

Exploring the Impact of Artificial Intelligence (AI) and Digital Connectivity on Educational Management in Nigerian Polytechnics.

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ABSTRACT

The integration of Artificial Intelligence (AI) and digital connectivity is driving a significant shift in education systems worldwide, offering unprecedented opportunities to improve efficiency, effectiveness, and decision-making processes, particularly in areas such as planning, administration, and student engagement. In Nigeria, the polytechnic education sector is at a critical juncture, with digital transformation presenting significant opportunities to enhance educational management practices. This study examines how AI tools and digital connectivity frameworks can improve administrative efficiency, data-driven decision-making, student support, and teaching methods within Nigerian polytechnics. Using a mixed-methods approach, the research combines surveys and interviews with around 200 participants from five polytechnics, including administrative staff, ICT officers, and academic leaders from selected polytechnic schools. Data analysis, using Likert-scale evaluations, shows increasing awareness and interest in AI solutions. However, challenges such as poor infrastructure, limited funding, and a lack of digital skills slow down widespread adoption. The study highlights the need for strategic policies, greater investment in ICT infrastructure, and targeted AI training programs. By sharing these findings, the research supports ongoing policy talks on digital transformation in higher education. It offers practical suggestions for developing smart, connected, and effective educational management systems in Nigeria's polytechnic sector.

Keywords: Artificial Intelligence, Digital Connectivity, Transformation, Data, Likert Scale, ICT, Survey, Data analysis

INTRODUCTION

Artificial Intelligence refers to the ability of machines to replicate human cognitive functions such as learning, problem-solving, and decision-making (Stuart & Peter, 2020). Digital connectivity, including internet infrastructure, cloud platforms, and mobile integration, forms the foundation of smart educational systems. It enables synchronous and asynchronous communication, real-time data access, and collaborative decision-making (Sarah Guri-Rosenblit, 2011). The rise of these technologies has significantly transformed global education systems, affecting not only teaching and learning (ITEdgeNews, 2025; Adebisi, 2025; TechTrends, 2025) but also school management and administration. Around the world, institutions are using these technologies to boost administrative efficiency, improve planning, and enhance learning outcomes (OECD, 2021). As digital innovation advances, its potential to enhance operational efficiency, facilitate data-driven decision-making, and improve policy implementation in education has become increasingly evident (UNESCO, 2021). In a developing country like Nigeria, where limited resources and managerial inefficiencies often hinder progress, integrating AI and digital tools offers a unique opportunity for modernization and reform. Nigerian polytechnics, whose main goal is to train technically skilled personnel for national development, face increasing pressure to improve quality, responsiveness, and accountability. However, traditional management approaches, characterized by paper-based systems, slow reporting, and disjointed communication, while they served their purpose in the past, are no longer sufficient to meet the demands of modern education, which require speed, efficiency, collaboration, and flexibility. Transitioning to more digital, integrated systems is crucial for fostering

better learning environments and administrative workflows in 21st-century education (NEA, 2020; Vijayarani, 2024; Juliana, Victoria, & Bibian, 2024). Consequently, there is a growing trend to use AI technologies such as predictive analytics, intelligent automation, machine learning, and chatbots, along with broadband internet, cloud computing, and mobile platforms, to enhance operations and support better decision-making across administrative functions (Tom et al., 2024; Clive Asuai & Ishiekwe, 2025; Juliana, Victoria, & Bibian, 2024). AI facilitates the automation of routine tasks, improves resource allocation, enables real-time monitoring of student performance, and provides insights for strategic planning. Meanwhile, digital connectivity ensures that data, tools, and stakeholders are seamlessly integrated within a dynamic, accessible information ecosystem (World Bank Group, 2025). When implemented strategically, these technologies can transform how polytechnics manage admissions, maintain academic records, handle human resources, run learning management systems, and deliver student services. More importantly, they foster greater transparency, inclusiveness, and efficiency within institutional management. Despite this potential, the adoption and integration of AI-driven and digitally connected management systems in Nigerian polytechnics remain limited and fragmented. Challenges such as inadequate digital infrastructure, low AI literacy, policy gaps, and resistance to change serve as significant barriers (JOYCE et al., 2025). Understanding how these technologies are perceived and used across polytechnic institutions is vital for designing sustainable solutions and strengthening institutional capacity for digital transformation. This study, therefore, explores the impact of Artificial Intelligence and digital connectivity on educational management in Nigerian polytechnics by analyzing the experiences of educators, administrators, and students. It evaluates how widely these technologies are being adopted, the challenges faced, and their perceived effectiveness in improving administrative processes, accountability, and decision-making.

LITERATURE REVIEW

Artificial Intelligence (AI) and digital connectivity are transforming the global education landscape, especially in the area of institutional management. These innovations are no longer optional but essential for improving administrative efficiency, data-driven planning, and responsive governance. According to (Zawacki Richter, et al., 2019; Ingrid, 2025), AI in education is used in areas ranging from intelligent tutoring systems to administrative automation and predictive analytics. (World Bank Group, 2025) highlights digital connectivity as the key infrastructure for seamless access to digital platforms, real-time information exchange, and synchronized systems in educational institutions. For Nigerian polytechnic institutions—charged with producing industry-ready, technically skilled graduates—this digital transformation is not just preferable but vital to meet global expectations for smart and adaptable education. AI's role in educational management is particularly significant for functions such as strategic planning, human resource deployment, student tracking, and financial operations. (OECD, 2021) reports that intelligent algorithms can identify patterns in student behavior, streamline administrative processes, and support strategic decision-making through predictive modeling.

With integrated digital systems, educational institutions can centralize information across departments, improving coordination and reducing redundancies. This technological synergy promotes transparency and data-informed leadership. (Luciano, et al., 2018) emphasizes that AI-supported management systems enable institutions to respond to challenges with agility and precision, traits crucial for polytechnics facing capacity constraints and diverse student needs. Moreover, platforms powered by machine learning and analytics tools can forecast enrollment trends, evaluate institutional performance, and recommend resource reallocation in real time (KPMG, 2020). Recent studies in sub-Saharan Africa suggest that adopting digital and AI solutions in educational administration greatly improves record-keeping, student support services, and increases transparency in academic operations (Gordon & Gabriel, 2021; Aina, Ayodele, & Aremu, 2021; Adebunmi & Ayodele, 2021; Ahmad, Salihu, Aminu, Abubakar, & Aliyu, 2024). In Nigeria, some polytechnics are already beginning to adopt Learning Management Systems (LMS), biometric attendance systems, and computer-based testing platforms, laying the groundwork for wider AI integration (NBTE, n.d., Young, 2025). (UNESCO, 2022; UNESCO, Digital Education, 2024) states that institutions with integrated AI systems and reliable digital infrastructure are better positioned to adopt inclusive, adaptable, and evidence-based practices. This is especially relevant for Nigerian polytechnics, where streamlined administration could support improved curriculum planning, real-time academic performance monitoring, and more efficient technical training. However, systemic challenges often limit the advantages of AI and digital connectivity. (Lawretta, Iniyomu, & Nwachukwu, 2023) notes that technological adoption in Nigerian tertiary institutions is constrained by weak leadership commitment,

underinvestment in ICT infrastructure, and insufficient staff capacity. Additionally, the absence of tailored digital policies, particularly in polytechnics, hampers long-term integration. Ethical issues such as data protection, algorithmic fairness, and the digital divide also need attention (Luciano et al., 2018; Gbolahan, 2020). The widespread use of standalone systems in many Nigerian polytechnics reflects a fragmented approach to digital transformation, often causing inefficiencies and redundancies that AI-enabled platforms could help address. (Adedoyin & Emrah, 2020) further argue that implementing technology must be supported by digital literacy training and a strong commitment to long-term digital governance for genuine transformation. Although interest in educational technology is increasing, few studies have explored how AI and digital connectivity influence management practices in Nigerian polytechnics. While previous research has focused mainly on pedagogical aspects of educational technologies, a clear gap remains in understanding their impact on institutional management, especially within polytechnic settings. This study aims to fill that gap by empirically examining the influence of AI and digital connectivity on institutional planning, resource management, and administrative effectiveness in Nigerian polytechnics through responses collected from a structured Likert-scale survey administered to key stakeholders. The Likert scale was used in this study because it is a well-known psychometric tool designed (Ankur, Saket, Satish, & Dinesh, 2015) to gather subjective opinions, attitudes, and perceptions systematically. It lets respondents show varying levels of agreement or disagreement with specific statements, helping to measure qualitative concepts such as attitudes toward AI integration, perceived benefits, and institutional readiness. By offering a structured response format, the Likert scale improves the reliability and comparability of responses, making it especially useful for educational research aimed at understanding stakeholders' views across different institutions.

METHODOLOGY

Research Design

This study employed a descriptive survey research design, deemed appropriate for systematically collecting and analyzing data from a well-defined population to assess prevailing conditions, perceptions, and institutional practices. The choice of this design is informed by its effectiveness in capturing respondents' experiences and attitudes regarding the adoption and impact of Artificial Intelligence (AI) and digital connectivity in educational management within Nigerian polytechnics. Furthermore, it facilitates the collection of quantifiable data through structured instruments, specifically Likert scale-based questionnaires, enabling the identification of trends and the evaluation of institutional responses to digital transformation initiatives.

Population and Sample

The target population for this study included academic administrators, ICT personnel, senior lecturers, heads of departments, and relevant non-academic staff from selected polytechnics in Nigeria. These participants were chosen because of their direct involvement in educational planning, administrative decision-making, and the implementation of digital technologies within their institutions. A total of 200 respondents were selected from five polytechnics in Nigeria's South-West geopolitical zone, including two each from Federal and state polytechnics, and one from a private polytechnic, using a combination of purposive and stratified sampling methods. Purposive sampling ensured the inclusion of individuals with relevant expertise and administrative roles, thereby enhancing the validity and relevance of the data. Stratified sampling divided the population into groups based on roles, departments, and institutional ownership (such as federal or state polytechnics). Proportional sampling from each group was then conducted to ensure balanced representation and reduce sampling bias.

Research Instrument

The primary tool for data collection was a structured questionnaire with closed-ended questions, designed on a 5-point Likert scale, with response options ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire was divided into key thematic sections, including respondents' demographic profiles, awareness and adoption levels of AI and digital technologies, perceived impacts of AI and digital connectivity on educational management, as well as challenges faced and recommendations for effective implementation. To

ensure content validity, the instrument was reviewed by subject matter experts in educational technology and administration. Additionally, a pilot study with 15 participants was conducted to evaluate the clarity, reliability, and internal consistency of the questions, confirming the suitability of the instrument for the larger study population.

Method of Data Collection and Analysis

Questionnaires were distributed both physically and electronically to broaden geographic coverage and maximize response rates. The data collection process lasted four weeks and included ongoing follow-up measures to ensure responses were complete, accurate, and reliable. Of the 220 questionnaires distributed, 200 were properly completed and deemed valid for analysis, resulting in a response rate of 91%. The collected data were analyzed in Excel using descriptive statistics, including frequency counts, percentages, means, and standard deviations. These tools are appropriate for interpreting Likert scale responses, as they effectively summarize respondent perceptions and reveal emerging patterns in the use and application of AI and digital technologies in educational management. The findings were presented using tables and graphical visuals to improve clarity and interpretability.

RESULTS AND DISCUSSION

Descriptive Statistics of Likert Responses

This study employed a 5-point Likert scale to systematically measure participants' perceptions and attitudes regarding the integration of Artificial Intelligence (AI) and digital connectivity within the context of educational management in Nigerian polytechnics. The scale ranged from 1 (Strongly Disagree) to 5 (Strongly Agree), and was used to evaluate responses to ten carefully formulated statements presented in Section C of the questionnaire (see Appendix). Data were collected from 200 respondents and analyzed using descriptive statistics to assess the central tendency and variability of their responses. Specifically, the mean and standard deviation for each item were computed to quantify the general direction and consistency of opinions, while frequency distributions provided insights into the spread of individual responses. Table 1 presents a summary of the computed mean scores, standard deviations, and corresponding percentage distributions derived from the frequency counts of responses. Table 2 presents the Likert frequency table, providing a structured breakdown of respondents' levels of agreement across all 10 items related to AI and digital integration in educational management. The frequency distribution highlighted in Table 2 reveals key trends in institutional experiences, ranging from perceived improvements in communication and service delivery to identified gaps in infrastructure and staff training. Furthermore, Figures 1 and 2 graphically illustrate the response trends, offering a visual representation of the collective perspectives of participants on the integration and impact of AI and digital tools in the management of polytechnic education.

Table 1: Summary Table (Mean, Standard Deviation, Percentages)

Likert Item	Description	Mean	Std Dev	%S D	%D	%N	%A	%SA
Q1	AI tools can enhance the accuracy and speed of educational administration.	3.68	1.15	5.0	12.5	20.0	35.0	27.5
Q2	Digital connectivity has improved communication among staff and students.	4.04	1.02	3.0	6.0	14.0	38.0	39.0
Q3	My institution has the infrastructure necessary for AI deployment.	3.16	1.22	11.0	19.0	29.0	25.0	16.0
Q4	Staff are adequately trained to use digital/AI technologies.	3.11	1.25	12.0	21.0	27.0	24.0	16.0

Q5	AI and digital systems contribute to faster decision-making.	3.56	1.19	7.0	13.0	22.5	32.5	25.0
Q6	Digital tools improved student access to administrative services.	4.19	0.97	2.0	5.0	12.5	33.0	47.5
Q7	AI reduces human error in records management.	3.69	1.12	5.0	10.0	22.5	36.0	26.5
Q8	AI enhances transparency and accountability.	3.61	1.15	6.0	11.0	24.0	34.0	25.0
Q9	AI can help predict and track student performance.	3.53	1.21	7.0	15.0	21.0	32.0	25.0
Q10	AI reduces administrative workload and stress.	3.61	1.17	6.0	12.0	23.0	33.0	26.0

Table 2: Likert Scale Response Frequency

Response Level	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Strongly Disagree (1)	10	6	22	24	14	4	10	12	14	12
Disagree (2)	25	12	38	42	26	10	20	22	30	24
Neutral (3)	40	28	58	54	45	25	45	48	42	46
Agree (4)	70	76	50	48	65	66	72	68	64	66
Strongly Agree (5)	55	78	32	32	50	95	53	50	50	52

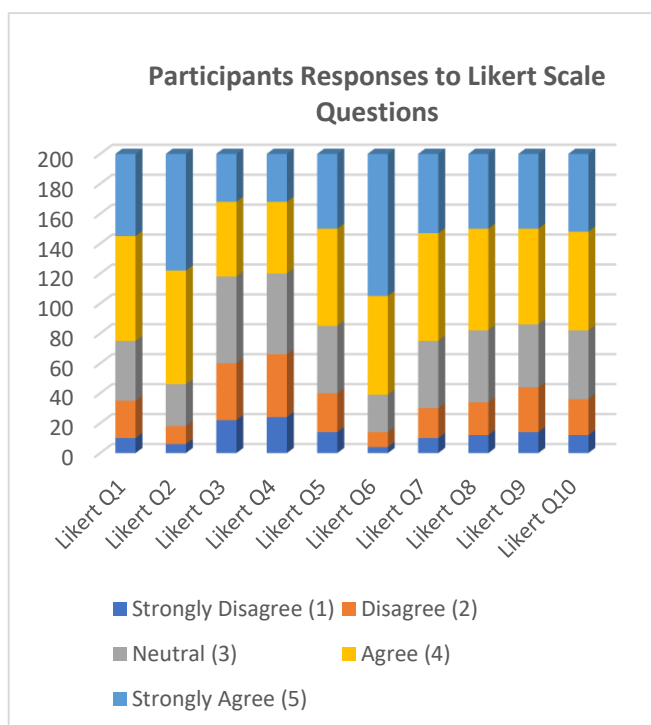


Figure 1: Participants' Responses to Likert Scale Question

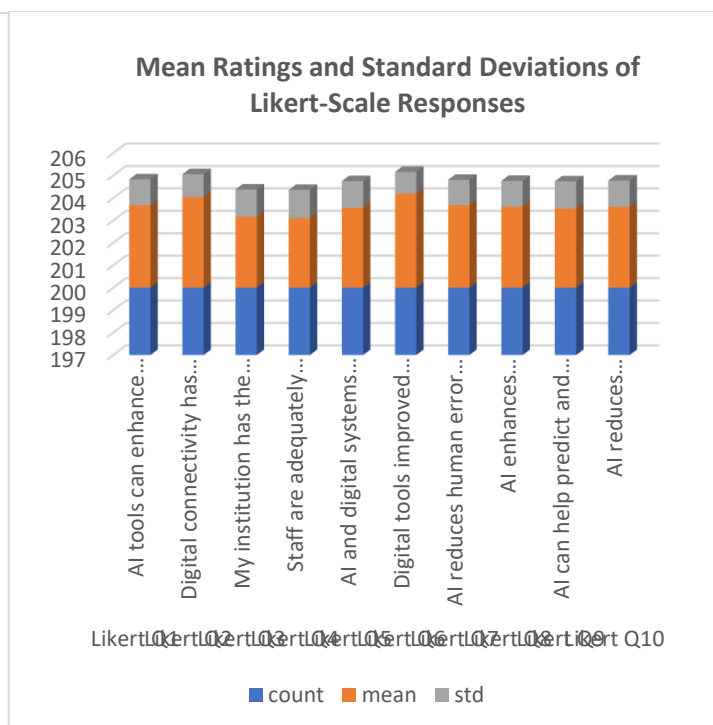


Figure 2: Mean ratings and standard deviation Likert scale responses

DISCUSSION OF FINDINGS

The findings of this research reveal an overall favorable view of incorporating Artificial Intelligence (AI) and digital connectivity in the administration of Nigerian polytechnics. The average scores, ranging from 3.11 to 4.19, indicate a moderate to strong consensus among participants, suggesting that AI and digital technologies are generally perceived as beneficial for enhancing administrative efficiency, communication within institutions,

service provision, and management effectiveness. These results align with earlier national and global research highlighting the transformative impact of AI and digital technologies on contemporary educational administration. Of the ten statements assessed, the statement "Digital tools have enhanced students' access to administrative services" received the highest mean score (Mean = 4.19, SD = 0.97). This result shows strong agreement that digital platforms, such as online registration systems, student portals, electronic transcript processing, and automated administrative services, have greatly improved service accessibility and institutional responsiveness. The comparatively small standard deviation underscores the strong level of consensus among participants. This outcome supports the conclusions of Aina and Ayodele (5), who noted that the adoption of digital technologies in Nigerian higher education institutions significantly enhanced records management, student enrollment, and administrative service efficiency. In a similar vein, Adedoyin and Soykan (3) noted that digital technologies streamline administrative processes, boost institutional productivity, and improve the quality of educational services. Similarly, one of the highest levels of agreement was recorded for the statement "Digital connectivity has improved communication among staff and students" (Mean = 4.04, SD = 1.02), with roughly 77% of respondents choosing either Agree or Strongly Agree. This result underscores how digital communication technologies are now essential to institutional operations, enabling administrators, instructors, and students to collaborate, coordinate, and disseminate information promptly. The outcome is consistent with reports from the OECD and UNESCO, which found that good digital connectivity promotes evidence-based educational management, enhances organizational communication, and strengthens institutional collaboration. Respondents also expressed positive opinions about AI's practical contributions to educational administration. They acknowledged AI as a useful instrument for increasing operational efficiency, as evidenced by the statements "AI tools can enhance the accuracy and speed of educational administration" (Mean = 3.68, SD = 1.15) and "AI reduces administrative workload and stress" (Mean = 3.61, SD = 1.17). Over 60% of participants concurred that AI technologies can increase workflow efficiency, decrease processing time, and automate repetitive administrative tasks. These results align with earlier research that found AI-driven administrative systems improve institutional productivity by facilitating data automation, streamlining workflows, and quickening managerial decision-making. Additionally, participants expressed moderate agreement that AI enhances transparency and accountability (Mean = 3.61) and helps monitor and forecast student performance (Mean = 3.53). These results indicate an increasing recognition of AI's analytical abilities in aiding institutional governance, performance assessment, and evidence-driven planning. While respondents recognized these advantages, the moderate degree of consensus suggests that predictive analytics and smart management systems are still in the initial phases of adoption in numerous Nigerian polytechnics. This finding aligns with global literature that identifies predictive analytics as a developing strength of AI in the management of higher education, while stressing that effective implementation relies on the institution's digital maturity and data governance.

Despite these encouraging findings, the research also uncovered significant gaps in institutional readiness for AI integration. The statements "My institution has the infrastructure necessary for AI deployment" (Mean = 3.16, SD = 1.22) and "Staff are adequately trained to use digital/AI technologies" (Mean = 3.11, SD = 1.25) attained the lowest average ratings. The relatively higher standard deviations also suggest significant differences in respondents' experiences among institutions. These results indicate that while participants recognize the possible advantages of AI, numerous Nigerian polytechnics still do not possess the necessary technological infrastructure and qualified staff for effective implementation. This discovery corresponds with earlier Nigerian research, which regularly highlighted inadequate ICT infrastructure, unstable internet access, insufficient funding, and restricted digital skills as significant obstacles to digital transformation in higher education institutions. The qualitative results obtained from Section D of the questionnaire further reinforce these quantitative findings. Most respondents cited insufficient ICT infrastructure (78%), weak internet connectivity (72%), limited funding (65%), and a lack of staff training (60%) as the main obstacles to AI integration. Other issues involved opposition to technological advancements and the lack of AI policies within the institution. These results closely align with earlier Nigerian studies, suggesting that infrastructure shortcomings, insufficient investment, poor policy execution, and restricted human resources persist in hindering digital transformation in higher education institutions. The alignment between the current results and previous studies indicates that while awareness of AI has significantly grown, its practical application is still limited by ongoing systemic obstacles. In addition to pinpointing implementation obstacles, participants acknowledged various significant advantages of AI integration. Over half of the respondents (52%) viewed administrative efficiency as the primary advantage of

adopting AI. Conversely, some emphasized better teaching and learning, improved student data analysis, and immediate monitoring and feedback. Participants also suggested enhancing investment in ICT infrastructure, ongoing staff training, the creation of thorough institutional AI policies, improved partnerships with technology companies, and ongoing financial support for digital transformation projects. These suggestions align with current global policy trends, promoting a comprehensive strategy that integrates technological investment with human capacity building, effective governance, and organizational preparedness.

A notable contribution of the present study is its emphasis on educational management rather than on teaching and learning outcomes. While much of the existing literature has focused on AI-assisted instruction, intelligent tutoring systems, and student academic performance, this study extends current knowledge by examining AI's influence on institutional administration, strategic planning, records management, communication, decision-making, and organizational effectiveness within Nigerian polytechnics. This broader management perspective demonstrates that AI has substantial potential to strengthen institutional governance and administrative performance, provided that adequate infrastructure, sustainable funding, supportive policies, and competent human resources are available. Overall, the findings strongly corroborate existing national and international evidence regarding the transformative potential of Artificial Intelligence and digital connectivity in higher education management. However, the study also confirms that the realization of these benefits within Nigerian polytechnics remains constrained by infrastructural deficiencies, financial limitations, inadequate staff capacity, and policy gaps. Consequently, although respondents expressed considerable optimism regarding AI adoption, achieving meaningful and sustainable digital transformation will require coordinated policy reforms, sustained investment in ICT infrastructure, continuous professional development, and comprehensive institutional strategies that support the effective integration of AI into educational management.

CONCLUSION

This study examined the impact of Artificial Intelligence (AI) and digital connectivity on educational management in selected Nigerian polytechnics, using descriptive statistics from Likert-scale responses and complementary qualitative data. The findings indicate that respondents generally view AI and digital technologies as valuable tools for improving administrative efficiency, communication, service delivery, and institutional decision-making. However, effective implementation is constrained by inadequate ICT infrastructure, poor internet connectivity, limited funding, insufficient staff training, resistance to technological change, and weak institutional policy frameworks. The study concludes that while AI has significant potential to transform educational management, its successful adoption depends on sustained investment in digital infrastructure, continuous human capacity development, supportive policies, and strong institutional commitment. The findings provide valuable empirical evidence for policymakers and educational administrators seeking to promote the effective integration of AI and digital connectivity within the Nigerian polytechnic system.

RECOMMENDATION

Based on the findings of this study, Nigerian polytechnics should prioritize strategic investment in ICT infrastructure, reliable internet connectivity, and AI-enabled digital platforms to support effective educational management. Institutions should also implement continuous staff training and capacity-building programmes to enhance digital competencies and facilitate the effective utilization of AI technologies. Furthermore, comprehensive institutional and national policies should be developed to provide clear guidelines for the adoption of AI, data governance, cybersecurity, and the ethical implementation of AI. Sustainable funding mechanisms, strengthened partnerships with technology providers and industry stakeholders, and continuous monitoring and evaluation should also be established to ensure the successful integration of AI and digital connectivity. Collectively, these measures will enhance administrative efficiency, improve decision-making, strengthen institutional governance, and accelerate the digital transformation of Nigerian polytechnics.

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Appendix A

Structured Research Questionnaire

IMPACT OF ARTIFICIAL INTELLIGENCE (AI) AND DIGITAL CONNECTIVITY ON EDUCATIONAL MANAGEMENT IN NIGERIAN POLYTECHNICS

Instructions:

- Please answer all questions honestly, as it affects you and your institution
- There are no right or wrong answers
- Select the option that best represents your opinion or experience

Section A: Respondents' Demographic Information

Please tick (✓) the appropriate option.

- Gender**
☐ Male ☐ Female
- Age** **Group**
☐ 18–24 ☐ 25–34 ☐ 35–45 ☐ 46–55 ☐ 56+
- Designation**
☐ Academic Staff ☐ Administrative Staff ☐ ICT Staff ☐ Management ☐ Other: _____
- Status:** _____
- Education Level**
☐ B.Sc. ☐ M.Sc/M.Tech ☐ Ph.D
- Institution** **Type**
☐ Federal Polytechnic ☐ State Polytechnic ☐ Private Polytechnic
- Years of Work** **Experience**
☐ Less than 5 years ☐ 5–10 years ☐ 11–15 years ☐ Over 15 years
- Have you received any formal training in Artificial Intelligence or digital tools?**
☐ Yes ☐ No if yes
 - Personally ☐ Institution sponsored ☐

Section B: AI and Digital Technologies Usage and Awareness

- Are you aware of the use of Artificial Intelligence (AI) in educational management processes?
☐ Yes ☐ No
- Which of these AI or digital tools are used at your institution? (Tick all that apply)
☐ Learning Management Systems (e.g., Moodle, Google Classroom)
☐ Chatbots or virtual assistants
☐ Automated admission/registration systems
☐ Smart attendance (e.g., facial recognition, biometric)
☐ Predictive analytics for performance tracking
☐ Cloud-based data storage/management
☐ AI-driven feedback or grading systems
☐ None of the above
- What is the Frequency of use of digital connectivity platforms (e.g., video conferencing, e-portals, e-meetings):
☐ Daily ☐ Weekly ☐ Occasionally ☐ Never?

Section C: Perception and Impact of AI and Digital Connectivity

Please indicate your level of agreement with the following statements using the scale below:
Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), Strongly Disagree (SD)

No.	Statement	SA	A	N	D	SD
1	AI tools can enhance the accuracy and speed of educational administration.	☐	☐	☐	☐	☐
2	Digital connectivity has improved communication among staff and students.	☐	☐	☐	☐	☐
3	My institution has the infrastructure necessary for AI deployment.	☐	☐	☐	☐	☐
4	Staff at my institution are adequately trained to use digital and AI technologies.	☐	☐	☐	☐	☐
5	AI and digital systems contribute to faster decision-making and policy implementation.	☐	☐	☐	☐	☐
6	Digital tools have improved students' access to administrative services (e.g., transcript, fees).	☐	☐	☐	☐	☐
7	AI and digital systems can reduce human error in educational records management.	☐	☐	☐	☐	☐
8	Integrating AI tools enhances institutional transparency and accountability.	☐	☐	☐	☐	☐
9	The use of AI and digital connectivity can help track and predict student performance.	☐	☐	☐	☐	☐
10	AI integration in management processes can reduce workload and administrative stress.	☐	☐	☐	☐	☐

Section D: Challenges and Recommendations

- What challenges limit the effective integration of AI and digital connectivity in your institution? (Tick all that apply)

☐	Inadequate	that	ICT	infrastructure
☐	Poor		internet	connectivity
☐		Limited		funding
☐	Lack	of	staff	training
☐	Resistance	to	technological	change
☐	Absence	of	policy/strategy	on AI adoption

☐ Other (please specify): _____
- In your opinion, what is the most significant benefit of integrating AI into educational management?

☐	Administrative	efficiency
☐	Student	data analytics
☐	Enhanced	teaching and learning
☐		Cost-effectiveness
☐	Real-time	monitoring and feedback

☐ Other: _____
- What recommendations would you suggest to promote AI and digital connectivity adoption in polytechnic management? (Please write your response in the space below)

Appendix B

5-point scale Likert scale used in the study

Response Level	Value
Strongly Disagree	1

Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

Table: Frequency Distribution of Responses for Section D

Part 1: Challenges Limiting the Effective Integration of AI and Digital Connectivity

S/N	Challenge Item	Frequency (N = 200)	Percentage (%)
1	Inadequate ICT infrastructure	156	78.0
2	Poor internet connectivity	144	72.0
3	Limited funding	130	65.0
4	Lack of staff training	120	60.0
5	Resistance to technological change	96	48.0
6	Absence of policy/strategy on AI adoption	84	42.0
7	Other (e.g., electricity, lack of awareness, etc.)	32	16.0

Note: Multiple responses allowed. Frequencies reflect how many respondents selected each challenge.

Part 2: Most Significant Benefit of Integrating AI into Educational Management

S/N	Benefit Item	Frequency	Percentage (%)
1	Administrative efficiency	104	52.0
2	Enhanced teaching and learning	46	23.0
3	Student data analytics	30	15.0
4	Real-time monitoring and feedback	16	8.0
5	Cost-effectiveness	4	2.0

Note: Single response allowed per respondent.

Part 3: Open-Ended Recommendations (Thematic Grouping)

S/N	Recommendation Theme	Frequency of Mentions	Percentage (%)
1	Improve ICT infrastructure and internet access	138	69.0
2	Provide regular staff training and digital literacy	112	56.0
3	Develop national/institutional AI policies	86	43.0
4	Increase funding and resource allocation	72	36.0
5	Encourage partnerships with tech firms/NGOs	50	25.0
6	Promote awareness and mindset change	38	19.0

Note: Responses were qualitatively grouped and tallied for frequency. Multiple themes were allowed per response.