Artificial Intelligence as a Catalyst for Transforming School Leadership Practices

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Abstract
Modern school administration faces growing demands for efficiency, data-driven decision-making, inclusive leadership, and continuous improvement in learning outcomes. However, many school leaders continue to rely on traditional, manual practices that limit timely insights and create inefficiencies in planning, monitoring, staffing, and communication, particularly in resource-constrained systems. This study employed a descriptive survey design to examine the use of artificial intelligence (AI) in school leadership. The sample comprised 60 school leaders from public tertiary institutions in Anambra State, purposively selected to represent different levels of experience (22 males and 38 females). Data were collected using a structured online questionnaire administered via Google Survey, covering AI utilization, its influence on decision-making, barriers to adoption, and its role in leadership transformation. Findings indicated that AI was moderately to highly utilized, primarily for communication and administrative tasks. The impact of AI on decision-making was moderate, particularly in enhancing reliance on data-based information and reducing error. Major barriers to adoption included limited training, inadequate funding, technical challenges, and staff resistance. AI was perceived as a driver of organizational change, especially in improving operational efficiency and leadership practices. ANOVA results revealed a statistically significant effect of AI on decision-making and organizational change ($p < 0.05$), while prior AI usage and perceived difficulties were not statistically significant ($p > 0.05$). The study concludes that AI holds strong potential to transform school leadership and emphasizes the need for capacity building, technological investment, and ethical guidelines to support effective AI integration in education.

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1. Introduction

Schools are still grappling with the same problems such as administrative overburden, lack of evidence-based decision-making data, inability to personalise learning opportunities, and the inability to work towards continuous school improvement. Traditional leadership habits often include processes that are manual and slow to access information, hindering prompt response of leaders to student and teacher requirements (Oladimeji et al., 2024). With the ever-growing complexity of educational systems, there is an urgent need to find tools that are capable of increasing efficiency, evidence-based decision-making, and empower instructional leadership. Artificial Intelligence (AI) presents a radical chance to help solve these issues by transforming the manner in which school leaders utilize resources, interact with stakeholders, and promote teaching and learning (Busa et al., 2025).

Artificial Intelligence has turned into a disruptive technology in education, providing school leaders with effective tools to advance leadership performance, simplify activities, and support the use of data to support decision making. Based on the above, UNESCO (2023) hypothesizes that AI can facilitate the development of educational governance because it provides timely information to guide leaders to plan, monitor, and evaluate school processes more effectively. This story is a transition to proactive leadership based on predictive analytics and individualised assistance. One of the most salient contributions of AI is the automation of administration; school heads tend to spend a considerable part of their time on the routine, mundane tasks, including scheduling, management of student records, and correspondence. A lot of these operations can be automated by AI-enabled systems, thus allowing leaders to focus on leadership in education and professional development among educators (OECD, 2021).

Artificial intelligence also supports the leadership of schools by making evidence-based decisions based on real-time dashboards and predictive analytics. These tools allow the leader to track attendance, achievement patterns and school climate thus informing planning and early intervention. This strength aligns with the need to mobilise resources and leaders to improve strategic leadership in schools in Nigeria (Egwu & Mbonu, 2023).

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AI also enhances quality assurance through effective internal assessment systems and improved accountability (Ezugoh et al, 2023). In the pedagogical sector, AI-driven personalised learning can be used to supplement modern pedagogical standards and increase student engagement (Egwu, 2022). Since the use of digital tools is increasingly prevalent in post-COVID-19 learning and teaching, AI increases the potential of ICT integration in adaptive instruction (Ikegbusi et al, 2021). The effective implementation of AI also depends on the leadership that will create institutional roadmaps that support innovation and skill development (Egwu & Ekwe, 2024).

Development of communication and engagement of stakeholders is also enhanced by AI. The timely sharing of information with parents, students, and teachers can be achieved through chatbots and automated communication systems; therefore, the openness of leadership practices can be maintained, and inclusive school environments can be promoted (OECD, 2021). Improved communication leads to building of trust and increased home-school collaboration. Teacher professional development is another area where AI is transforming leadership because artificial intelligence (AI) tools can process classroom data to recognise the strengths and weaknesses of teachers and provide them with personalised coaching tips. These systems equip the leaders with the knowledge they need to develop specific professional development programmes to meet the school goals (Ajani, 2023), which enhances the quality of instruction and professional learning community.

However, introduction of AI in leadership in schools would require thorough ethical consideration especially related to the privacy of data, transparency, bias, and the digital divide. According to UNESCO (2023), human control, justice, and equity should be in the top of the list of responsible AI usage. Educational leaders need to make sure that AI technologies are ethical and encourage equitable learning methods. The training process is also necessary to enhance the digital competence of leaders and teachers (Okunlola & Naicker, 2025). The use of Artificial Intelligence in education is spreading quickly; however, the studies of school leadership show that a significant portion of school leaders has little experience with AI tools. The available research indicates an increasing interest in AI, but with very little information on how school leaders utilize AI in their daily activities, particularly in areas where technological adoption is still in its infancy (UNESCO, 2023). It is this uncertainty that highlights the need to understand the prior exposure and readiness of leaders.

According Okokoyo et al. (2024), AI can also enhance decision-making through real-time analytics and predictive information, but there is limited empirical research available on how the tools currently affect the quality and speed of the decisions made by leaders in schools. At the same time, the implementation of artificial intelligence (AI) is often hampered by the lack of proper infrastructure, ethical issues, or the lack of digital skills. However, the empirical literature does not report the particular challenges that the school leaders face in practice (UNESCO, 2023). In spite of the world presses describing AI as transformative, there is a lack of situational research that elucidates AI proactively redefining leadership practices, which encompass communication, supervision, strategic planning, and instructional support (OECD, 2021). These gaps form the basis of the current research.

1.1. Statement of the Problem

The problem in contemporary school administration is strongly connected to the limited and uneven use of Artificial Intelligence in leadership practices. Although digital transformation is accelerating in many sectors, evidence shows that fewer than thirty percent of school leaders in developing countries have ever used AI based tools in their professional tasks such as planning, data analysis, communication, or student monitoring. This low extent of previous AI use raises concern, especially as schools now operate within complex, data rich environments that demand faster, more accurate decision making. Consequently, many school leaders continue to rely on traditional and manual approaches to leadership, which often result in delayed decisions, poor resource allocation, and weak instructional supervision. At the same time, the potential ways artificial intelligence may influence the decision-making of school leaders have not been studied in the Nigerian context extensively. On a worldwide level, empirical research has shown that artificial intelligence technologies increase predictive accuracy, augment performance monitoring systems, and enable an evidence-based planning process. However, many education administrators have faced significant barriers to the implementation of AI, which are caused by a lack of digital skills, infrastructural readiness, the fear of job loss, and a lack of clear policy directions. Such restrictions hinder innovation and continue to create systemic inefficiencies in institutions of learning. Therefore, there is a pressing need to investigate the extent of school leaders' previous use of AI, the influence it has on their decision making, the challenges they face in adopting it, and the specific ways AI can drive positive change in school leadership practices. This study is important because its findings can guide policy, training programmes, and leadership reform for improved educational outcomes.

1.2. Research Questions

The study is guided by the following research question

a. What is the extent of school leaders' previous use of AI in their work?

b. What influence does AI have on school leaders' decision making?

c. What challenges do school leaders face when adopting AI?

d. What is the influence of AI on school leadership practices?

1.3. Hypotheses

The following hypotheses were formulated to guide the study

H_{01}: There is no significant extent of previous AI use among school leaders.

H_{02}: AI has no significant influence on school leaders' decision making.

H_{03}: Challenges faced by school leaders do not significantly affect AI adoption.

H_{04}: AI has no significant influence on school leadership practices.

2. Method

Design of the Study: A descriptive survey research design was used. This design helped to systematically gather and analyze the data of school leaders and describe the patterns and relationships without experimentally manipulating the variables.

Area of the Study: The study site was in the public tertiary institutions in Anambra State. These institutions were selected because they are actively involved in the process of administrative and academic leadership and their growing usage of technology, including AI, in management practices.

Population of the Study: The target population was school leaders (head of departments, deans, directors) working at the chosen tertiary institutions of the public. These leaders were directly engaged in the administrative and instructional decision-making, which makes them perfectly equipped to offer meaningful insights into the application of AI in leadership.

Sample and Sampling Techniques: The sample size of 60 school leaders was purposive to ensure that the respondents had relevant experience and exposure to AI as leaders of their respective schools.

Data Collection Instrument: The researcher developed a structured questionnaire, which was used to gather data, the title is Artificial Intelligence and School Leadership Practices Scale (AISLPS). The tool included parts that were in line with the research objectives, which included: previous AI use, AI impact on decision-making, adoption issues, and AI as a driver of change. The answers were recorded on a four-point Likert scale ranging between strongly disagree and strongly agree.

Instrument validation: The questionnaire was reviewed by two educational technology professionals and one research methodologist who judged its clarity, relevance and suitability. Constructive feedback was also added to polish ambiguous items and make sure that they align with the research objectives.

Instrument Reliability: Reliability testing was conducted on a pilot study with ten school leaders who were not part of the main research location. The alpha coefficient of Cronbach was 0.85 and this value showed reasonable internal consistency of the instrument.

Method of Data Collection: Data was gathered through an online survey that was administered using Google Forms. The survey link was distributed to respondents through institutional email and formal messaging systems and followed up to ensure maximum responses.

Method of Data Analysis: Descriptive and inferential statistics were used to analyze data. Demographic characteristics and survey responses were summarized using descriptive statistics: mean, standard deviation, variance, skewness and kurtosis. The hypotheses were tested using analysis of variance (ANOVA) at a significance of 0.05 level, thus showing whether AI use, influence, challenges, or transformational roles were statistically significant.

3. Results and Discussion

3.1. Results

Table 1. Gender Distribution of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	22	36.7	36.7	36.7
	Female	38	63.3	63.3	100.0
	Total	60	100.0	100.0	

Table 1 shows that most respondents were female (38, 63.3 percent), while males were fewer (22, 36.7 percent). This means females made up almost two thirds of the sample, suggesting they were more available or more represented in the study setting.

Table 2. Years of Experience of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5 years	14	23.3	23.3	23.3
	6-10 years	16	26.7	26.7	50.0
	11-15 years	17	28.3	28.3	78.3
	16-20 years	5	8.3	8.3	86.7
	21-35 years	8	13.3	13.3	100.0
	Total	60	100.0	100.0	

The distribution in Table 2 shows a fairly mixed workforce. Most respondents had 11 to 15 years of experience (17, 28.3 percent), followed by those with 6 to 10 years (16, 26.7 percent) and 0 to 5 years (14, 23.3 percent). Fewer participants had 21 to 35 years (8, 13.3 percent) and 16 to 20 years (5, 8.3 percent). Overall, the sample included 60 respondents.

3.1.1. Research Question 1: What is the Extent of School Leaders' Previous Use of AI in Their Work?

Table 3. Extent of School Leaders' Previous Use of AI in Their Work

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
My school uses AI tools to handle administrative tasks.	3.43	0.65	0.419	-0.713	0.309	-0.474	0.608
AI is used in my school to monitor staff performance.	3.17	0.81	0.650	-1.120	0.309	1.458	0.608
AI applications are used for planning school activities.	3.38	0.52	0.274	0.123	0.309	-1.191	0.608
AI tools support communication in my school.	3.45	0.65	0.421	-1.156	0.309	2.000	0.608
AI is used to assess student learning outcomes.	3.07	0.76	0.572	-0.599	0.309	0.345	0.608
Valid N (listwise)							

Table 3 shows that school leaders reported moderate to high use of AI in their work, with mean scores ranging from 3.07 to 3.45. AI was most frequently used to support communication (3.45) and handle administrative tasks (3.43), while monitoring staff performance (3.17) and assessing student learning outcomes (3.07) were slightly lower. Planning school activities had a mean of 3.38. Standard deviations were low (.524–.806), indicating that responses were fairly consistent among the 60 respondents.

3.1.2. Research Question 2: What Influence Does AI Have on School Leaders' Decision Making?

Table 4. Influence of AI on Decision-Making Processes of School Leaders

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
AI has improved the quality of my decision-making.	3.05	0.87	0.760	-0.416	0.309	-0.838	0.608

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
I rely on AI-generated data to make administrative decisions.	3.38	0.61	0.376	-0.904	0.309	2.201	0.608
AI helps me make decisions more quickly.	3.22	0.59	0.342	-0.064	0.309	-0.302	0.608
AI helps me identify trends for strategic planning.	3.27	0.64	0.408	-0.303	0.311	-0.629	0.613
AI reduces errors in administrative decision-making.	3.28	0.61	0.376	-0.245	0.309	-0.560	0.608
Valid N (listwise)							

Table 4 indicates that AI moderately influences decision-making among school leaders, with mean scores ranging from 3.05 to 3.38. AI-generated data was most relied upon for administrative decisions (3.38), followed by reducing errors in decision-making (3.28) and identifying trends for strategic planning (3.27). AI also helps leaders make decisions more quickly (3.22), while improving overall decision quality was slightly lower (3.05). Standard deviations were low (.585–.872), showing responses were generally consistent across the 60 respondents.

3.1.3. Research Question 3: What Challenges Do School Leaders Face When Adopting AI?

Table 5. Challenges Faced by School Leaders in Adopting AI

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Lack of training limits the use of AI in my school.	3.47	0.54	0.287	-0.206	0.309	-1.246	0.608
Insufficient funding prevents effective AI adoption.	3.42	0.50	0.247	0.347	0.309	-1.946	0.608
Staff resistance slows down AI implementation.	3.25	0.65	0.428	-0.681	0.309	1.162	0.608
Technical problems hinder the effective use of AI.	3.28	0.67	0.444	-0.748	0.309	1.062	0.608
Ethical concerns limit the use of AI in my school.	3.15	0.69	0.469	-0.199	0.309	-0.816	0.608
Valid N (listwise)							

Table 5 reveals that school leaders face several challenges in adopting AI, with mean scores ranging from 3.15 to 3.47. Lack of training was the most significant barrier (3.47), followed by insufficient funding (3.42). Technical problems (3.28) and staff resistance (3.25) also affected AI implementation, while ethical concerns were slightly lower (3.15). Standard deviations were low (.497–.685), indicating consistent responses among the 60 participants. These findings suggest that both resource and human factors influence AI adoption in schools.

3.1.4. Research Question 4: What Is the Influence of AI on School Leadership Practices?

Table 6. Perceived Role of AI as a Driver of Change in School Leadership Practices

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
AI can transform school leadership practices.	3.48	0.60	0.356	-0.678	0.309	-0.464	0.608
AI increases efficiency in school operations.	3.52	0.50	0.254	-0.068	0.309	-2.065	0.608

	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
AI supports innovative teaching and learning.	3.23	0.65	0.419	-0.651	0.309	1.235	0.608
AI improves communication in my school.	3.20	0.78	0.603	-0.817	0.309	0.492	0.608
AI contributes to long-term school development.	3.28	0.64	0.410	-0.329	0.309	-0.641	0.608
Valid N (listwise)							

Table 6 shows that respondents generally perceive AI as a strong driver of change, with mean scores ranging from 3.20 to 3.52. AI was seen as most effective in increasing efficiency in school operations (3.52) and transforming leadership practices (3.48). Contributions to long-term school development (3.28) and support for innovative teaching and learning (3.23) were moderate, while improvement in communication scored slightly lower (3.20). Standard deviations were low (.504–.777), indicating consistent responses among the 60 participants.

3.1.5. Hypothesis 1: There Is No Significant Extent of Previous AI use Among School Leaders

Table 7: ANOVA Test for Previous Use of AI by School Leaders

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.072	1	0.072	0.017	0.895
Within Groups	238.928	58	4.119		
Total	239.000	59			

The ANOVA results in Table 7 show an F-value of 0.017 with a significance level of 0.895. Since the p-value (0.895) is greater than 0.05, the result is not statistically significant. Therefore, the null hypothesis (H_{01}) is accepted, indicating that there is no significant difference in the extent of previous AI use among school leaders. This suggests that AI use was relatively similar across the respondents.

3.1.6. Hypothesis 2: AI Has No significant influence on school leaders' decision making.

Table 8: ANOVA Test for the Influence of AI on School Leaders' Decision Making

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26.237	2	13.118	4.521	0.015
Within Groups	165.413	57	2.902		
Total	191.650	59			

The ANOVA results in Table 8 show an F-value of 4.521 with a significance level of 0.015. Since the p-value (0.015) is less than 0.05, the result is statistically significant. Therefore, the null hypothesis (H_{02}) is rejected, indicating that AI has a significant influence on school leaders' decision-making processes among the respondents.

3.1.7. Hypothesis 3: Challenges Faced By School Leaders Do Not Significantly Affect AI Adoption

Table 9. ANOVA Test for the Effect of Challenges on AI Adoption by School Leaders

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.437	1	9.437	2.832	0.098
Within Groups	193.297	58	3.333		
Total	202.733	59			

The ANOVA results in Table 9 show an F-value of 2.832 with a significance level of 0.098. Since the p-value (0.098) is greater than 0.05, the result is not statistically significant. Therefore, the null hypothesis (H_{03}) is accepted, indicating that the challenges faced by school leaders do not significantly affect the adoption of AI in their schools.

3.1.8. Hypothesis 4: AI has no significant influence on school leadership practices.

Table 10. ANOVA Test for the AI Influence On School Leadership Practices

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	103.322	2	51.661	22.164	0.000
Within Groups	132.861	57	2.331		
Total	236.183	59			

The ANOVA results in Table 10 show an F-value of 4.521 with a significance level of 0.015. Since the p-value (0.015) is less than 0.05, the result is statistically significant. Therefore, the null hypothesis (H_{02}) is rejected, indicating that AI has a significant influence on school leaders' decision-making processes among the respondents.

3.2. Discussion

The findings of the Research Question One show that school leaders have stated moderate to high pre-use of artificial intelligence (AI), with the highest mean scores obtained related to AI in assisting communication and managing administrative activities. The planning of school activities also had moderate use, and the monitoring of staff performance and the evaluation of students learning outcomes were also noted as lower. These results indicate that AI is more embedded in the managerial than instructional areas. This finding is similar to that of Okokoyo et al. (2024), who observed the extensive use of AI in administrative tasks. Conversely, Payadnya et al. (2025) note that the primary application of AI in East Asian schools includes instructional analytics, which is in contrast to the lower learning-related mean in this analysis. Similarly, the adoption of AI in staff monitoring was limited as reported by a related study by Nguyen et al. (2025).

In Research Question Two, the findings show that AI has a moderate effect on the decision-making of school leaders, and the use of AI-generated data on administrative decisions is the most dependent. The reduction of errors, support of strategic trend recognition, and faster decision-making were also found to be achieved by AI, whereas the enhancement of decision quality was rated less. This observation aligns with the findings of Pereira et al (2023) who established that AI dashboards reinforce administrative decisions greatly through counterfactual thinking strategy. On the other hand, Okokoyo et al. (2024) indicated that AI has the strongest positive effect on the quality of decisions and not on speed, which is contrary to the current hierarchy. A parallel study conducted by Çınar (2024) demonstrated that AI-assisted trend analysis is a significant factor in strategy planning.

Research Question Three shows that school leaders are facing significant issues with the adoption of AI, and the most significant obstacles are the absence of training and insufficient financing. Ethical concerns, staff resistance, and technical issues were also observed. This fact correlates with Iyoha et al. (2025), who claimed that skill gaps are still the highest barrier to AI implementation in Nigerian schools. Conversely, Slimi and Carballido (2023) found the most important barrier internationally to be ethical concerns, but ethics was the lowest-ranking in this research.

In the case of Research Question Four, participants viewed AI as an engine of change, with high means in increasing efficiency and changing the way leadership is conducted. Long-term development, innovative teaching support, and communication improvement were found to have moderate influence. This observation is in line with Han et al. (2025), who indicated that AI has a significant impact on enhancing the efficiency of operations in schools. In contrast, communication benefits were highlighted by Ananyi and Somieari-Pepple (2023), although in the current study, communication received the lowest mean score among the measured variables.

4. Conclusion

The research concludes that artificial intelligence (AI) has a huge role in changing school leadership practices at tertiary institutions in the Anambra State that are publicly owned. Leaders in schools noted moderate-to-high AI utilization, especially in communication, administration, and planning, which means that this technology has become a new part of school leadership. AI was identified to have a massive impact on the decision-making process, increasing efficiency, minimizing errors, and contributing to strategic planning. Although some issues include training, funding, technical, and resistance by staff, they did not significantly hinder the uptake of AI, implying that leaders are working out strategies to address them. In addition, AI is viewed as a powerful change agent, which will promote efficiency, innovation, and long-term growth within the school activity. The results highlight the idea that AI can be utilized as an operational support instrument, but also as a driver of improving leadership effectiveness, fostering innovation, and creating sustainable change in the educational management practice.

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Declaration on AI Use

The authors declare that no artificial intelligence (AI) or AI-assisted tools were used in the preparation of this manuscript. AI were used only to improve readability and language under strict human oversight; no content, ideas, analyses, or conclusions were generated by AI.

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