



APPLICATION OF ARTIFICIAL INTELLIGENCE IN THE MANAGEMENT OF UNIVERSITY EDUCATION FOR THE DELIVERY OF QUALITY EDUCATION IN ANAMBRA STATE, NIGERIA

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Abstract

This study investigated the application of artificial intelligence in the management of university education for the delivery of quality education in Anambra State. Two research questions and two hypotheses guided the study. The study adopted a correlational survey design with a population of 807 academic staff and 21 administrative heads (Heads of Departments, Dean and Directors of Institutes) in the Faculty of Education of Nnamdi Azikiwe University, Awka, and Chukwuemeka Odumegwu Ojukwu University, Uli making a total of 828 staff in the Faculty of Education of the two universities. A sample of 171 staff was drawn from the two universities using multi-stage sampling procedure. This included 150 academic staff and 21 administrative heads. The instrument used was questionnaire titled: 'artificial intelligence in the management of university education for the delivery of quality education Questionnaire (AIMUEDQE)' developed by the researchers. The instrument was validated and the internal consistency was determined through Chronbach Alpha at 0.88. Mean and standard deviation scores were used to answer the research questions and t-test was used to test the hypotheses at 0.05 alpha significant level. The findings revealed that, the ways artificial intelligence can be applied in university education for the delivery of quality education in Anambra State include: reshaping future education practices using artificial intelligence, strengthening the cultivation of professional talents in artificial intelligence, attaching importance to ethical issues in the application of artificial intelligence in education management, stimulating teachers' high-level thinking and initiative, equipping the next generation of educational managers with leadership skills to perform their expected jobs, managing classroom activities for enhanced productivity using artificial intelligence innovations. There is no significant difference between the mean scores of administrative heads and academic staff on the ways artificial intelligence could be applied in the university education for delivery of quality education in Anambra State. Based on the findings, recommendations were made.

Keywords: Artificial intelligence, management, university education, delivery of quality education

Introduction

Artificial intelligence is a product of the development of modern day industry and university growth. Application of artificial intelligence in the management of university education has opened up various opportunities that enable personalization of teaching and learning for improved efficiency of resource management and administrative processes. Artificial intelligence is an educational resource that has brought great convenience in the management of university education for the delivery of quality education. Artificial intelligence is emerging as the next game changer in the field of education and technology as it simulates human cognitive processes through computer systems. According to Dangwal (2023), the use of artificial



intelligence might considerably improve the overall functioning of the educational system. The key goals of integrating artificial intelligence in educational management and administration are to improve educational practices and administrative quality. Artificial intelligence is based on data and programs that are more specific and accurate in providing services, more scientific in learning suggestions, more reasonable in knowledge content, and more significant on the quality and benefits of education (Yu, 2023).

Innovations in university education are very important and essential to aligning teaching with technological developments for the delivery of quality education. The use of artificial intelligence (AI) offers great potential to improve educational management in university education through optimizing the teaching and learning process for quality output (Siminto, Akib, Hasmiati & Widiyanto, 2023). The various technological applications carried out by artificial intelligence have broken through the technical barriers of traditional education informatization, endowing artificial intelligence with contemporary significance and enhancing the application of new awareness in the reform of education management informatization, which is of great significance for educational reform. According Xing (2023), the combination of artificial intelligence and educational management aims to change the talent cultivation mode, with a focus on improving the quality and efficiency of education system. Lecturers and university administrators must have the knowledge of application of artificial intelligence in the management of education and teaching to enhance practical skills of learners, transfer experience to the students, and form a systematic and comprehensive learning system for quality output (Huang & Zhang, 2019).

With the rapid development of technology, artificial intelligence has become an important catalyst in designing an education system that is more efficient, adaptive and responsive to individual needs (Allam & Dhunny, 2019). In university education, the use of artificial intelligence in education management promises a more reliable transformation (Chanas et al., 2019). University administrators use artificial intelligence as powerful tool for the management of university education with a focus on improving the quality and efficiency of the system. Artificial intelligence is used to strengthen data collection and processing; upgrade education management information systems; create a more inclusive, fair, and open education environment; cultivate personalized learning, autonomous learning, enhance critical thinking, collaborate with peers to explore problems, cultivate innovative thinking methods, and improve students' practical abilities and levels (Liang & Lui, 2018).

Looking at ways of empowering students' learning, artificial intelligence upgrades the educational environment, provides personalized support for students in various forms of learning, comprehensively organizes student data, and obtains a comprehensive evaluation of students' comprehensive quality. On the ways of empowering lecturers' growth and development, artificial intelligence helps them actualise their academic work, supports them in professional development, and helps update educational information technology, concepts, and models (Yu, 2021). On the area of empowering educational management, artificial intelligence provides the basis for educational decision-making, promotes humanized management, locates the needs of teachers and students, and finely manages schools, promoting the transformation of educational management models. According to Huang (2019), there are strategies needed to stimulate lecturers' and administrative heads of universities' high-level thinking and initiative, which can lead the next generation of educational artificial intelligence innovation. Such strategies include: provision of professional training and support for lecturers, providing relevant training opportunities for them to understand the basic principles of artificial intelligence, application scenarios and development trends in the field of education, and continuously updating their knowledge and skills through continuous learning to improve their professional level. However, universities create an innovative environment for lecturers by creating an environment that encourages innovation and exploration, giving them freedom and space to practice and try new educational methods and tools.

University management provides necessary resources and support to help lecturers implement educational artificial intelligence innovation for the delivery of quality education. University management emphasizes on teamwork and communication among lecturers by encouraging communication and cooperation among them, sharing innovative experiences and best practices for smooth delivery of quality education in universities (Nwabueze, 2017). The university management provides reward and recognition mechanisms for lecturers, establish reward and recognition mechanisms to encourage them to actively participate in educational artificial intelligence innovation, and incorporate their achievements into their evaluation system, providing more motivation and motivation for teachers.

Artificial Intelligence (AI) used in the management of university education for the delivery of quality education are: Virtual learning platforms such as Online course platforms (Udemy, Coursera, and edX),



Intelligent tutoring systems such as AI-powered tools (Khan Academy, DreamBox, and Carnegie Learning), Language Learning apps (Duolingo, Babbel, and Rosetta Stone), Essay Writing Tools such as AI-powered tools (Grammarly, Pro Writing Aid, and Turn-it-in). Also included are: Mathematics and Science Problem Solvers (Wolfram Alpha, Symbolab, and Mathway), Research Assistants (Google Scholar, Semantic Scholar, and Microsoft), and Virtual Study Groups (Discord, Slack, and Google Groups). Others are: AI-powered notetaking such as (Evernote, OneNote, and Simplenote), and Learning Management Systems such as Canvas, Blackboard, and Moodle (Offor, Nwaru & Offiah, 2024). These AI tools enhance teaching, learning, productivity, and accessibility, and are becoming increasingly popular in education.

The expected performance of artificial intelligence in educational management is as follows: retrieving and securing knowledge for improved productivity, using reasoning actions in knowledge sharing, comprehending languages, and understanding people requirements in delivering quality education, and connecting dots via learning. Artificial intelligence can be effectively included in educational management to streamline the various processes and procedures that define the day-to-day functionalities, although many of the claims of the revolutionary potential of AI in education are based on conjecture, speculation, and optimism (Nemorin, 2021). However, students that rely too heavily on AI use it to generate fake academic certificates or transcripts and spread false information or propaganda. This why Omame and Alex (2020) had stated that students using Artificial Intelligence (AI) to write exams is a growing concern in academic integrity. They may use artificial intelligence tools to generate answers to exam questions, potentially without understanding the content. Equally, Muayyad and Maha (2024) agreed that students utilize AI-powered tools to write entire essays or assignments, potentially passing them off as their own work and rely on AI-powered chatbots or tutoring tools to complete assignments or answer exam questions without proper understanding.

Statement of the Problem

The management of university education has become a serious challenge in recent time due to the abuse of artificial intelligence tools by staff and students in research, teaching and learning. The abuse of artificial intelligence in the management of university education affects the delivery of quality education and institutional productivity. However, if the teachers and students become overly dependent on artificial intelligence, it would limit their abilities to acquire critical thinking skills and cognitive abilities, and solely become very dependent on machines to perform their functions. This will hinder them from teaching, learning or managing what it means to be multitasking or push them to be creative. This therefore may limit their ability to attain their full potential and explore the abilities to carry out academic assignments through the use of artificial intelligence. Some university students seem to abuse the use of artificial intelligence (AI) for examination malpractice, and equally use AI-powered chatbots to provide answers during online examinations. The students use AI-powered tools to generate essays, making it difficult to detect plagiarism, and AI-powered deep fakes are used to impersonate during online examinations. Based on this, it appears that students may use AI tools negatively due to overreliance on technology to pass their examinations and work on assignments. Hence, excessive use of artificial intelligence can lead to decreased critical thinking and problem-solving skills, as well as poor human interaction among staff and students of universities.

Purpose of the Study

The aim of this study is to investigate the application of artificial intelligence in the management of university education for the delivery of quality education in Anambra State. Specifically, the objectives are to:

1. find out the ways of managing university education for the delivery of quality education in Anambra State; and
2. ascertain the ways artificial intelligence can be applied in the university education for delivery of quality education in Anambra State.

Research Questions

The following research questions guided the study.

1. In what ways can university education be managed for the delivery of quality education in Anambra State?
2. In what ways can artificial intelligence be applied in university education for the delivery of quality education in Anambra State?



Hypotheses

The following hypotheses were posed and tested at a 0.05 level of significance.

1. There is no significant difference between the mean scores of academic staff and administrative heads on the ways of managing university education for the delivery of quality education in Anambra State.
2. There is no significant difference between the mean scores of academic staff and administrative heads on the ways artificial intelligence can be applied in the university education for delivery of quality education in Anambra State.

Methodology

The study adopted a correlational survey design with a population of 828 administrative heads and academic staff of the Faculty of Education in the two Universities in Anambra State, Nigeria. They included 807 academic staff and 21 administrative heads (Heads of Departments, Dean and Directors of Institutes) in the Faculty of Education of Nnamdi Azikiwe University, Awka, and Chukwuemeka Odumegwu Ojukwu University, Uli making a total of 828 staff. A sample of 171 staff was drawn from the two universities using multi-stage sampling procedure representing 20.7% of the population. This included 150 academic staff drawn using stratified random sampling technique and 21 administrative heads drawn using purposive sampling technique. Nnamdi Azikiwe University, Awka had 12 administrative heads and 85 academic staff, while Chukwuemeka Odumegwu Ojukwu University, Uli had 9 administrative heads and 65 academic staff. The instrument used was questionnaire titled: 'application of artificial intelligence in the management of university education Questionnaire (AAIMUEQ)' developed by the researchers. The instrument had two sections: sections A & B. Section A comprised demographic information of respondents such as: name of institution and staff status. Section B comprised two cluster designed based on the researcher objectives, questions and hypotheses. The instrument was validated by three experts in the Faculty of Education, Nnamdi Azikiwe University, Awka. The reliability of the instrument was ascertained in University of Nigeria Nsukka on 20 administrative heads and academic staff through Crombach Alpha Method, and internal consistency was determined at 0.84 for cluster A and 0.92 for cluster B, with an overall reliability index of 0.88. Mean and standard deviation scores were used to answer the research questions and t-test was used to test the hypotheses at 0.05 significant level.

Results

Research Question One: In what ways can university education be managed for the delivery of quality education in Anambra State?

Table 1: Mean scores and standard deviation of staff on the ways university education can be managed for the delivery of quality education

S/N	Ways university education can be managed for the delivery of quality education include:	Admin. Heads (21)		Acad. Staff (150)		Decision
		Mean	St.D	Mean	St.D	
1	Taking adequate motivation of staff to improve their functional performances	3.10	1.51	3.13	0.56	Agreed
2	Involving staff in technology training to boost their knowledge and skills of using artificial intelligence for academic purposes	3.18	1.49	3.07	0.57	Agreed
3	Adopting proper supervisory techniques in the management university education	3.34	1.45	3.23	0.55	Agreed
4	Promoting good condition of service to improve performance of staff	3.13	1.50	2.87	0.58	Agreed
5	Managing school finance for institutional up-keep	3.22	1.48	3.13	0.56	Agreed
6	Ensuring job security system in university institutions to promote staff active commitment to duties	3.22	1.48	3.09	0.57	Agreed
7	Providing the staff with poor accommodation within the school environment	2.00	1.75	2.13	0.71	Disagreed
8	Ensuring that staff offices are properly installed to	3.15	1.50	3.13	0.56	Agreed



	accommodate their performance functions					
9	Encouraging discipline among staff to create positive development in the institution	3.16	1.49	3.15	0.56	Agreed
10	Managing available educational facilities in the school system increases staff productivity	2.96	1.54	3.01	0.58	Agreed
	Aggregate Mean Score	3.05	1.52	2.99	0.58	Agreed

Data presented on Table 1 showed the mean scores and standard deviation of administrative heads and academic staff on the ways university education can be managed for the delivery of quality education in Anambra State. The respondents agreed on item 1-6, 8- 10 with high mean scores above the mean criterion of 2.50, and disagreed on item 7 with mean score below the mean criterion of 2.50. Based on the analysis, it can be seen that the higher the mean score, the lower the standard deviation and vice-versa. The aggregate mean scores of 3.05 (St.D. = 1.52 and 2.99 (St.D. 0.58) for administrative heads and academic staff respectively indicated that the items in the table are agreed upon. Therefore, the ways university education can be managed for the delivery of quality education in Anambra State include: taking adequate motivation of staff to improve their functional performances, involving staff in technology training to boost their knowledge and skills of using artificial intelligence for academic purposes, adopting proper supervisory techniques in the management university education, promoting good condition of service to improve performance of staff, and managing school finance for institutional up-keep. Other ways of managing university education include: ensuring job security system in university institutions to promote staff active commitment to duties, providing the staff with poor accommodation within the school environment, ensuring that staff offices are properly installed to accommodate their performance functions, encouraging discipline among staff to create positive development in the institution, and managing available educational facilities in the school system increases staff productivity.

Research Question Two: In what ways can artificial intelligence be applied in university education for the delivery of quality education in Anambra State?

Table 2: Mean scores and standard deviation of staff on the ways artificial intelligence can be applied in university education for the delivery of quality education in Anambra State

S/ N	Ways artificial intelligence can be applied in university education for the delivery of quality education include:	Admin. Heads (21) Mean	St.D	Acad. Staff (150) Mean	St.D	Decision
11	Reshaping future education practices using artificial intelligence	3.12	1.50	3.16	0.56	Agreed
12	Strengthening the cultivation of professional talents in artificial intelligence	3.26	1.47	3.24	0.55	Agreed
13	Attaching importance to ethical issues in the application of artificial intelligence in education management	3.30	1.46	3.30	0.54	Agreed
14	Stimulating teachers' high-level thinking and initiative	3.23	1.48	3.20	0.55	Agreed
15	Equipping the next generation of educational managers with leadership skills to perform their expected jobs	3.37	1.44	3.20	0.55	Agreed
16	Managing classroom activities for enhanced productivity using artificial intelligence innovations	3.18	1.49	3.28	0.54	Agreed
17	Retrieving and securing knowledge for improved productivity using artificial intelligence	3.29	1.46	3.14	0.56	Agreed
18	Using reasoning actions for knowledge sharing through AI-powered tools	3.29	1.46	3.10	0.57	Agreed
19	Using AI-based virtual assistants to support knowledge transfer	2.93	1.54	2.97	0.58	Agreed
	Aggregate Mean Score	3.22	1.48	3.18	0.56	Agreed

Data presented on Table 2 showed the mean scores and standard deviation of academic staff and administrative heads on the ways artificial intelligence can be applied in university education for the delivery



of quality education in Anambra State. The respondents agreed on all the items with high mean scores above the mean criterion of 2.50. Based on the analysis, it can be deduced that the higher the mean score, the lower the standard deviation and vice-versa. The aggregate mean scores of 3.22 (St.D. = 1.48) and 3.18 (St.D. = 0.56) for administrative heads and academic staff respectively indicated that the items in the table are agreed upon. Therefore, the ways artificial intelligence can be applied in university education for the delivery of quality education in Anambra State include: reshaping future education practices using artificial intelligence, strengthening the cultivation of professional talents in artificial intelligence, attaching importance to ethical issues in the application of artificial intelligence in education management, stimulating teachers' high-level thinking and initiative, equipping the next generation of educational managers with leadership skills to perform their expected jobs, managing classroom activities for enhanced productivity using artificial intelligence innovations, retrieving and securing knowledge for improved productivity using artificial intelligence, using reasoning actions for knowledge sharing through AI-powered tools, and using AI-based virtual assistants to support knowledge transfer.

Hypothesis One: There is no significant difference between the mean scores of administrative heads and academic staff on the ways of managing university education for the delivery of quality education in Anambra State.

Table 3: Summary of t-test analysis on the difference between the mean scores of administrative heads and academic staff on the ways of managing university education for the delivery of quality education

Staff	N	Mean	St.D	df	t-calculated value	t-critical value	Decision
Administrative Heads	21	3.05	1.52	169	1.04	±2.00	Accept Ho1
Academic staff	150	2.99	0.58				

Data presented on Table 3 showed the summary of t-test analysis on the difference between the mean scores of administrative heads and academic staff on the ways of managing university education for the delivery of quality education in Anambra State. The null hypothesis was accepted because the t-calculated value of 1.04 is less than the t-critical value of ±2.00. This implies that, there is no significant difference between the mean scores of administrative heads and academic staff on the ways of managing university education for the delivery of quality education in Anambra State.

Hypothesis Two: There is no significant difference between the mean scores of administrative heads and academic staff on the ways artificial intelligence could be applied in the university education for delivery of quality education in Anambra State.

Table 4: Summary of t-test analysis on the difference between the mean scores of administrative heads and academic staff on the ways artificial intelligence could be applied in the university education for delivery of quality education

Staff	N	Mean	St.D	df	t-calculated value	t-critical value	Decision
Administrative Heads	21	3.22	1.48	169	0.87	±2.00	Accept Ho1
Academic staff	150	3.18	0.56				

Data presented on Table 4 showed the summary of t-test analysis on the difference between the mean scores of administrative heads and academic staff on the ways artificial intelligence could be applied in the university education for delivery of quality education in Anambra State. The null hypothesis was accepted because the t-calculated value of 1.04 is less than the t-critical value of ±2.00. This implies that, there is no significant difference between the mean scores of administrative heads and academic staff on the ways artificial intelligence could be applied in the university education for delivery of quality education in Anambra State.



Discussion of Findings

The findings of this study revealed that, the ways university education can be managed for the delivery of quality education in Anambra State include: taking adequate motivation of staff to improve their functional performances, involving staff in technology training to boost their knowledge and skills of using artificial intelligence for academic purposes, adopting proper supervisory techniques in the management university education, promoting good condition of service to improve performance of staff, and managing school finance for institutional up-keep. Other ways of managing university education include: ensuring job security system in university institutions to promote staff active commitment to duties, providing the staff with poor accommodation within the school environment, ensuring that staff offices are properly installed to accommodate their performance functions, encouraging discipline among staff to create positive development in the institution, and managing available educational facilities in the school system increases staff productivity. The test of hypothesis one had shown that, there is no significant difference between the mean scores of administrative heads and academic staff on the ways of managing university education for the delivery of quality education in Anambra State. In line with the findings, Nwabueze (2017) stated that, university management emphasizes on teamwork and information dissemination among lecturers by encouraging communication and cooperation among them, sharing innovative experiences and best practices for smooth delivery of quality education in universities. University management provides necessary resources and support to help lecturers implement educational artificial intelligence innovation for the delivery of quality education. The university management provides reward and recognition mechanisms for lecturers, establish reward and recognition mechanisms to encourage them to actively participate in educational artificial intelligence innovation, and incorporate their achievements into their evaluation system, providing more motivation and motivation for teachers. On the ways of empowering lecturers' growth and development, artificial intelligence helps them actualise their academic work, supports them in professional development, and helps update educational information technology, concepts, and models (Yu, 2021). On the area of empowering educational management, artificial intelligence provides the basis for educational decision-making, promotes humanized management, locates the needs of teachers and students, and finely manages schools, promoting the transformation of educational management models.

The findings of this study finally revealed that, the ways artificial intelligence can be applied in university education for the delivery of quality education in Anambra State include: reshaping future education practices using artificial intelligence, strengthening the cultivation of professional talents in artificial intelligence, attaching importance to ethical issues in the application of artificial intelligence in education management, stimulating teachers' high-level thinking and initiative, equipping the next generation of educational managers with leadership skills to perform their expected jobs, managing classroom activities for enhanced productivity using artificial intelligence innovations, retrieving and securing knowledge for improved productivity using artificial intelligence, using reasoning actions for knowledge sharing through AI-powered tools, and using AI-based virtual assistants to support knowledge transfer. The test of hypotheses two had shown that, there is no significant difference between the mean scores of administrative heads and academic staff on the ways artificial intelligence could be applied in the university education for delivery of quality education in Anambra State. In line with the findings, Nemorin (2021) stated that artificial intelligence can be effectively included in educational management to streamline the various processes and procedures that define the day-to-day functionalities, although many of the claims of the revolutionary potential of AI in education are based on conjecture, speculation, and optimism. According to Huang (2019), there are strategies needed to stimulate lecturers' and administrative heads of universities' high-level thinking and initiative, which can lead the next generation of educational artificial intelligence innovation. Such strategies include: provision of professional training and support for lecturers, providing relevant training opportunities for them to understand the basic principles of artificial intelligence, application scenarios and development trends in the field of education, and continuously updating their knowledge and skills through continuous learning to improve their professional level. However, universities create an innovative environment for lecturers by creating an environment that encourages innovation and exploration, giving them freedom and space to practice and try new educational methods and tools.

Conclusion

This study had shown that, the management of university education can be properly handled with the application of artificial intelligence in the delivery of quality education. It has been shown that, the expected



performance of artificial intelligence in educational management included retrieving and securing knowledge for improved productivity, using reasoning actions in knowledge sharing, comprehending languages, and understanding people requirements in delivering quality education, and connecting dots via learning.

Recommendations

Based on the findings, the following recommendations were made.

1. The management of universities in Anambra State should manage their institutions effectively to maintain quality education delivery.
2. They should support academic staff in technology training to boost their knowledge and skills of using artificial intelligence for academic purposes.
3. University management should adopt proper supervisory techniques to manage the staff and students to sustain the growth of university education.
4. They should ensure job security system in university institutions to promote staff active commitment to duties and create positive development in the institution.
5. Artificial intelligence should be applied in university education to improve the delivery of quality education through reshaping future education practices and strengthening the cultivation of professional talents among staff.

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