singapore, that have implemented solutions that are driven by artificial intelligence. These solutions have been implemented with the objectives of improving enrolment projections, optimising resource allocation, and improving institutional monitoring systems of educational institutions. As an example, China employs artificial intelligence in order to carry out extensive educational data analysis and monitor the performance of students. On the other hand, Finland makes use of intelligent technology to improve the capacity for individualised education and to boost the effectiveness of administrative processes. Neither of these applications is beyond the realm of what can be accomplished with artificial intelligence. In addition, as part of the Smart Nation program, many forms of artificial intelligence have been included into Singapore's educational system. This was done with the purpose of enhancing the accuracy of instructional planning and the efficacy of educational institutions (OECD, 2021). These examples, which come from all over the world, indicate that artificial intelligence is not merely a technical tool; rather, it is also a strategic innovation that has the potential to improve governance and efficiency in educational institutions. These examples come from all over the world.

Despite the substantial progress that has been made on a worldwide scale, the use of artificial intelligence in the management and design of educational programs in Nigeria is still in its infancy. Other countries have made great development in this area. poor digital infrastructure, poor funds, low levels of artificial intelligence literacy among administrators, and inadequate policy implementation frameworks are some of the issues that the Nigerian education system continues to confront (and will continue to encounter). These are but a few of the challenges that the industry is now facing. Because of these constraints, the incorporation of technologies that are based on artificial intelligence into the planning and administration of educational institutions is considerably restricted. As a result of the fact that a considerable

number of companies continue to depend on reactive planning techniques rather as proactive ones, inefficiencies in resource allocation, erroneous enrolment estimates, and poor performance monitoring systems are the results (Akinyemi & Babalola, 2023; Ifinedo, 2022). A consequence of the fact that the majority of businesses continue to depend on reactive planning tactics is the fact that this has occurred. Due to the fact that this issue exists, it is of the utmost importance that the educational system in Nigeria undergo a digital transition as soon as it is possible to do so.

Taking this into perspective, the purpose of this study is to investigate the several ways in which applications of artificial intelligence might be used in an efficient manner to accomplish the goal of improving the efficiency of educational management and planning in Nigeria. One school of thought maintains that artificial intelligence has the potential to improve decision-making processes that are driven by data, to improve the accuracy of forecasting, to reduce the amount of administrative labour that is necessary, and to encourage institutional accountability. It is possible that the implementation of artificial intelligence into the educational planning systems of Nigeria has the potential to considerably enhance the efficacy and efficiency of the educational system in the nation. Further, this would put Nigeria in line with the most successful digital transformation plans that are now being applied all over the world. This will bring Nigeria into alignment with the global standard.

Empirical Review

In recent empirical study, it has been repeatedly shown that there is a rising worldwide interest in the use of artificial intelligence (AI) in education, notably in the development of administrative efficiency and the upgrading of decision-making processes. This interest has been on the rise in recent years. The findings of these studies have shed light on this interest that has been brought to its attention. For instance, research carried out in nations that are technologically advanced, such as the United States and China, demonstrates that AI-powered systems significantly increase the efficiency of institutions by automating administrative tasks, utilising predictive analytics, and implementing personalised learning systems. This is accomplished through the implementation of these systems. Utilising these systems allows for the successful completion of this task. In higher education, the majority of applications of artificial intelligence are concentrated on administrative support systems and learning analytics, as stated by Zawacki-Richter et al. (2019). Those who conducted the study discovered this. By using these applications, the organization is able to improve its productivity while simultaneously decreasing the amount of work that is carried out by individuals.

It has been shown via empirical evidence that the use of artificial intelligence into educational management has resulted in the development of student monitoring systems and the improvement of academic advising through the usage of predictive modelling tools in the United States. This has been demonstrated to be the case. There is evidence from recent studies that suggests educational institutions might potentially reap benefits from the use of machine learning algorithms in order to identify students who are at risk at an earlier stage. This enables educational institutions to implement timely interventions that increase academic performance and levels of student retention, which in turn enhances the overall student experience. In accordance with the findings of Holmes et al. (2022), the use of analytics that are powered by artificial intelligence makes it possible to design plans that are founded on data. Therefore, as a consequence of this, there is a significant improvement in the performance of educational institutions as well as the choices that they make.

The empirical research that was conducted in European educational systems focused a substantial amount of attention on the use of artificial intelligence for predictive analytics and learning analytics dashboards. This was the topic of a significant amount of attention. This is done in order to monitor the academic performance of pupils in their classrooms as well as the

efficiency with which educational institutions are operating. Research has shown that educational institutions in nations such as the United Kingdom, Germany, and Finland are increasingly embracing tactics that are centred on artificial intelligence. This is something that educational institutions in these countries are gradually adopting. The objective of these strategies is to foresee the performance of their pupils and to make the most of the resources that are available to them in order to achieve the best possible results.. The study was conducted by the University of California, Davis. Ifenthaler and Yau (2020) focused their examination on this particular subject and did research on it as their field of interest.

The use of artificial intelligence (AI) in educational settings is spreading throughout the African continent, particularly in nations such as South Africa and Kenya, according to the findings of an empirical study that was conducted. This pattern is especially widespread in the two nations that are now being discussed. There is still a significant disparity in the use of artificial intelligence in educational settings. This disparity may be attributed to limitations brought about by both the infrastructure and the financial resources available. The truth that this is still the case is not altered by the fact that technology has been more readily available to the general public. There are just a few educational institutions that have effectively integrated digital learning management systems and technologies that are driven by artificial intelligence. This is still the case even in the present day. In spite of the fact that certain educational institutions have previously used methodologies and technologies of this kind in the past, the situation remains the same. In spite of the fact that there have been some people who have done so in the past, this is the current state of affairs. As stated by the UNESCO (2023), there are a number of difficulties that prohibit educational institutions in Africa from making substantial use of artificial intelligence. These obstacles include a lack of funding, personnel, and resources. Because of these challenges, educational institutions are unable to use artificial intelligence on a large scale. The fact that educational institutions in Africa are gradually implementing digital technology into their operations does not change the fact that this is the reality. This is the case despite the fact that it is a truth. The problems that are now being encountered include, but are not limited to, inadequate infrastructure and a lack of technical experience. These are just two instances. Other challenges include a lack of resources.

The results of an empirical study that was carried out in Nigeria indicate that the use of artificial intelligence (AI) and digital technology in the administration of schools is still in its very early stages. In spite of this, it is gradually going to expand over the whole country. According to the findings of a poll, an increasing number of businesses are beginning to use management information systems (MIS), e-learning platforms, and fundamental data analytics technologies in order to provide assistance with administrative tasks. On the other hand, the utilisation of more advanced applications of artificial intelligence, including as automated decision systems and predictive analytics, continues to be restricted due to the limits imposed by infrastructure and legislation (OECD, 2021). This is the case despite the fact that these applications are becoming more complex.

Artificial intelligence is now being used for educational management and planning in developed nations; however, developing countries such as Nigeria are still in the process of embracing it. This is despite the fact that it is routinely utilised in wealthy nations. The conclusion that can be drawn from the empirical evidence that has been obtained from a broad variety of various fields of study is that this is the general conclusion that can be drawn. In situations where it is applied in the appropriate manner, artificial intelligence (AI) has the potential to improve efficiency, decision-making, and institutional performance, as stated by Dwivedi et al. (2021). This is the case in settings where it is implemented. The conclusions that have been drawn from a variety of studies that have been carried out provide the basis for this. When it comes to artificial intelligence, on the other hand, the efficiency of this technology is to a large extent reliant on infrastructure, technical skill, and the help of governmental agencies.

Artificial Intelligence in Education

Artificial intelligence is used to refer to intelligent systems that are meant to replicate human cognitive skills such as learning, reasoning, problem-solving, and decision-making. These abilities include learning, reasoning, and finding solutions to problems. The provision of practical assistance is the purpose of these systems, which are meant to ease the processes of teaching and learning, as well as the administration and decision-making procedures of institutions. The purpose of each of these technologies is to provide assistance to educators and administrators in order to enhance the effectiveness and precision of the delivery of educational services. They are capable of analysing massive databases, identifying patterns, and making forecasts without any difficulty. The purpose of each of these capacities is to contribute to the enhancement of educational delivery. Artificial intelligence (AI) technologies, such as machine learning, natural language processing, and predictive analytics, are rapidly being implemented into educational systems, as stated by Zawacki-Richter et al. (2019). The purpose of these technologies is to improve both academic and administrative responsibilities. This action is being taken in order to enhance the overall quality of the educational experience that is being provided.

The automation of regular administrative and instructional duties that are carried out inside educational institutions is another area in which artificial intelligence plays a key role. These jobs include instructing students and managing administrative tasks. The management of student records, the processing of admissions, the grading of assignments, and the scheduling of class schedules are all included in this area. All of these responsibilities, which often require a large amount of human labour and time, are covered in this category. A number of advantages may be attained via the use of artificial intelligence, including the enhancement of the effectiveness of establishments, the reduction of the quantity of administrative work that has to be completed, and the reduction of the likelihood of errors caused by human intervention. The authors Holmes et al. (2022) have proposed that artificial intelligence (AI) has the potential to improve educational systems by facilitating automation and providing help for decision-making processes that are driven by data. The use of these aspects results in an enhancement of the efficiency and effectiveness of educational institutions, which ultimately leads to the achievement of the intended outcomes.

Two examples of how artificial intelligence makes it possible to construct learning systems that are both adjustable and individualised are the analysis of data pertaining to learners and the adaptation of instructional material to meet the specific requirements of each individual. Both of these examples are examples of how artificial intelligence makes it possible to create learning systems. Because of this, educational institutions are able to provide students with individualised learning experiences, which, in turn, leads to an improvement in the level of involvement that students have in their studies and their overall academic accomplishment. The ability of artificial intelligence systems to make predictions about the outcomes of students and to give interventions for kids who are at risk is another advantage of these systems. The end outcome of this is that there is an increase in the percentage of pupils who are successful in their educational endeavours (Holmes et al., 2022).

Educational Management

Management of educational resources is the deliberate process of planning, organising, coordinating, directing and controlling the human, financial, material, technological and informational resources available to an educational institution in order to achieve predetermined educational objectives efficiently and effectively. It involves not only the acquisition and provision of resources but also their appropriate allocation, utilisation, maintenance, monitoring and evaluation. In educational institutions, resource management

covers such activities as student admission, recruitment and deployment of personnel, budgeting and financial administration, provision and maintenance of facilities, procurement of instructional materials, curriculum implementation, supervision and execution of educational policies. Bush (2020) explained that educational management is concerned with the application of management principles to the organisation and operation of educational institutions, with particular attention to the achievement of institutional goals.

In the Nigerian context, the management of educational resources has become increasingly important because educational institutions operate within an environment characterised by growing enrolment, competing institutional demands, inadequate funding, infrastructural deficiencies and the need for greater accountability. Umesi and Nwanguma (2025) specifically observed that effective educational management is essential for the advancement of educational programmes and objectives in Nigeria. They argued that although educational management is critical to organisational effectiveness, several emerging challenges continue to affect the effective management of education in the country. They consequently emphasise the need to strengthen the professional competence and capacity of educational planners and managers and to provide the resources required for effective educational management.

The Nigerian dimension is also evident in the growing importance of information management in educational administration. Nwankwo and Odunze (2025) investigated management information systems (MIS) data-collection methods for university administrators' decision-making processes in South-East Nigeria. Their study demonstrates that information is an important resource in educational administration because administrators require reliable and timely information to make appropriate decisions. Thus, management of educational resources in Nigerian institutions should not be restricted to physical facilities, finances and personnel; it should also encompass the systematic generation, processing, storage and utilisation of institutional information for planning and decision-making.

Furthermore, effective management of educational resources requires the proper coordination of human resources. Teachers, administrators, support staff and other employees constitute important resources through which educational objectives are achieved. The availability of qualified personnel alone, however, does not guarantee institutional effectiveness. Such personnel must be appropriately recruited, deployed, supervised, motivated and developed. In Nigeria, where educational institutions frequently experience shortages and uneven distribution of personnel, effective deployment and utilisation of available human resources are particularly important. This reinforces the argument of Umesi and Nwanguma (2025) that the competence and professional status of educational managers and planners need to be strengthened to improve educational management in Nigeria.

Financial resources also constitute a major component of educational resource management. Educational institutions require adequate funds to pay personnel, procure instructional materials, maintain infrastructure, support teaching and learning activities and implement development programmes. However, the effectiveness of financial resources depends not only on the amount available but also on the manner in which they are planned, allocated and controlled. Poor budgeting, inappropriate expenditure and weak accountability can result in wastage and reduce the capacity of an institution to achieve its educational objectives. Consequently, sound educational management requires transparent budgeting, expenditure control, monitoring and accountability mechanisms.

Material resources are equally important. These include classrooms, offices, laboratories, libraries, workshops, furniture, teaching aids, textbooks, information and communication technology facilities and other physical infrastructure required for effective teaching and learning. The availability and proper maintenance of such resources influence the quality of the educational environment. In the Nigerian educational system, therefore,

educational resource management should involve continuous assessment of the condition and adequacy of facilities, prioritisation of institutional needs and effective maintenance of existing resources rather than concentrating exclusively on the acquisition of new ones. This is consistent with Umesi and Nwanguma's (2025) position that adequate attention and resources are necessary for effective educational management in Nigeria.

Another important dimension of educational resource management is the use of information and communication technologies. Contemporary educational institutions increasingly depend on digital systems for student records, staff administration, financial management, communication, monitoring and institutional decision-making. Nwankwo and Odunze (2025) provided a Nigerian example of this development by examining the use of management information systems in universities in South-East Nigeria. Their work indicates the relevance of systematic information collection to administrative decision-making, suggesting that digital information resources can contribute to more informed and efficient educational management when properly implemented.

The growing application of artificial intelligence has further expanded the possibilities for educational resource management. Artificial intelligence systems can support administrators through data analysis, automated reporting, performance monitoring, prediction and decision-support functions. Holmes et al. (2022) noted that artificial intelligence is increasingly influencing education and has potential applications across different aspects of educational systems. However, the application of AI should not be understood as a substitute for professional educational managers. Rather, it can serve as a decision-support resource that enables managers to analyse larger quantities of information and identify patterns that may not be immediately apparent through conventional administrative procedures.

The relevance of this emerging technology is particularly evident in Nigeria. Nwankwo and Odunze (2025) investigated the preparedness of educational managers for the application of artificial intelligence and machine learning in the management of secondary schools in Nigeria. Their study involved education managers drawn from the six geopolitical zones of the country and directly examined the readiness of educational managers to apply AI and machine learning in educational management. This Nigerian evidence is particularly relevant because it shows that artificial intelligence is no longer merely a theoretical issue for Nigerian education; its possible application to educational administration and management is already receiving empirical attention.

Nevertheless, the adoption of digital and AI-based approaches to educational resource management in Nigeria must take account of contextual realities. Issues such as inadequate digital infrastructure, unreliable electricity supply, limited internet access, inadequate funding, shortage of technically skilled personnel and varying levels of digital literacy can affect the successful adoption of technology-based management systems. Consequently, the effectiveness of AI-supported educational management cannot be separated from the availability of the basic infrastructure and human capacity required to operate such systems. The Nigerian perspective therefore calls for a gradual and context-sensitive approach that combines technological innovation with investment in infrastructure, professional development and institutional capacity.

Effective management of educational resources also requires monitoring and evaluation. Educational managers need to determine whether human, financial, material and technological resources are producing the expected outcomes. Monitoring enables administrators to identify resource shortages, wastage, underutilisation and emerging institutional needs, while evaluation provides evidence for subsequent planning and decision-making. In this regard, management information systems can provide administrators with timely information for institutional monitoring, while emerging AI technologies can potentially strengthen data analysis and forecasting. Nwankwo and Odunze (2025) demonstrated the

relevance of information systems to administrative decision-making in Nigerian universities, while Nwankwo and Odunze (2025) extended the discussion to the emerging application of AI and machine learning in Nigerian educational management.

Furthermore, management of educational resources is a comprehensive process involving the planning, acquisition, allocation, utilisation, maintenance, monitoring and evaluation of resources for the achievement of educational objectives. While Bush (2020) provided a broader theoretical foundation for understanding educational management, Nigerian scholars have demonstrated why the concept must be interpreted within the realities of the Nigerian educational system. Umesi and Nwanguma (2025) highlighted the challenges and requirements of educational management in Nigeria, while Nwankwo and Odunze (2025) demonstrated the importance of management information systems for administrative decision-making in South-East Nigerian universities. More recently, Nwankwo and Odunze (2025) have examined the preparedness of Nigerian educational managers for AI and machine learning. Therefore, the management of educational resources in the Nigerian context should be understood as both a traditional administrative responsibility and an increasingly technology-supported process. Effective management requires competent educational managers, adequate funding, appropriate facilities, qualified personnel, reliable information systems, accountability mechanisms and the capacity to adopt emerging technologies responsibly. The integration of these elements can enhance efficiency, transparency, informed decision-making and institutional effectiveness within Nigerian educational institutions.

Educational Planning

The term "educational planning" refers to the process of establishing educational goals in a way that is consistent with logic, forecasting future needs, and assigning resources in order to achieve the desired educational results. The application of this strategy is what ultimately leads to the achievement of the intended educational outcomes. A strategic role that is accountable for ensuring that educational systems are responsive to the necessities of society, the expansion of the population, and the goals of national development is the one that is responsible for achieving this purpose. This role is responsible for seeing to it that this purpose is accomplished. The strategic role is responsible for fulfilling this duty. In the process of achieving sustainable development goals, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), which is an abbreviation that stands for the UNESCO, places a strong focus on the relevance of effective educational planning. This is particularly true in developing nations, which are having a difficult time providing sufficient resources while simultaneously accommodating populations that are rising (Nwankwo & Odunze, 2025).

One of the most important objectives of educational planning is to improve the efficiency of educational institutions and the allocation of the resources that are available. The process of educational planning is comprised of a number of components, including the gathering of data, the examination of that data, the hypothesising about future events, and the design of policies (Umesi & Nwanguma, 2025). By ensuring that educational institutions are fully prepared to meet future needs, such as the increase in the number of students enrolled, the rise in the number of instructors that are required, and the development of infrastructure, this guarantee ensures that educational institutions are appropriately equipped. It is nearly usually the case that ineffective planning results in classrooms that are overcrowded, facilities that are not acceptable, and poor use of the resources that are available. In the vast majority of instances, this is the situation.

Data analytics and digital technology, which considerably increase the accuracy of forecasting and decision-making, are becoming an increasingly crucial driving force behind educational planning in modern contexts. This is because these technologies allow for large improvements in each of these metrics. More and more significance is being placed on this

particular aspect. This is because these technologies make it feasible to produce considerable advances in each of these criteria, which is the reason why this is the case. As stated by the Organization for Economic Co-operation and Development (2021), one of the ways that artificial intelligence and digital technologies are able to significantly improve educational planning is by providing predictive analytics, reducing uncertainty, and supporting policy decisions that are evidence-based. This is what makes it possible for these technologies to significantly improve educational planning. To name just a few of the ways in which these technologies might assist in enhancing educational planning, here are some examples. As a consequence of this, artificial intelligence systems play a vital role in boosting the efficiency of educational planning processes and ensuring that these procedures will continue to be sustainable during the duration of their deployment because of their ability to ensure their continued viability.

AI Applications in Educational Management

The introduction of a broad variety of apps that are causing changes in school administration is one of the many benefits that have been brought about by artificial intelligence (AI), which has in turn brought about a number of other advantages. The use of these apps is enhancing the processes of decision-making, as well as efficiency and accuracy. One of the most important uses of this technology is the ability to make predictions about the performance of students via the use of machine learning (ML). Using prior academic data, attendance records, and behavioural tendencies, this application's goal is to identify children who are at danger of not doing well in school or dropping out of school. This will be accomplished by assessing the data. These prediction algorithms allow school administrators to adopt early intervention techniques that result in an increase in the percentage of children who are successful. This is made possible by the fact that these algorithms allow for the implementation of these tactics. In the field of educational data mining, the use of machine learning methods, as stated by Kotsiantis et al. (2020), significantly enhances the capacity of educational institutions to anticipate the consequences of academic attempts and to provide assistance for proactive decision-making.

The topic of administrative communication is another popular use of natural language processing (NLP), which is also a useful application. Robots are able to comprehend, understand, and reply to human language via the use of natural language processing, often known as NLP. Natural language processing (NLP) is used in a significant manner by a number of applications, including educational chatbots, automated email systems, and document processing tools, with the goal of enhancing communication between students, staff, and administrators. To name just a few instances, here are several. There has been a reduction in the amount of administrative work that is necessary as a consequence of the enhancements that have been made to the communication systems of the organization. According to Yang et al. (2021), natural language processing (NLP)-based solutions have the potential to automate a variety of tasks, including text categorisation, sentiment analysis, and communication operations. These solutions have the ability to increase the efficiency of organisations by automating tasks in educational settings.

Another area that makes substantial use of artificial intelligence is the field of intelligent scheduling systems. The scheduling of lectures, examinations, and the allocation of resources is accomplished via the use of optimisation techniques by these systems. By using these information systems, educational institutions are able to use classrooms, lecturers, and resources in the most effective manner possible, hence reducing the number of scheduling disputes that happen. On the other hand, in contrast to human scheduling, scheduling systems that are based on artificial intelligence are able to analyse several constraints simultaneously and generate effective schedules in a little amount of time. Intelligent timetabling systems are

able to significantly improve scheduling efficiency and reduce administrative burden at universities, as stated by Rudová et al. (2020). These enhancements are made possible via the use of methodologies that are founded on constraint-based optimisation.

Artificial intelligence is a crucial component of data analytics dashboards and automated assessment systems, which are used for the purposes of decision-making and evaluation. This is an attempt to add insult to injury. By giving a visual depiction of institutional performance indicators in real time, data dashboards make it possible to make decisions based on that information. Among these indications are the achievements of students, the expenditures of financial resources, and the productivity of personnel. Assignments and examinations are evaluated by automated grading systems, which, on the other hand, make use of algorithms that are based on artificial intelligence. In addition to reducing the amount of work that teachers are required to undertake, this makes it possible to provide feedback in a more timely manner. Ifenthaler and Yau (2020) proposed that the utilisation of learning analytics dashboards and assessment tools that are powered by artificial intelligence may have the potential to improve the transparency of higher education institutions, as well as to promote institutional monitoring and the efficiency of educational decision-making. This is according to the proposition that they have presented.

Benefits of AI in Educational Management and Planning

The key benefits of AI in educational management and planning are buttressed below:

1. **Improved decision-making accuracy:** Artificial intelligence (AI) can improve the accuracy and timeliness of decision-making in educational institutions by enabling administrators to analyse large volumes of institutional data and identify patterns that may not be readily apparent through conventional methods. AI-supported analytics can assist managers in monitoring student enrolment, attendance, academic performance, staff deployment and institutional operations, thereby providing evidence for more informed administrative decisions. In Nigeria, Nwankwo and Odunze (2025) examined the preparedness of educational managers for the application of AI and machine learning in the management of secondary schools, demonstrating the growing relevance of these technologies to educational administration. UNESCO (2021) similarly noted that AI can support educational planning and management through data-informed decision-making, although appropriate ethical safeguards are necessary.
2. **Reduced administrative workload:** AI can reduce the administrative workload of educational managers by automating repetitive activities such as record management, report generation, student information processing, scheduling and routine communication. This allows administrators to devote more time to strategic planning, supervision and other human-centred responsibilities. Emegwa (2025) explained that the integration of AI into educational management information systems can support administration, data analysis and timely decision-making, thereby improving administrative processes and coordination in Nigerian educational institutions. Thus, AI can complement educational managers by reducing routine information-processing tasks and enabling them to concentrate on more complex administrative responsibilities.
3. **Enhanced planning efficiency:** AI can contribute to more effective educational planning by analysing historical and current data to forecast student enrolment, staffing requirements, infrastructure needs and other resource demands. Educational institutions can therefore use AI-supported forecasting to anticipate future needs and make appropriate preparations. UNESCO IIEP (2025) highlighted the growing potential of AI and data-driven technologies for educational planning and governance. In the Nigerian context, Nwankwo and Odunze (2025) emphasized the emerging relevance of

AI and machine learning to educational management and the need for educational managers to develop the capacity to use these technologies effectively.

4. **Better resource utilization:** AI can support the efficient utilisation of educational resources by assisting administrators in allocating staff, facilities, funds and other resources according to identified institutional needs. AI-based systems can analyse information relating to enrolment, staffing, infrastructure and institutional performance and provide decision-support information for resource allocation. Ogunode and Gregory (2023) identified improved data analysis, decision-making and resource optimisation as potential benefits of AI in educational administration. However, AI-supported resource allocation still requires human oversight because inaccurate data, algorithmic bias and unequal technological capacity may result in inappropriate decisions.

Challenges of AI Adoption in Nigeria

The Challenges of AI Adoption in Nigeria are stated below:

1. **Poor infrastructure:** One of the major challenges affecting the adoption of artificial intelligence (AI) in Nigerian educational institutions is inadequate digital and physical infrastructure. AI-supported educational management requires reliable electricity, internet connectivity, appropriate computing facilities and access to digital platforms. However, infrastructural limitations can make it difficult for institutions to implement and sustain AI-based systems. Emegwa (2025) noted that although AI has potential to improve educational administration, its effective application within educational management information systems requires appropriate technological support. More recent evidence from Nigerian higher education also identifies significant infrastructural deficits as one of the major barriers to AI-enabled digital transformation (Adebayo et al., 2026). Therefore, without substantial improvement in electricity supply, connectivity and digital infrastructure, the benefits of AI adoption may remain limited in many Nigerian educational institutions.
2. **Limited technical expertise:** Another significant challenge is the shortage of adequate AI literacy and digital skills among educational managers and other personnel. The effective use of AI requires administrators to understand how to operate digital systems, interpret AI-generated information and recognise the limitations and potential biases of automated systems. Nwankwo and Odunze (2025) specifically examined the preparedness of educational managers for the application of AI and machine learning in Nigerian secondary-school management, highlighting the importance of managerial preparedness for successful adoption. Similarly, evidence from Nigerian higher education indicates that inadequate digital literacy among staff and limited institutional readiness continue to constrain AI adoption (Adebayo et al., 2026). This suggests that investment in continuous professional development, digital literacy and AI-related training is necessary if educational administrators are to use AI effectively and responsibly.
3. **High cost of implementation:** The financial requirements associated with AI adoption constitute another challenge for Nigerian educational institutions. Implementing AI systems may require investment in computers and other digital devices, software, internet services, data infrastructure, system maintenance and staff training. Institutions with limited financial resources may therefore find it difficult to acquire and maintain sophisticated AI technologies. Lawrence et al. (2025) argued that investments in infrastructure and professional development are essential for supporting AI integration within Nigeria's tertiary education system. They further note that equitable access to AI technologies is necessary to prevent existing digital inequalities from becoming wider.

Consequently, the financial implications of AI adoption need to be considered alongside the expected benefits, particularly in institutions operating under significant resource constraints.

4. **Policy and ethical issues:** AI adoption in Nigerian education also raises important concerns relating to policy, data privacy, security, transparency, accountability and algorithmic bias. Educational institutions process sensitive information about students, staff and other stakeholders; therefore, the use of AI systems must ensure that such information is properly protected. Omezurike et al. (2026) identified data privacy, algorithmic bias, fairness, transparency and accountability as important ethical issues surrounding AI implementation in the Nigerian education system and emphasise the need for comprehensive guidelines and robust data governance. Similarly, Lawrence et al. (2025) argued that Nigeria requires stronger policy and regulatory frameworks to address data privacy, ethical considerations and equity in AI adoption. Thus, the absence of sufficiently developed institutional policies and clear ethical guidelines can reduce confidence in AI systems and hinder their responsible adoption in Nigerian educational institutions.

Conclusion

There is a significant revolutionary prospect for the development of educational management and planning in the country of Nigeria that may be brought about by the use of artificial intelligence (AI), which has a large potential in and of itself. This scenario has the ability to bring about a significant revolution. Because it has the capacity to increase the accuracy of decision-making, automate administrative operations, and give aid for data-driven planning, it is an instrument that is important for educational institutions that are both conventional and modern in their approach to education. A rise in both the competence and effectiveness of businesses that make use of artificial intelligence (AI) is the result of using AI in an appropriate manner, as shown by the empirical data. This is the consequence of the usage of AI.

On the other hand, the adoption of artificial intelligence in Nigeria's education sector is hindered by a number of obstacles, including insufficient legislative frameworks, high implementation costs, a lack of technical skill, and underdeveloped infrastructure. The extensive use of artificial intelligence in the educational system of the nation is being hampered by these obstacles. In spite of the fact that artificial intelligence has the ability to bring about a broad variety of benefits, the truth of the matter is that this is the scenario that exists. Because of these particular limits, the effective inclusion of artificial intelligence into the administrative systems of educational institutions is limited. This is a result of the restrictions.

Therefore, in order for artificial intelligence to reach its full potential in terms of bringing about advances in the education sector in Nigeria, there is a need for strategic investments, the development of competence, and strong backing from the government. These are the ingredients that are required. It is necessary to have these three items in order to proceed. Artificial intelligence has the ability to significantly improve the efficiency of planning, the accuracy of planning, and the overall educational outcomes in Nigeria, provided that it is used in an appropriate environment.

Suggestions

The suggestions for the paper are stated below:

1. The government should invest in reliable digital infrastructure such as stable electricity and internet connectivity in schools to support AI integration.
2. Regular training and capacity-building programs should be introduced for educational administrators to improve AI literacy and technical competence.

3. The education sector should develop clear and comprehensive AI policies to guide ethical use, implementation, and management of AI systems.
4. Universities and colleges of education should integrate AI literacy and digital skills into teacher education curricula to prepare future educators.
5. Public-private partnerships should be encouraged to promote innovation and investment in Educational Technology (EdTech) development.
6. Strong data protection laws should be enforced to safeguard student information and ensure ethical use of AI systems in education.

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