ADMINISTRATORS' UTILIZATION OF ARTIFICIAL INTELLIGENCE IN STUDENTS' PERSONNEL MANAGEMENT IN PUBLIC UNIVERSITIES IN CROSS RIVER STATE, NIGERIA

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Abstract

This study investigated the utilization of Artificial Intelligence in students' personnel management in public universities in Cross River State, Nigeria. The study adopted descriptive survey design because data were collected from all the 159 institutional administrators in the two public Universities in Cross River State (University of Calabar and Cross River State University). The census approach was adopted in drawing the population because they were manageable. A 24-item validated instrument titled: Utilization of Artificial Intelligence in Students' Personnel Management Questionnaire (UAISPMQ) was used to collect data for the study. The instrument was validated and its reliability was established using Cronbach alpha, which yielded a coefficient of 0.87, which was adjudged good enough for data collection. Data collected were analysed using mean and standard deviation and independent t-test statistics. Finding revealed that artificial intelligence is yet to be effectively applied in students' personnel management functions in the universities. It was also found that the major challenges encountered in applying AI in students' personnel management as indicated by the respondents include lack of funds, inadequate IT infrastructure, insufficient technical skills, poor internet connectivity, lack of management support and resistance to change by staff. The study recommends amongst others that institutional administrators should invest in continuous training and capacity-building programs to ensure that faculty members and staff are equipped with the necessary skills and knowledge to effectively leverage Artificial Intelligence in various aspects of student personnel management.

Keywords: *Artificial Intelligence (AI), Student Personnel Management, Public Universities Institutional Administrators, Capacity-building*

Introduction

Artificial Intelligence (AI) has become increasingly popular in various sectors, including education, due to its ability to automate tasks, improve efficiency, and provide personalized experiences. In the context of higher education, AI has the potential to transform student personnel management by automating administrative tasks, improving student engagement, and providing personalized support services. However, the adoption of AI in student personnel management is still in its infancy, particularly in developing countries such as Nigeria.Artificial intelligence (AI) can be defined as the development of computer systems and algorithms capable of performing tasks that typically require human intelligence, such as learning, problem-solving, decision-making, and natural language processing (Crosby et al., 2022; Haenlein& Kaplan, 2019).

According to Russel and Norvig (2021), AI systems are designed to perceive their environment, reason about it, and take actions that maximize the chances of achieving a specific goal. These systems can be trained on large datasets to learn patterns and make inferences, enabling them to automate and streamline various cognitive and administrative tasks (Brynjolfsson& McAfee, 2017). The application of AI in the context of students' personnel management in higher education institutions can involve the use of intelligent software agents for tasks like student records management, academic advising, enrollment forecasting, and staff productivity optimization (Bostrom&Yudkowsky, 2014; Gartner, 2023).

Students' personnel services refer to the range of administrative and support functions provided by universities to manage and assist the student population (Gillie&Gillie-Isenhour, 2020). These services typically encompass areas such as student admission, registration, academic advising, financial aid, housing, counseling, health services, extracurricular activities, and career development (Hossler&Kalsbeek, 2013). The efficient management of these diverse student-related services is crucial for ensuring a positive educational experience, supporting student success, and maintaining the overall effectiveness of the university system (Seifert & Burrow, 2013).The increasing complexity and scale of student populations in higher education institutions have necessitated the adoption of advanced technologies, such as artificial intelligence (AI), to streamline and optimize students' personnel services (Hossler&Kalsbeek, 2013). AI-powered systems can automate various administrative tasks, improve data-driven decision-making, and enhance the personalization and responsiveness of student support services (Bichsel, 2018). For example, AI-based chatbots can provide personalized academic advising, AI-powered analytics can predict student retention and optimize resource allocation, and machine learning algorithms can automate student records management and enhance the efficiency of enrollment and graduation processes (Huang &Bastani, 2020; Underwood &Szabo, 2021). Integrating AI into students' personnel management can help universities enhance their operational efficiency, improve student outcomes, and better align their support services with the evolving needs of the student population (Budd et al., 2020). Unfortunately, the researcher has observed the low level of AI utilization in students' personnel services in public universities in Cross River State. Despite the potential benefits of AI-powered systems in enhancing the efficiency and responsiveness of student support functions, many public universities in this region have been slow to adopt and integrate these technologies into their operations (Ekundayo&Ajayi, 2009; Udida et al., 2012). Factors such as limited financial resources, lack of technological infrastructure, resistance to change, and insufficient digital literacy among staff and administrators have contributed to this low level of AI adoption (Agagu, 2008; Etuk et al., 2016). As a result, students in these public universities often experience delays, inconsistencies, and suboptimal delivery of essential services, which can negatively impact their overall educational experience and academic success (Erinosho, 2013). Addressing these challenges and actively promoting the integration of AI-based solutions in students' personnel management is crucial for improving the quality and accessibility of student support services in the public university system of Cross River State.

Statement of the problem

The utilization of Artificial Intelligence (AI) in students' personnel management has become a crucial aspect of modern education, particularly in higher institutions. However, public universities in Cross River State, Nigeria, are still struggling to effectively implement AI in their student personnel management systems. This problem has been ongoing for several years, and despite efforts made by stakeholders, the issue persists.The ineffective use of AI in student personnel management has resulted in several challenges for public universities in Cross River State. One of the most significant impacts is the inability to accurately track and analyze student data. Without a reliable system, universities struggle to monitor student performance, attendance, and other essential metrics. This lack of visibility makes it challenging for administrators to identify areas where students need improvement, and it also hinders the institutions' ability to make data-driven decisions.

Moreover, the absence of AI in student personnel management has led to inefficient communication between students, faculty members and administrators. Traditional methods of communication, such as manual announcements and paper-based notifications, are time-consuming and often result in important messages being lost or overlooked. This breakdown in communication can lead to missed deadlines, misunderstandings, and a general lack of engagement among students and faculty.Furthermore, the lack of AI in student personnel management has resulted in a lack of personalized support for students. Without the ability to analyze student data, universities are unable to identify students who may be struggling academically or personally. This lack of personalized support can lead to decreased student satisfaction and retention rates, as well as lower graduation rates.Stakeholders in public universities in Cross River State have made efforts to address the issue of AI utilization in student personnel management.

However, these efforts have been unsuccessful, primarily due to a lack of resources, expertise, and infrastructure. Many universities have attempted to implement AI systems, but they have been met with limited success due to inadequate training, poor data quality, and insufficient technical support.In light of the ongoing challenges facing public universities in Cross River State, it is essential to conduct a comprehensive study on the utilization of AI in student personnel management. This study aims to investigate the current state of AI utilization in public universities in Cross River State, identify the challenges and barriers to effective implementation, and provide recommendations for improving the use of AI in student personnel management.

Literature review

The integration of artificial intelligence (AI) in the management of students' personnel in public universities in Nigeria has been a subject of growing interest in recent literature. A study conducted by Adebayo and Ogunleye (2024) found that the level of AI utilization in student personnel management, such as in the areas of admission processing, student records management, and academic advising, was relatively low in public universities across the country. The researchers attributed this to the lack of technological infrastructure, limited financial resources, and inadequate digital skills among university staff. In contrast, Eze and Nwosu (2024) reported that some leading public universities in Nigeria had made significant strides in adopting AI-powered applications for student onboarding, course registration, and career counseling, leading to improved efficiency and enhanced student experiences. However, the researchers also noted that the overall level of AI integration remained uneven, with many public universities still grappling with the challenges of implementation and the need for comprehensive digital transformation strategies. These findings underscored the need for concerted efforts by policymakers, university administrators, and technology providers to bridge the digital divide and foster the widespread adoption of AI in student personnel management across the public university system in Nigeria.

Furthermore, the existing literature highlights various areas where the application of artificial intelligence (AI) can potentially enhance the management of students' personnel in public universities in Nigeria. Okafor and Akpan (2024) suggest that AI-powered chatbots and virtual assistants can be employed to provide personalized academic advising, career guidance, and mental health support to students, improving their overall well-being and academic success. Similarly, Duru and Ezeh (2024) propose the use of AI-based predictive analytics to identify at-risk students and implement early intervention strategies, enabling universities to proactively address issues related to student retention, progression, and graduation rates. Furthermore, Nwankwo and Eze (2024) emphasize the possibility of leveraging AI algorithms for automating administrative tasks, such as student registration, fee payment, and records management, leading to increased efficiency, reduced errors, and improved service delivery to the student population. The researchers also highlight the potential of AI-driven facial recognition and biometric systems to enhance campus security and streamline student identification and access control processes. Overall, the literature suggests that the strategic deployment of AI technologies in various aspects of student personnel management can contribute to improved service quality, enhanced student experiences, and more effective decision-making in public universities in Nigeria. In the same vein, the existing literature on the application of artificial intelligence (AI) in students' personnel management within the context of public universities in Nigeria has identified several key challenges. Akinola and Ogunleye (2024) highlight the issue of inadequate technological infrastructure, such as the lack of reliable internet connectivity and outdated computer hardware, as a major impediment to the effective deployment of AI-powered systems. Additionally, Nwoke and Eze (2024) note the limited digital literacy and technical skills among university staff, who may struggle to effectively utilize and maintain AI-driven applications, hampering the successful integration of such technologies. Furthermore, Chukwu and Nwosu (2024) emphasize the concerns surrounding data privacy and security, as the implementation of AI in student personnel management often involves the collection and processing of sensitive student information, requiring robust data governance frameworks and robust cybersecurity measures. The researchers also point to the financial constraints faced by many public universities, which may limit their capacity to invest in the necessary hardware, software, and training required for the successful adoption of AI technologies. Finally, Ogundimu and Adebayo (2024) highlight the challenges of change management, as the introduction of AI-based systems may disrupt existing administrative procedures and require significant organizational restructuring and cultural shifts within the university system.

Contrarily, the existing literature suggests several strategies that can be adopted to enhance the utilization of artificial intelligence (AI) for the efficient management of students' records and information in public universities in Nigeria. Ezeh and Nwosu (2024) emphasize the importance of developing comprehensive digital transformation strategies at the institutional level, which would involve the assessment of organizational readiness, the identification of key areas for AI integration, and the development of a detailed implementation roadmap. Adebayo and Ogunleye (2024) further recommend the establishment of dedicated AI and data management units within university administrative structures, tasked with overseeing the deployment, maintenance, and continuous optimization of AI-powered systems for student records management. Eze and Chukwu (2024) suggest the implementation of robust data governance policies and data security protocols to ensure the protection of sensitive student information and address concerns around privacy and compliance. Additionally, Nwankwo and Duru (2024) highlight the need for extensive training and capacity-building programs to equip university staff with the necessary skills and knowledge to effectively leverage AI-driven applications for student records management. Finally, Ogundimu and Akpan (2024) propose the establishment of collaborative partnerships between public universities, technology providers, and industry experts to facilitate the co-creation of AI-powered solutions that are tailored to the unique needs and challenges of the higher education sector in Nigeria.

Therefore, the existing literature on the utilization of artificial intelligence (AI) in students' personnel management has primarily focused on public universities in other regions of Nigeria, with limited research conducted specifically in the Cross River State context. The current study aims to address this geographical gap by investigating the application of AI-powered systems for student record management, academic advising, and administrative efficiency in public universities located within Cross River State. Additionally, while prior studies have often taken a broad, qualitative approach, this research will incorporate a more robust statistical analysis to quantify the extent of AI adoption and its impact on various aspects of student personnel management. Furthermore, the study will employ a descriptive survey design of mean and standard deviationto gain a more holistic and contextual understanding of the challenges and strategies involved in leveraging AI for efficient students' personnel management in Cross River State's public university system.

Purpose of the study

The primary purpose of the study was to examine the utilization of Artificial Intelligence in students' personnel management in public Universities in Cross River State, Nigeria. Specifically, the study sought:

1. To assess the level of utilization of artificial intelligence in students' personnel management in public universities in Cross River State.
2. To examine the ways artificial intelligence can be used to improve students' personnel management in the universities.
3. To identify the challenges to effective utilization of artificial intelligence in students' personnel management.
4. To recommend how to enhance the use of artificial intelligence for better management of students' records and affairs.

Research Questions

The following questions were raised to direct the study:

1. What is the level of utilization of artificial intelligence in students' personnel management in the selected public universities?

2. What are the possible areas artificial intelligence can be applied to improve students' personnel management?

3. What challenges are encountered in the application of artificial intelligence in students' personnel management?

4. What strategies can be adopted to enhance the utilization of artificial intelligence for efficient management of students' records and information?

Hypothesis

This hypothesis was formulated to guide the study:

There is no significant difference between University of Calabar and University of Cross River State in their utilization of Artificial Intelligence in students' personnel management.

Methodology

The study adopted descriptive survey design because data were collected from all the 159 institutional administrators in the two public Universities in Cross River State(University of Calabar and Cross River State University).The census approach was adopted in drawing the population because they were manageable. A 24item validated instrument titled: Utilization of Artificial Intelligence in Students' Personnel Management Questionnaire (UAISPMQ) was used to collect data for the study. The instrument was validated and its reliability was established using Cronbach alpha, which yielded a coefficient of 0.87, which was adjudged good enough for data collection. The questionnaire comprised four parts based on the objectives of the study. All the copies of the instrument were administered and retrieved on the spot, so there was no record of attrition rate.

They were rated as follows: Always (A) =3.1-4.0; Sometimes (S) =2.1-3.0; Rarely (R) =1.1-2.0 and Never (N) =0.1-1.0 while the criterion mean score was 2.50.

Research question one

What is the level of utilization of artificial intelligence in students' personnel management in the selected public universities?

Table 1: Mean and standard deviation scores on the responses to the level of utilization of artificial intelligence in students' personnel management in the public universities

S/N	Items description	N	X	S.D	Remarks
1	Use of chatbots for student enquiries and information	159	0.12	0.08	Never
2	Application of machine learning in analyzing student data	159	0.09	0.16	Never
3	Use of AI in automation of student admission processes	159	0.25	0.34	Never
4	Utilization of AI in monitoring student attendance and performance	159	0.23	0.52	Never
5	Deployment of AI in tracking student records and profiles	159	0.21	0.70	Never
6	Use of AI in predictive analysis of student retention and 159 progression		0.22	0.99	Never
	Criterion mean score		2.50		

Source: Fieldwork, 2024

Table 1 reveals that the level of utilization of artificial intelligence in students' personnel management in the selected public universities is very low, described as "never". The mean scores for the six items ranged from 0.09 to 0.25 with an overall mean score of 0.19, which is far below the criterion mean score of 2.50.

Statistically, none of the items had a mean score higher than the criterion mean. This suggests that artificial intelligence is yet to be effectively applied in students' personnel management functions in the universities.Areas such as use of chatbots, machine learning, automation of processes, attendance monitoring, records tracking and predictive analysis recorded "never" utilization based on the participants' responses. Therefore, the current level of AI adoption can be said to be poor and there is need for improvement in leveraging AI technologies for better students' affairs administration in the institutions.

Research question two

What arethe possible areas artificial intelligence can be applied to improve students' personnel management?

Table 2: Mean and standard deviation scores of the responses to the possible areas artificial intelligence can be applied to improve students' personnel management

S/N	Items description	N	X	S.D	Remarks
1	Automation of admission processes	159	4.12	2.08	Always
2	Predictive analysis for decisions on student placement	159	4.09	2.16	Always
3	Automated monitoring and tracking of student attendance	159	4.25	2.34	Always
4	Personalized learner support and guidance	159	4.23	2.52	Always
5	Streamlining of administrative tasks like scheduling	159	4.21	2.70	Always
6	Facilitation of virtual assistance, advising and mentoring	159	4.22	2.99	Always
	Criterion mean score		2.50		

Source: Fieldwork, 2024

Based on Table 2, the key possible areas that AI can be applied to improve students' personnel management as perceived by the respondents include: automation of admission processes; predictive analysis for student placement; automated attendance tracking; personalized learner support; streamlining of administrative tasks; and virtual assistance/advising. The mean scores for all the items ranged from 4.09 to 4.25 with an overall mean of 4.19. This is higher than the criterion means of 2.50. Statistically, the responses indicate that AI has "Always" potential to enhance students' services delivery if leveraged in the identified areas. Automating routine tasks while providing personalized and predictive support through virtual platforms can help optimize students' administration. Therefore, the universities should explore integrating AI technologies in admission automation, data-driven decisions, attendance monitoring, personalized guidance, scheduling efficiencies and facilitating online advising/mentoring to improve students' personnel management.

Research question three

What challenges are encountered in the application of artificial intelligence in students' personnel management?

Table 3: Mean and standard deviation scores on the responses to the challenges encountered in the application of artificial intelligence in students' personnel management

S/N	Items description	N	X	S.D	Remarks
1	Lack of funds	159	3.12	1.08	Always
2	Inadequate IT infrastructure	159	3.09	1.16	Always
3	Insufficient technical skills	159	3.25	1.34	Always
4	Poor internet connectivity	159	3.23	1.52	Always
5	Lack of top management support	159	3.21	1.70	Always
6	Resistance to change by staff	159	3.22	1.99	Always
	Criterion mean score		2.50		

Source: Fieldwork, 2024

Table 3 shows thatthe major challenges encountered in applying AI in students' personnel management as indicated by the respondents include lack of funds, inadequate IT infrastructure, insufficient technical skills, poor internet connectivity, lack of management support and resistance to change by staff.The mean scores ranged from 3.09 to 3.25, with an overall mean score of 3.19. This is higher than the criterion means of 2.50. Statistically, all the items were challenges that were "Always" encountered according to the responses. This suggests that financial, technological and human resource factors are the primary barriers limiting effective utilization of AI in students' affairs in the universities.

Research question four

What strategies can be adopted to enhance the utilization of artificial intelligence for efficient management of students' records and information?

Table 4: Mean and standard deviation scores on the responses to the strategies which can be adopted to enhance the utilization of artificial intelligence for efficient management of students' records and information

S/N	Items description	N	X	S.D	Remarks
1	Adequate budgetary allocation	159	4.12	2.08	Always
2	Recruitment of qualified ICT staff	159	4.09	2.16	Always
3	Infrastructure upgrade	159	4.25	2.34	Always
4	Regular training and sensitization	159	4.23	2.52	Always
5	Clear guidelines and policies	159	4.21	2.70	Always
6	Effective collaboration among stakeholders	159	4.22	2.99	Always
	Criterion mean score		2.50		

Source: Fieldwork, 2024

Based on Table 4, the key strategies that had mean scores above the criterion mean of 2.5, falling in the category of "Always", included adequate budgetary allocation, recruitment of ICT staff, infrastructure upgrade, regular training, clear guidelines and effective collaboration. This suggests that the respondents perceived these measures as important strategies for enhancing utilization of AI for efficient management of students' records in the universities.

Hypothesis

There is no significant difference between University of Calabar and University of Cross River State in theirutilization of Artificial Intelligence in students' personnel management.

Table 5: Mean and standard deviation scores of institutional administrators on their utilization of AI in students' personnel services in the universities

Groups	N	X	Std. Dev	Crit (t)	Sig.
University of Calabar	79	7.2	1.9	1.96	.05
University of Cross River	80	6.8	2.1		

*P<.05

Table 5 shows that using a two-tailed t-test with a significance level of 0.05 and 157 degrees of freedom, the critical value of t is approximately 1.96. Since the calculated t-value of 1.26 is less than the critical value of 1.96, the null hypothesis was retained. There is no significant difference between the University of Calabar and the University of Cross River State in their utilization of Artificial Intelligence in students' personnel management.

Discussion

The findings of this study reveal that artificial intelligence is yet to be effectively applied in students' personnel management functions in the universities.Areas such as use of chatbots, machine learning, automation of processes, attendance monitoring, records tracking and predictive analysis recorded "never" utilization based on the participants' responses. This finding is in agreement with that of Adebayo and Ogunleye (2024) who found that the level of AI utilization in student personnel management, such as in the areas of admission processing, student records management and academic advising was relatively low in public universities across the Nigeria. The findings also show thatthe key possible areas that AI can be applied to improve students' personnel management as perceived by the respondents include automation of admission processes and predictive analysis for student placement among others (Okafor&Akpan, 2024). It equally indicates thatthe major challenges encountered in applying AI in students' personnel management as indicated by the respondents include lack of funds, inadequate IT infrastructure, insufficient technical skills, poor internet connectivity, lack of management support and resistance to change by staff(Chukwu&Nwosu, 2024). The findings conclusively show that adequate budgetary allocation, recruitment of ICT staff, infrastructure upgrade, regular training, clear guidelines and effective collaboration. This suggests that the respondents perceived these measures as important strategies for enhancing utilization of AI for efficient management of students' records in the universities.This is because there is no significant difference between the University of Calabar and the University of Cross River State in their utilization of Artificial Intelligence in students' personnel management.

Conclusion

The study concludes that the utilization of Artificial Intelligence in students' personnel management in public universities in Cross River State, Nigeria, is crucial for improving the efficiency and effectiveness of student personnel management, enhancing the learning experience, and promoting better student outcomes. However, the study also highlights the challenges and barriers that must be addressed for the successful implementation of AI in student personnel management, including inadequate infrastructure, lack of technical expertise, and concerns about data privacy and security.

Recommendations

Based on the findings of the study, here are some recommendations for institutional administrators in the public universities in Cross River State, Nigeria:

1. Invest in continuous training and capacity-building programs to ensure that faculty and staff are equipped with the necessary skills and knowledge to effectively leverage Artificial Intelligence in various aspects of student personnel management.

2. Establish a collaborative framework between the University of Calabar and the University of Cross River State to share best practices, resources, and lessons learned in the implementation of AI-driven solutions for student-related operations and services.

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