RETHINKING STAFF SUPERVISION PROCEDURES IN AN ERA OF ARTIFICIAL INTELLIGENCE FOR EFFECTIVE SECONDARY SCHOOL ADMINISTRATION IN BAYELSA STATE

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Abstract

Staff supervision landscape is changing in this era of artificial intelligence and only schools that are proactive can achieve effective school administration in this era. This study focused on rethinking staff supervision procedures in an era of artificial intelligence for effective secondary school administration in Bayelsa State. Three research questions and related hypotheses were answered and tested in the study. The study adopted descriptive survey design and out of a population of 207 public secondary school principals in the State, 136 principals (62 males and 74 females) were sampled for the study using simple random sampling technique. Instrument used for data gathering was questionnaire named "Rethinking Staff Supervision Procedures in an Era of Artificial Intelligence for Effective Secondary School Administration Questionnaire" (RSSPEAIESSAQ) which was face and content validated by experts with a reliability index of 0.97 using Cronbach alpha statistics. There were 136 copies of questionnaire administered out of which 129 copies (57 males and 72 females) which represented 94.9% were retrieved. The research questions raised were answered using mean and standard deviation while the hypotheses were tested at 5% significant using z-test. The result of the study indicated existing staff supervision procedures included regular classroom observation andseasonal performance evaluation.The challenges of staff supervision procedures in the era of artificial intelligence included the possibility of job displacement andlack of data privacy.Automation of staff performance evaluation and provision of relevant data for decision making were ways AI can enhance staff supervision. There was no difference in the opinion of the respondents on these issues. The study recommended the digitalization of administrative practices to make the benefits of AI fully realizable.

Keywords: *Administration, Artificial Intelligence, Education, School, Supervision,*

Introduction

Effective school administration is widely acknowledged as a fundamental driver of educational achievement at all levels. As the global landscape of education increasingly embraces technological advancements, the integration of artificial intelligence (AI) into school administration has become not just advantageous but imperative. At the core of school administration are the teaching and non-teaching staff, whose supervision is critical to the realization of institutional goals. In light of emerging technologies, particularly AI, there is a growing need to reexamine traditional methods of staff supervision to ensure alignment with contemporary demands in secondary school administration.

The advent of information technology (IT) has already ushered in significant improvements in school processes, as noted by Kolog et al. (2022). This technological shift is not exclusive to secondary schools; higher educational institutions globally have been propelled into technology-driven educational practices (Gallagher & Palmer, 2020). These trends underscore the relevance and inevitability of digital transformation in educational administration at all levels.

Supervision, whether internal or external, is traditionally conceived as a deliberate and continuous process aimed at enhancing the outcomes of schools and educational programs. Shamsuddeen et al.

(2016) emphasized that this process, focused on improvement and quality assurance, can significantly benefit from emerging technologies such as artificial intelligence. Indeed, the integration of AI into staff supervision aligns with the broader educational objective of leveraging technology for more effective administration.

Artificial intelligence, as defined by Tien (2017), refers to computer systems capable of performing tasks that typically require human intelligence, including visual perception, speech recognition, decision-making, and language translation. In the educational context, the utility of AI transcends mere automation; it offers intelligent assistance in routine and complex administrative tasks. Ogunode and Gregory (2025) conceptualized administration as the coordinated management of both human and non-human resources to achieve organizational goals. This process encompasses planning, organizing, directing, coordinating, controlling, and evaluating institutional performance (Akinwumi et al., 2021). AI's potential to augment these administrative functions cannot be understated.

Recent studies have highlighted AI's transformative impact on education. Walter (2024) observed that AI is reshaping teaching and learning methods, thereby altering the broader educational landscape. Beyond instructional contexts, administrative tasks such as grading assignments and providing feedback are increasingly being automated through AI-powered market research technologies (Umali, 2024). Additionally, AI has shown promise in streamlining the recruitment process through automated screening and scheduling, thereby enhancing the efficiency of human resource management in schools (Johansson &Herranen, 2019).

The intersection of AI and school administration also extends to student support services. Offia et al. (2025) indicated that AI facilitates various academic activities such as reading, supervising assignments, managing projects, and attending lectures online. For these innovations to yield optimal results, teachers must be adequately prepared and integrated into AI-driven processes, reaffirming the necessity of revising staff supervision strategies to reflect the new technological realities.

Despite the immense opportunities that AI presents, its adoption is not without challenges. Afful-Dadzie and Afful-Dadzie (2017) argued that realizing the benefits of AI requires substantial investments in fiscal resources, skilled personnel, knowledge capacity, ICT infrastructure, and robust governance and policy frameworks. These constraints highlight the need for strategic planning and capacity building in schools seeking to integrate AI into their administrative processes.

Moreover, Karakose and Tülübaş (2024) emphasized that AI technologies offer opportunities to enhance school leadership through open management practices grounded in transparency, participation, and digital competence. By fostering collaboration among teachers, students, and parents, AI can create the synergy needed to meet evolving educational objectives. Consequently, AI should not be viewed as separate from the staff supervision process but rather as a catalyst for improving administrative effectiveness in secondary schools.

Several researchers have attempted to understudy the changes taking place in the area of staff supervision in the artificial intelligence era, so that schools can achieve effective administration. Chogwu and Daniel (2024) investigated the role of artificial intelligence in school supervision and school plant management in public secondary schools in Abuja, Nigeria. A descriptive survey design was used, sampling 400 principals and vice principals through stratified random sampling. Data was collected through a questionnaire and analyzed using Pearson Product Moment Correlation and t-test. The findings revealed a significant positive correlation between AI and effective school supervision, as well as between AI and effective school plant management, highlighting the potential of AI to enhance administrative functions in secondary schools.

Similarly, Epelle and Muruwei (2024)conducted another study on the impact of artificial intelligence on academic staff job performance in tertiary institutions in South-South Nigeria during an economic downturn. Using a descriptive survey design, the study sampled 341 academic staff members from six tertiary institutions. Questionnaire was used for data collection, and the results were analyzed both descriptively and inferentially. The study found a significant relationship between the use of AI tools like ChatGPT and sustainable academic job performance, suggesting that AI can play a pivotal role in enhancing job efficiency and performance during challenging economic periods.

Furthermore, Hutami (2024) investigated the application of technology and artificial intelligence in educational administration to improve school performance at junior high schools. The study adopted a descriptive qualitative approach, utilizing in-depth interviews, observations, and document analysis for triangulation. The findings indicated that AI and technology use led to improved operational efficiency, accelerated administrative processes, and better monitoring of student and staff performance. However, challenges such as limited infrastructure, resistance to change, and data privacy concernswere identified. These studies established the fact that schools stand a lot to benefit is the process of staff supervision is reformed in this era of artificial intelligence.

Aim and Objectives of the Study

The aim of the study was to examine the effect of web-based learning on academic performance of nursing mothers in Public Universities in Rivers State. The specific objectives of the study were to:
examine the existing staff supervision procedures adopted for effective secondary school administration in Bayelsa State
ascertain the challenges of staff supervision procedures in an era of artificial intelligence for effective secondary school administration in Bayelsa State.
determine the ways that artificial intelligence can enhance staff supervision procedures for effective secondary school administration in Bayelsa State

Research Questions

The research questions that guided this study are as follows:
What are the existing staff supervision procedures adopted for effective secondary school administration in Bayelsa State?

What are the challenges of staff supervision procedures in an era of artificial intelligence for effective secondary school administration in Bayelsa State?
What are the ways that artificial intelligence can enhance staff supervision procedures for effective secondary school administration in Bayelsa State?

Hypotheses

The following hypotheses were tested using z-test statistics at 5% level of significance:
There is no significant difference between the mean ratings of male and female principals on the existing staff supervision procedures adopted for effective secondary school administration in Bayelsa State.

There is no significant difference between the mean ratings of male and female principals on the challenges of staff supervision procedures in an era of artificial intelligence for effective secondary school administration in Bayelsa State.

There is no significant difference between the mean ratings of male and female principals on the ways that artificial intelligence can enhance staff supervision procedures for effective secondary school administration in Bayelsa State

Methodology

Descriptive survey design was employed in this study as it dealt with the investigation of a phenomenon that currently exists. The population of the study comprised all the 207 public secondary school principals in Bayelsa State. A total of 136 principals (62 males and 74 females) were sampled for the study through simple random sampling technique. The sample size was estimated using the Taro Yamane formula for the estimation of sample size for a given population. The instrument adopted for the gathering of data was a 15 item questionnaire titled "Rethinking Staff Supervision Procedures in an Era of Artificial Intelligence for Effective Secondary School Administration Questionnaire" (RSSPEAIESSAQ). The instrument consisted of Section A for the collection of demographic data of the respondents' and Section B which contained the questionnaire items. The questionnaire items were structured on a four point modified Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) and the weightsof the scale were 4, 3, 2 and 1 respectively with an average

value of 2.50 which was the criterion mean score for decision making. The questionnaire was validated both in terms of face and content by anEducational Management expert at the University of Port Harcourt while the reliability of the questionnaire was estimated as 0.97 using Cronbach alpha statistics. Out of the 136 copies of questionnaire administered, 129 copies (57 males and 72 females) which represented 94.9% were properly filled and used for analysis. Research questions raised were answered using mean and standard deviation while the hypotheses were tested at 5% significant using z-test.
Results

Answer to Research Questions
Research Question One: What are the existing staff supervision procedures adopted for effective secondary school administration in Bayelsa State?

Table 1: Mean and Standard Deviation Scores on the Existing Staff Supervision Procedures Adopted for Effective Secondary School Administration inBayelsa State

S/No	Items	Male Principals n=57		Female Principals n=72		Mean Set	
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD	$X\ \bar{X}$	Decision
1	Regular classroom observation	2.71	0.70	2.86	0.71	2.79	Agree
2	Seasonal performance evaluation	2.68	0.72	2.82	0.70	2.75	Agree
3	Practice of instructional leadership	2.63	0.74	2.75	0.75	2.69	Agree
4	Implementation of Professional development programmes	2.88	0.68	2.93	0.70	2.91	Agree
5	Peer review activities	2.61	0.75	2.70	0.77	2.66	Agree
	Average	2.70	0.72	2.81	0.73	2.76	Agree

Table 1 established that the principals agreed that existing staff supervision procedures included regular classroom observation, seasonal performance evaluation, practice of instructional leadership, implementation of professional development programmes and peer review activities. This was based on the fact that the mean values of these items were all above the criterion mean score of 2.50 used for decision making.

Research Question Two: What are the challenges of staff supervision procedures in an era of artificial intelligence for effective secondary school administration in Bayelsa State?

Table 2: Mean and Standard Deviation Scores on the Challenges of Staff Supervision Procedures in an Era of Artificial Intelligence for Effective Secondary School Administration in Bayelsa State

S/No	Items	Male Principals n=57		Female Principals n=72		Mean Set	
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD	$X\ \bar{X}$	Decision
6	Possibility of Job displacement due to adoption of this technology	2.77	0.68	2.95	0.62	2.86	Agree
7	Obsolescence of traditional supervisory	2.85	0.70	2.90	0.64	2.88	Agree

	skills due to emerging technological skills						
8	Lack of data privacy as a result of staff data vulnerability	2.55	0.79	2.60	0.82	2.58	Agree
9	Inadequate technological competence to adopt AI for staff supervision	2.87	0.69	2.97	0.61	2.92	Agree
10	Ethical concerns due to reliance on AI for staff supervision	2.50	0.82	2.58	0.84	2.54	Agree
	Average	2.71	0.74	2.80	0.71	2.75	Agree

Table 2 revealed that the principals agreed that the challenges of staff supervision procedures in the era of artificial intelligence included the possibility of job displacement, obsolescence of traditional supervisory skills, lack of data privacy, inadequate technological competence and ethical concerns due to overreliance on AI and this decision was made based on the closeness of the item mean values to the criterion mean score of 2.50.

Research Question Three: What are the ways that artificial intelligence can enhance staff supervision procedures for effective secondary school administration in Bayelsa State?

Table 3: Mean and Standard Deviation Scores on the Ways that Artificial Intelligence Can Enhance Staff Supervision Procedures for Effective Secondary School Administration in Bayelsa State

S/No	Items	Male Principals n=57		Female Principals n=72		Mean Set	
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD	X $\bar{X}$	Decision
11	Automation of staff performance evaluation activities	2.90	0.67	2.86	0.69	2.88	Agree
12	Provision of relevant information for data driven decision making	2.71	0.75	2.73	0.68	2.72	Agree
13	Elimination of supervisory bias from human perceptions	2.69	0.76	2.47	0.92	2.58	Agree
14	Predictive insight into staff turnover	2.62	0.78	2.70	0.70	2.66	Agree
15	Reduces supervisory workload of administrators	2.88	0.68	2.89	0.67	2.89	Agree
	Average	2.76	0.73	2.73	0.73	2.75	Agree

Table 3 pointed out that the principals agreed that artificial intelligence can enhance staff supervision in several ways which included automation of staff performance evaluation, provision of relevant data for decision making, elimination of human bias in supervision, predictive insight into staff turnover and reduced workload for the administrator and this was because these items were more than the criterion mean value of 2.50 used for decision making.

Test of Hypotheses

Hypothesis One: There is no significant difference between the mean ratings of male and female principals on the existing staff supervision procedures adopted for effective secondary school administration in Bayelsa State.

Table 4: z-test Analysis of no Significant Difference Between the Mean Ratings of Male and Female Principals on the Existing Staff Supervision Procedures Adopted for Effective Secondary School Administration in Bayelsa State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Principals	57	2.70	0.72	127	0.86	1.96	0.05	Retained
Female Principals	72	2.81	0.73					

Table 4 was able to show that the value of z-cal. of 0.86 was less than the value of z-crit. of 1.96 and as such, the null hypothesis was retained and this indicated that there was no significant difference between the mean ratings of male and female principals on the existing staff supervision procedures adopted for effective secondary school administration in Bayelsa State.

Hypothesis Two: There is no significant difference between the mean ratings of male and female principals on the challenges of staff supervision procedures in an era of artificial intelligence for effective secondary school administration in Bayelsa State.

Table 5: z-test Analysis of no Significant Difference Between the Mean Ratings of Male and Female Principals On the Challenges of Staff Supervision Procedures in an Era of Artificial Intelligence for Effective Secondary School Administration in Bayelsa State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Principals	57	2.71	0.74	127	0.70	1.96	0.05	Retained
Female Principals	72	2.80	0.71					

Table 5pointed outthat the value of z-cal. of 0.70 was less than the value of z-crit. of 1.96 and as such, the null hypothesis was retained and this revealed that there was no significant difference between the mean ratings of male and female principals on the challenges of staff supervision procedures in an era of artificial intelligence for effective secondary school administration in Bayelsa State.

Hypothesis Three: There is no significant difference between the mean ratings of male and female principals on the ways that artificial intelligence can enhance staff supervision procedures for effective secondary school administration in Bayelsa State

Table 6: z-test Analysis of no Significant Difference Between the Mean Ratings of Male and Female Principals on the Ways That Artificial Intelligence Can Enhance Staff Supervision Procedures for Effective Secondary School Administration in Bayelsa State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Principals	57	2.76	0.73	127	0.23	1.96	0.05	Retained
Female Principals	72	2.73	0.73					

Table 6revealed that the value of z-cal. of 0.23 was less than the value of z-crit. of 1.96 and as such, the null hypothesis was retained and this showed that there was no significant difference between the mean ratings of male and female principals on the ways that artificial intelligence can enhance staff supervision procedures for effective secondary school administration in Bayelsa State.

Discussion of Findings

The result from this study provided insight on the perceptions of male and female school principals regarding the integration of artificial intelligence (AI) into staff supervision. One of the key concerns raised by both the male and female principals was the possibility of job displacement due to the adoption of AI technologies in staff supervision. The responses indicated a general agreement on the potential for AI to replace certain administrative roles traditionally handled by human supervisors. This concern was particularly pronounced among female principals, who reported slightly higher agreement with the notion of job displacement. The fear of job displacement often arises when new technologies automate tasks that were previously performed by humans.

Furthermore, the male and female principals expressed concerns about the obsolescence of traditional supervisory skills. The increasing reliance on AI tools leads to fear that essential skills such as interpersonal communication, decision-making, and conflict resolution might become less relevant. The findings suggest that principals acknowledge the importance of adapting their leadership styles to the changing technological landscape. However, they also recognized the ongoing need for human judgment in situations where emotional intelligence, ethical considerations, and complex decision-making are required. Other scholars such as Hutami (2024) also identified that there are challenges such as limited infrastructure, resistance to change, and data privacy concernswhich were identified as part of the adoption of AI in school administration.

Another significant challenge highlighted by the principals was the issue of data privacy. Both male and female principals agreed that AI systems pose a risk to staff data security, as the collection and analysis of personal information are integral to AI's operation. While AI offers the potential for more efficient and effective staff supervision, it also raises concerns about how data is collected, stored, and protected. The principals expressed a need for strong data protection mechanisms to ensure that staff members' privacy is maintained. The growing emphasis on data privacy in the digital age aligns with global discussions on the ethical use of AI and personal data.

The issue of technological competence was also a major concern. The study found that both male and female principals felt that there was inadequate technological competence to adopt AI for staff supervision. This was a significant challenge, as the successful implementation of AI requires not only the right infrastructure but also adequate training for staff. Principals acknowledged that in order to fully leverage AI, both school leaders and their staff would need to acquire the necessary skills to operate AI systems effectively. This highlights the importance of professional development and continuous learning in the digital era, ensuring that educational administrators are equipped to handle technological advancements.

Ethical concerns regarding the reliance on AI for staff supervision were also acknowledged by the principals. The use of AI systems to monitor and evaluate staff performance can raise questions

about fairness, transparency, and accountability. Principals expressed concerns about the potential for AI to introduce biases in performance evaluations or lead to decisions that might not fully reflect the perception of individual situations. As AI technologies evolve, it is crucial for educational leaders to establish ethical frameworks that ensure AI tools are used in a way that is both fair and aligned with educational values.

Despite the challenges, the principals were generally positive about the potential benefits of AI in enhancing staff supervision. They agreed that AI could improve administrative processes by automating staff performance evaluations, providing relevant information for data-driven decision-making, eliminating supervisory bias, offering predictive insights into staff turnover, and reducing the supervisory workload. This finding agree with that of Epelle and Muruwei (2024)which showed a significant relationship between the use of AI tools like ChatGPT and sustainable academic job performance, suggesting that AI can play a pivotal role in enhancing job efficiency and performance during challenging economic periods.AI's ability to automate routine tasks can free up administrators to focus on more strategic and human-centered aspects of leadership, such as fostering professional development and improving school culture.

The principals also recognized the potential of AI to provide more accurate and objective performance evaluations by removing human biases. This could lead to more consistent and fair assessments of staff performance, which is crucial for maintaining morale and ensuring that staff members are held to high standards. The ability to predict staff turnover and identify potential issues before they arise is another valuable feature of AI. By using predictive analytics, principals could proactively address staff concerns, prevent burnout, and retain high-quality teachers and administrators. The reduction in the supervisory workload was seen as a significant advantage of AI adoption. Related study by Chogwu and Daniel (2024) revealed a significant positive correlation between AI and effective school supervision, as well as between AI and effective school plant management, highlighting the potential of AI to enhance administrative functions in secondary schools. By automating routine tasks such as scheduling, performance tracking, and reporting, AI could alleviate the administrative burden on school leaders, enabling them to devote more time to strategic planning and engaging with staff and students.

Conclusion

The study concluded that there are existing staff supervision procedures in the schools which are often adopted for school administration. However, in this era of AI, there are both technical and administrative constraints which have made it difficult for schools to reform the process of staff supervision to be more digitally refined and except existing policies are revised, it will be difficult for these schools to harness the benefits of AI for effective school administration.

Recommendations

The following recommendations were made based on the findings of the study:

School administrators and staff of all these schools need to be trained and retrained on how AI can be integrated into the process of staff supervision as this is important to bring all workers on board for effective school administration.

There is need for the government to revise existing school policies in this era of AI to make these schools more digitally inclined in the execution of various school activities, particularly those that relate to staff supervision. School activities that are both academic and administrative need to be digitalized as this is important to carry out proper staff supervision and monitor staff performance on these digital platforms for proper assessment in this era of AI.

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