

Perceptions of Academic Staff on the Integration of AI and Digital Connectivity for Transformative Educational Management in Bayelsa State

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DOI: <https://doi.org/10.62154/qjhcer.2026.023.01021>

Abstract

The study assessed the perceptions of academic staff on the integration of Artificial Intelligence (AI) and digital connectivity for transformative educational management in tertiary institutions in Bayelsa State. A descriptive survey research design was adopted, guided by two research questions. The population comprised academic staff from selected public universities and colleges of education in Bayelsa State, from which a sample of 350 respondents was drawn using stratified random sampling. Data were collected using a structured questionnaire titled Artificial Intelligence and Digital Connectivity in Educational Management Questionnaire (AIDEMQ), validated by experts and yielding a reliability coefficient of 0.89 via Cronbach Alpha. Descriptive statistics (mean and standard deviation) were used to answer the research questions. The findings revealed that academic staff generally perceived AI as enhancing administrative efficiency through improved decision-making, error reduction, transparency, and time management, although challenges such as inadequate training and limited practical application constrained its full potential. Similarly, digital connectivity was perceived as effective in improving communication, collaboration, information dissemination, and the quality of teaching and learning, though gaps in infrastructure and system functionality limited its impact on administrative planning and scheduling. The study concluded that while AI and digital connectivity hold significant potential for transforming educational management, targeted interventions including capacity building, infrastructure enhancement, and strategic system integration are necessary to fully realize these benefits. Recommendations included providing regular staff training, investing in robust digital infrastructure, and implementing supportive policies to optimize the integration of AI and digital tools in tertiary institutions.

Keywords: Artificial Intelligence, Digital Connectivity, Educational Management, Academic Staff, Tertiary Institutions, Bayelsa State.

Introduction

The integration of Artificial Intelligence (AI) and digital connectivity into educational management has gained increasing global attention in recent years, particularly as institutions seek innovative approaches to improve efficiency, accountability, and service

delivery. AI encompasses a broad range of technologies that enable machines to simulate human intelligence, including decision-making, predictive analytics, and automation of complex tasks (Russell & Norvig, 2020). Digital connectivity, on the other hand, refers to the seamless use of internet-based platforms and digital tools to enhance communication, information management, and service accessibility (UNESCO, 2021). Together, these technological innovations hold significant potential to transform higher education by streamlining administrative processes, enriching instructional support, and strengthening institutional management.

The integration of AI and digital systems into educational management remains at a developmental stage, with most institutions still grappling with infrastructural challenges, inadequate funding, and resistance to technological change (Adewale & Umeh, 2022). Although several tertiary institutions are experimenting with digital platforms for administrative and instructional purposes, the adoption of AI-driven tools is still uneven and often dependent on institutional capacity and staff readiness (Okafor & Nwankwo, 2021). Specifically, in Bayelsa State, where infrastructural limitations and human capacity gaps persist, the extent to which AI and digital connectivity are embraced by academic staff for educational management requires empirical investigation.

Existing studies underscore the importance of staff perceptions in driving institutional change. For example, Olanrewaju and Adebayo (2020) found that positive attitudes of academic staff toward digital technologies significantly enhanced the implementation of e-governance systems in Nigerian universities. Similarly, Chukwuma and Eze (2021) reported that when staff viewed AI and digital platforms as beneficial and user-friendly, they were more likely to adopt them for administrative functions. These findings suggest that without staff buy-in and favorable perceptions, investments in technological infrastructure may yield limited results.

Empirical evidence from international contexts further supports this claim. A study conducted in the United States revealed that universities that actively engaged staff in decision-making about AI integration achieved higher adoption rates and greater improvements in service delivery (Brynjolfsson & McAfee, 2017). In China, research demonstrated that academic staff perceptions of AI were directly linked to their willingness to adopt intelligent systems for managing research outputs, admissions, and teaching evaluations (Zhang & Chen, 2020). These insights underscore the centrality of academic staff as key stakeholders in ensuring successful technological transformation in higher education.

As Bayelsa State continues to confront challenges of educational inefficiency, delayed administrative processes, and limited digital integration, assessing academic staff perceptions of AI and digital connectivity becomes timely and necessary. Such an assessment will provide evidence on the readiness of staff to embrace these innovations, the perceived benefits and challenges, and the potential pathways for integrating AI-driven systems into transformative educational management. Ultimately, understanding these perceptions will not only inform policy but also guide institutional strategies aimed at

leveraging technology for efficiency, inclusivity, and sustainable educational outcomes. This study, therefore, seeks to assess academic staff perceptions of the integration of AI and digital connectivity for transformative educational management in tertiary institutions in Bayelsa State.

Purpose of the Study

The study assessed academic staff perceptions of the integration of Artificial Intelligence (AI) and digital connectivity for transformative educational management in tertiary institutions in Bayelsa State. Specifically, the study aimed to achieve the following:

- i. To assess academic staff's perceptions on the integration of Artificial Intelligence for enhancing administrative efficiency in tertiary institutions in Bayelsa State.
- ii. To assess academic staff's perceptions on the use of digital connectivity for improving educational service delivery in tertiary institutions in Bayelsa State.

Research Questions

The following research questions guided the study:

- i. What are the perceptions of academic staff on the integration of Artificial Intelligence for enhancing administrative efficiency in tertiary institutions in Bayelsa State?
- ii. What are the perceptions of academic staff on the use of digital connectivity for improving educational service delivery in tertiary institutions in Bayelsa State?

Literature Review

Theoretical Foundation

The study is anchored on The Technology Acceptance Model (TAM) by Davis (1989). The theory supports users of new technology to believe in the system in order to enhance their job performance. It is therefore linked to the study for its rooting in the psychological Theory of Reasoned Action, TAM posits that actual system usage is driven by a user's Behavioral Intention (BI) to use the system, which is shaped by two core cognitive beliefs: Perceived Usefulness (PU): The degree to which a person believes that using a specific system will enhance their job performance or productivity and Perceived Ease of Use (PEOU): The degree to which a person believes that using the system will be free of effort and straightforward.

Concept of Artificial Intelligence

Conceptually, AI in education goes beyond classroom applications to include functions such as student records management, administrative decision support, predictive enrollment systems, and quality assurance monitoring (Luckin et al., 2016). Digital connectivity complements these innovations by providing a networked infrastructure that supports data sharing, real-time collaboration, and virtual access to services (OECD, 2020). Within the framework of educational management, integration of AI and digital tools represents a shift

toward smarter governance where data-driven insights and automated systems can enhance institutional efficiency and accountability.

Artificial Intelligence and Administrative Efficiency

Globally, the application of AI and digital systems in higher education management has been recognized as a catalyst for transformation. Institutions across Europe and Asia, for example, have adopted AI-powered platforms to optimize course scheduling, streamline admissions, and monitor student performance trends, thereby improving administrative timeliness and reducing workloads (Holmes et al., 2019).

Digital connectivity has further enabled global collaborations, virtual classrooms, and remote access to administrative services, ensuring inclusivity and efficiency in educational delivery (World Economic Forum [WEF], 2022). These developments highlight the growing recognition that AI and connectivity are no longer futuristic tools but present necessities for sustainable educational reforms.

Research Methods

This study adopted a descriptive survey research design. According to Charles-Owaba (2019), descriptive survey research design is a method in which data is collected from a representative sample of individuals or items, and the findings are then generalized to the entire population. This design was considered appropriate for the present study because it enabled the collection and analysis of data from academic staff who are directly involved in educational management and are familiar with the potentials and challenges of integrating Artificial Intelligence (AI) and digital connectivity in tertiary institutions in Bayelsa State.

The population of the study comprised all 3546 academic staff in public tertiary institutions in Bayelsa State. A sample of 350 academic staff was selected from three universities and one college of education using a stratified random sampling technique. Stratified sampling was employed to ensure equitable representation across gender, institutional type, and academic rank. This approach ensured that the diversity of perspectives on the integration of AI and digital connectivity into educational management was adequately captured.

The instrument for data collection was a structured questionnaire titled *Artificial Intelligence and Digital Connectivity in Educational Management Questionnaire (AIDEMQ)*. The questionnaire was designed using a four-point Likert scale format, ranging from Strongly Agree to Strongly Disagree, to measure respondents' perceptions on the extent to which AI and digital connectivity enhance educational management. The questionnaire was organized into two parts: Part I and Part II. Part I collected demographic information such as gender, academic rank, years of teaching experience, and institutional type. Part II was divided into Sections A and B, corresponding to the two research questions. Section A examined the extent to which AI integration enhances administrative efficiency, while Section B explored the extent to which digital connectivity improves educational service delivery.

To ensure the validity of the instrument, the draft questionnaire was reviewed by three experts in Educational Management, Information and Communication Technology in Education, and Measurement and Evaluation. Their observations and recommendations led to improvements in clarity, appropriateness, and relevance of the questionnaire items. A pilot test was conducted with 20 academic staff from a tertiary institution not included in the main study. The reliability of the instrument was calculated using the Cronbach Alpha method, which yielded a coefficient of 0.89, indicating high internal consistency and reliability for data collection.

The researcher personally administered the questionnaire to the selected respondents and provided necessary clarifications to ensure accurate responses. Out of the 350 questionnaires distributed, 338 were properly completed and returned, representing a 96% response rate. Data collected were analyzed using descriptive statistics such as mean and standard deviation. Mean scores were used to interpret respondents' levels of agreement on each item. Items with a mean of 2.50 and above were considered as "Agree," while those with a mean below 2.50 were interpreted as "Disagree."

Analysis and Results

Research Question 1

What are the perceptions of academic staff on the integration of Artificial Intelligence for enhancing administrative efficiency in tertiary institutions in Bayelsa State?

Table 1: Mean and standard deviation on the perceptions of academic staff on the integration of Artificial Intelligence for enhancing administrative efficiency in tertiary institutions in Bayelsa State.

S/N	STATEMENT	SA	A	D	SD	$\bar{x}$	STD	REMARK
1	AI integration improves the speed of administrative decision-making in my institution.	154	96	56	32	3.05	1.10	A
2	AI tools help reduce human error in record-keeping and administrative processes.	165	76	48	49	3.28	.89	A
3	The use of AI has made student registration and enrollment processes more efficient.	178	100	40	20	3.28	.89	A
4	AI enables better tracking of academic staff workload and performance.	56	68	100	114	2.19	1.08	D
5	AI systems facilitate timely generation of reports for management decision-making.	70	68	90	110	2.29	1.12	D

S/N	STATEMENT	SA	A	D	SD	$\bar{x}$	STD	REMARK
6	AI applications in administration save staff time for other academic responsibilities.	150	106	42	40	3.08	1.01	A
7	The use of AI reduces bureaucratic delays in educational management.	78	69	91	100	2.36	1.13	D
8	AI integration promotes transparency and accountability in institutional management.	180	78	50	30	3.20	.99	A
9	Academic staff are adequately trained to utilize AI systems for administrative tasks.	69	51	80	138	2.16	1.12	D
10	AI implementation has enhanced overall institutional productivity and efficiency.	37	36	105	160	1.52	.68	D
	Grand Mean					2.64	1.00	

Source: Field work (2025) A=Agree, D=Disagree

Based on the data presented in Table 1, there are noticeable differences in the perceptions of academic staff regarding the integration of Artificial Intelligence (AI) for enhancing administrative efficiency in tertiary institutions in Bayelsa State. Several items recorded mean scores above the benchmark of 2.50, indicating agreement among respondents that AI contributes positively to administrative functions. For instance, academic staff strongly agreed that "AI tools help reduce human error in record-keeping and administrative processes" and that "the use of AI has made student registration and enrollment processes more efficient," both with mean scores of 3.28, reflecting a clear recognition of AI's benefits in streamlining administrative operations. Similarly, items such as "AI integration improves the speed of administrative decision-making" ($\bar{x} = 3.05$), "AI applications in administration save staff time for other academic responsibilities" ($\bar{x} = 3.08$), and "AI integration promotes transparency and accountability in institutional management" ($\bar{x} = 3.20$) also recorded agreement, showing that staff perceive AI as enhancing efficiency, transparency, and time management in administrative processes.

Conversely, certain items recorded mean scores below 2.50, reflecting disagreement or skepticism among respondents. For example, staff disagreed that "AI enables better tracking of academic staff workload and performance" ($\bar{x} = 2.19$), "AI systems facilitate timely generation of reports for management decision-making" ($\bar{x} = 2.29$), "the use of AI reduces bureaucratic delays in educational management" ($\bar{x} = 2.36$), "academic staff are adequately trained to utilize AI systems for administrative tasks" ($\bar{x} = 2.16$), and "AI implementation has enhanced overall institutional productivity and efficiency" ($\bar{x} = 1.52$). These findings suggest that while academic staff recognize the potential of AI, challenges such as inadequate training, limited practical application, and persistent bureaucratic constraints may hinder full realization of AI's benefits in institutional administration.

Research Question 2

What are the perceptions of academic staff on the use of digital connectivity for improving educational service delivery in tertiary institutions in Bayelsa State?

Table 2: Mean and standard deviation on the perceptions of academic staff on the use of digital connectivity for improving educational service delivery in tertiary institutions in Bayelsa State.

S/N	STATEMENT	SA	A	D	SD	$\bar{x}$	STD	REMARK
1.	Digital connectivity improves communication between academic staff and students.	198	80	47	13	3.36	.86	A
2.	Online platforms enable efficient dissemination of academic information and updates.	200	95	38	5	3.44	.75	A
3.	Digital tools support effective monitoring of student attendance and performance.	123	76	69	70	2.74	1.15	A
4.	Connectivity facilitates collaboration among staff across departments or campuses.	186	100	40	12	3.36	.82	A
5.	The use of digital platforms enhances timely feedback to students on academic matters.	96	99	72	71	2.65	1.10	A
6.	Digital connectivity provides access to real-time data for administrative planning.	60	78	121	79	2.35	1.02	D
7.	E-learning and online resources improve the quality of teaching and learning delivery.	268	50	6	4	3.74	.54	A
8.	Internet-based systems support efficient scheduling of lectures and examinations.	70	80	93	95	2.41	1.06	D
	Grand Mean					3.00	.91	A

Source: Field work (2025) A=Agree, D=Disagree

Based on the data presented in Table 2, academic staff generally hold positive perceptions regarding the use of digital connectivity for improving educational service delivery in tertiary institutions in Bayelsa State. Several items recorded mean scores above the benchmark of 2.50, indicating agreement that digital connectivity enhances various aspects of educational management. For example, staff agreed that "digital connectivity improves communication between academic staff and students" ($\bar{x} = 3.36$), "online platforms enable efficient dissemination of academic information and updates" ($\bar{x} = 3.44$), "connectivity facilitates collaboration among staff across departments or campuses" ($\bar{x} = 3.36$), and "e-

learning and online resources improve the quality of teaching and learning delivery" ($\bar{x} = 3.74$). These findings suggest that academic staff perceive digital connectivity as a critical tool for enhancing interaction, collaboration, and the overall quality of educational service delivery.

Other items also recorded agreement but with relatively lower mean scores, such as "digital tools support effective monitoring of student attendance and performance" ($\bar{x} = 2.74$) and "the use of digital platforms enhances timely feedback to students on academic matters" ($\bar{x} = 2.65$). While these scores indicate a generally positive perception, they reflect moderate confidence among staff regarding the consistency and effectiveness of digital tools in monitoring and feedback processes.

Conversely, some items recorded mean scores below 2.50, reflecting areas of concern. For instance, staff disagreed that "digital connectivity provides access to real-time data for administrative planning" ($\bar{x} = 2.35$) and "internet-based systems support efficient scheduling of lectures and examinations" ($\bar{x} = 2.41$). These results suggest that limitations in digital infrastructure, system functionality, or institutional support may hinder the full realization of digital connectivity's benefits for educational service delivery.

Discussion of Findings

The results from Research Question 1 revealed that academic staff in tertiary institutions in Bayelsa State generally perceive the integration of Artificial Intelligence (AI) as beneficial for enhancing administrative efficiency, although some aspects are viewed more positively than others. Staff agreed that AI tools help reduce human error in record-keeping, improve the speed of administrative decision-making, enhance student registration and enrollment processes, save staff time for other academic responsibilities, and promote transparency and accountability in institutional management. Conversely, items relating to the tracking of staff workload, timely generation of management reports, reduction of bureaucratic delays, adequacy of staff training on AI systems, and overall productivity yielded disagreement or lower mean scores. This suggests that while AI is broadly recognized as a transformative tool, challenges such as insufficient training, limited practical use, and bureaucratic constraints may hinder the full realization of its potential in administrative functions. Overall, the grand mean of 2.64 indicates a generally positive perception of AI's contribution to administrative efficiency, though gaps in implementation remain.

These findings are consistent with earlier studies such as Olanrewaju and Adebayo (2020) and Chukwuma and Eze (2021), which highlighted that academic staff generally recognize the benefits of AI in streamlining administrative processes, enhancing accuracy, and supporting decision-making. However, the studies also noted that limitations in training, infrastructure, and familiarity with AI systems can constrain adoption and full utilization. Similarly, Russell and Norvig (2020) emphasized that while AI has the potential to transform institutional management, the success of implementation depends on both technical capacity and the readiness of staff to embrace the technology.

The results from Research Question 2 revealed that academic staff in tertiary institutions in Bayelsa State generally perceive digital connectivity as an effective tool for improving educational service delivery, though perceptions vary across specific aspects of implementation. Respondents agreed that digital connectivity improves communication between academic staff and students, enables efficient dissemination of academic information and updates, facilitates collaboration among staff across departments or campuses, and enhances the quality of teaching and learning through e-learning platforms and online resources. Items such as monitoring student attendance and performance and providing timely feedback to students also recorded agreement, although with relatively lower mean scores, suggesting moderate confidence in the consistency and effectiveness of these functions. Conversely, staff disagreed that digital connectivity provides access to real-time data for administrative planning and supports efficient scheduling of lectures and examinations, indicating challenges in infrastructure, system functionality, or institutional support. Overall, the grand mean of 3.00 reflects a generally positive perception of digital connectivity in enhancing educational service delivery.

These findings align with prior studies such as Chukwuma and Eze (2021) and World Economic Forum (2022), which highlighted that digital tool facilitate timely communication, collaboration, and access to information, thereby improving service delivery in higher education contexts. Similarly, UNESCO (2021) emphasized that digital connectivity enables more inclusive and efficient educational management, though its effectiveness depends on adequate infrastructure, training, and system integration. The observed lower scores for administrative planning and scheduling suggest that, despite the recognized benefits, gaps remain in the practical application and optimization of digital platforms in tertiary institutions.

Conclusion

The study concluded that academic staff in tertiary institutions in Bayelsa State generally hold positive perceptions regarding the integration of Artificial Intelligence (AI) and digital connectivity for transformative educational management. AI is recognized for enhancing administrative efficiency through improved decision-making, reduced errors, and greater transparency, although challenges such as inadequate training and limited practical application constrain its full potential. Similarly, digital connectivity is perceived as effective in improving communication, collaboration, and the quality of teaching and learning, yet gaps in infrastructure and system functionality limit its impact on administrative planning and scheduling. The findings suggest that while AI and digital connectivity are valuable tools for advancing educational management, targeted interventions including capacity building, infrastructure enhancement, and strategic system integration are necessary to fully realize their transformative potential in tertiary institutions across Bayelsa State.

Recommendations

Based on the findings of the study, the following recommendations are given:

1. Academic staff should be provided with regular training and capacity-building programs to enhance their skills in effectively utilizing AI systems for administrative efficiency in tertiary institutions.
2. Tertiary institutions should invest in robust digital infrastructure and system integration to maximize the benefits of digital connectivity in improving educational service delivery.
3. There should be a change process toward introduction of any form of Artificial Intelligence.
4. There should be a deliberate effort in policy by education managers to ensure domestication of Artificial Intelligence and integration of digitalization in teaching and learning.

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