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ARTIFICIAL INTELLIGENCE INTEGRATION AS CORRELATE OF IMPROVED LEADERSHIP DECISION-MAKING IN PUBLIC SECONDARY SCHOOLS IN ANAMBRA STATE

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Abstract: The study sought to determine the relationship between artificial intelligence integration and improved leadership decision making in public secondary schools in Anambra State. One research question guided the study and one null hypothesis was tested at 0.05 level of significance. The correlational research design was adopted for the study and the population of the study comprised 267 public secondary school students in Anambra State. Two structured validated questionnaires were used for data collection. The instruments yielded co-efficient values of 0.88 and 0.90 for QPAII and QISLDM respectively. Pearson Product Moment Correlation statistics was used to answer the research question and test the hypothesis. Finding of the study revealed that a high positive relationship exists between artificial intelligence integration and improved leadership decision-making in public secondary schools in Anambra State. Findings also showed that significant relationship between the artificial technology integration and improved leadership decision-making in public secondary schools in Anambra State. The researchers conclude based on these findings that the integration of AI would improve leadership decision-making in public secondary schools in Anambra State. Based on this conclusion, the researchers recommended among others, that the Anambra State Ministry of Education in conjunction with the Post Primary Schools Service Commission (PPSSC) should prioritise the integration of artificial intelligence tools to assist school leaders in making data-driven decisions in public secondary schools.

Keywords: Artificial Intelligence (AI), School, Leadership, Decision-Making

Introduction/Contextual Background

Leadership necessitates creativity, which allows individuals to steer clear of common mistakes. Furthermore, it empowers those in the developmental phase to attain their objectives with a sense of fulfilment and mutual respect. In the context of education, leadership pertains to the methods and approaches employed by figures such as principals, superintendents and educational administrators. These leaders are responsible for guiding teachers, students and the wider school community. Mazurkiewicz (2021) stated that the strength of educational leadership lies in its capacity to increase participants' involvement in both learning activities and decision-making processes.

School leaders play a pivotal role in shaping the vision and direction of a school, ensuring that all stakeholders are aligned towards a common goal. Akhibi and Omenyi (2024) stated that by articulating a clear and strategic vision, they guide the planning process and foster collaboration among teachers, students, and parents. This vision serves as a foundation for setting academic and operational priorities, allowing the school community to work cohesively towards achieving shared objectives. Through strong leadership, school leaders communicate the importance of the school's mission, creating an atmosphere of unity and purpose (Ezeugbo & Emere, 2017). In addition to vision setting, effective school leaders focus on instructional leadership, which is central to improving teaching and learning outcomes. Izuehie (2024) stated that school leaders actively support teachers by implementing evidence-based instructional strategies and providing opportunities for professional development. Also, by regularly monitoring classroom practices and student performance, leaders ensure that educational standards are upheld. In the effort to promote high standards, equity and efficiency in education, policymakers introduced a new public management framework that prioritizes market-driven approaches, accountability, performance comparisons and decentralization. This gave schools more authority to make decisions at the operational level. However, it also increased their responsibility for student outcomes, including both successes and failures. With this rise in autonomy, school leaders took on additional tasks and responsibilities. Their accountability now extends beyond administrative functions to include managing staff and overseeing organizational operations. Additionally, school leaders are responsible for supervising the school's educational programs (Kemethofer et al., 2022). Despite these efforts, many school leaders face obstacles such as inadequate training, limited resources and an overwhelming administrative burden. These challenges can detract from their ability to focus on instructional leadership, ultimately affecting the quality of education in their schools.

In order to promote high standards equity, and efficiency in education, policymakers introduced a new public management framework that prioritizes market-driven approaches, accountability, performance comparisons and decentralization. This gave schools more authority to make decisions at the operational level. However, it also increased their responsibilities for student performance, including both successes and failures. With this rise in autonomy, school leaders took on additional tasks and responsibilities. Kemethofer et al. (2022) stated that the role of school leaders now extends beyond administrative functions to include managing staff and overseeing school operations. Given the increasing responsibilities imposed on school administrators, some researchers like Donasco and Oliveros (2024) and Satya and Mohammed (2024) have proposed that Artificial Intelligence (AI) powered machines may assist reduce the extra responsibilities on school leaders.

Artificial Intelligence (AI) is a broad term that encompasses various techniques, including expert systems, machine learning, neural networks, deep learning, and others (Tyson & Sauers, 2021). According to Castelvecchi (2016), AI refers to algorithms or computer systems that replicate human cognitive processes such as meaning interpretation, reasoning, and learning from prior experiences. To generate this intelligence, four technological approaches are typically used: rule-based (if X, then Y), machine learning (statistical techniques), neural networks, and deep learning (Davenport, 2018). The first two techniques have previously been used by school administrators to make decisions in a variety of areas, such as instruction coordination and evaluation, curriculum development, high school dropout prevention, and school improvement (Duke, 2019). This is in agreement with Wang (2021) who stated that machine learning is the most widely used, though it is relatively new to educational administration and leadership. This technique allows machines to learn from data and replicate or enhance human intelligence using algorithms and models. Krafft et al. (2022) opined that in machine learning-driven algorithmic

decision-making, a particular aspect of reality is represented by the statistical model behind the algorithm, and results are produced through numeric values and predefined steps within the system, without human intervention. For instance, algorithms can analyse student performance data and predict learning outcomes without requiring human input. Satya and Mohammed (2024) opined that AI powered machines has the ability to automate administrative activities, enhance data management, and assist decision-making processes, allowing school leaders to concentrate on instructional leadership. AI has the potential to cut burden and improve overall school administration efficiency by automating regular tasks. Jarrahi (2018) observed that AI systems are particularly effective in handling complex problems in analytical decision-making contexts, while humans are better suited to leading intuitive decision-making in uncertain or ambiguous situations. Wang (2021) further suggests that AI excels in making data-driven or evidence-based decisions, whereas human judgment is more appropriate for value-based decisions. Shrestha et al. (2019) adds that AI systems can operate independently without human intervention when precise, swift, and repetitive outcomes are required. However, decision making involves human emotions and cultural believe which is lacking in the AI system. Johansson and Björkman (2018) stated that some AI tools can recognise human emotions by analysing vocal tones and facial expressions are already used in school management to monitor student behaviour, but these systems lack emotional intelligence—the ability to make ethical decisions, understand attitudes and feelings, and assess morale. Furthermore, scholars like Eriksson and Djoweini, (2020) opined that human behaviours, such as networking, representation and perception, are still beyond AI systems.

The adoption of AI systems produces new leadership positions, such as motivators and monitors (Johansson & Björkman, 2018). Leaders must fully understand the performance of AI systems, recognize the new opportunities they bring, decide when and how to deploy these technologies, and carefully choose tools that correspond with the school's framework (Agrawal et al., 2017; Davenport, 2018; Tyson & Sauers, 2021). Furthermore, they must motivate and inspire teachers to embrace AI technologies and incorporate them into their regular practices. This includes developing, monitoring, and supporting AI applications that connect with organizational goals and improve decision-making processes (Richardson et al., 2021; Sterrett & Richardson, 2019). Despite the successful adoption of artificial intelligence (AI) in school leadership decision-making in developed countries, the perceptions of secondary school principals in Anambra State regarding its influence on school leadership decision making remains unclear. This uncertainty prompts questions about how AI could improve or transform decision-making processes in schools in Anambra State. In many developed educational systems, AI tools are used to analyse data, simplify administrative duties, and support instructional strategies (Richardson et al., 2021). These technologies enable school leaders to make informed decisions that enhance educational outcomes. However, there is limited literature on whether principals in Anambra State are aware of, or willing to adopt, such technologies. It is against this backdrop that the researchers sought to investigate if artificial intelligence integration correlates with improved leadership decision-making in public secondary schools in Anambra State.

Statement of the Problem

Secondary school leadership in Anambra State face numerous challenges that impede effective management and educational outcomes. Although school leaders play a crucial role in shaping the educational environment, the decision-making processes within these institutions often encounter significant obstacles. The objectives of secondary schools include providing quality education, equipping students with the knowledge and skills needed for further studies or vocational training, fostering personal development through social, emotional and moral growth, preparing students for responsible citizenship and encouraging critical thinking to enhance problem-

solving abilities. However, several issues hinder school leaders in achieving these aims. It appears like decision-making in secondary schools is often problematic. Observation by the researcher seem to suggest that some school leaders fail to adequately involve teachers, which leads to feelings of exclusion and disengagement among staff, negatively affecting decision implementation and communication. These challenges have raised the question to know if AI integration could enhance decision-making in secondary schools in Anambra State.

Purpose of the Study

The main purpose of the study was to determine the relationship between artificial intelligence integration and improved leadership decision-making in public secondary schools in Anambra State.

Research Question

What is the relationship between artificial intelligence integration and improved leadership decision-making in public secondary schools in Anambra State?

Hypothesis

The null hypothesis was tested at 0.05 level of significance:

Artificial technology integration has no significant relationship with improved leadership decision-making in public secondary schools in Anambra State.

Research Method

The study adopted the correlational research design. The study was carried out in Anambra state which is one of the thirty-six (36) states of the Federal Republic of Nigeria, located in the South-Eastern part of Nigeria. The population of the study comprised principals of 267 public secondary schools in Anambra State. Two instruments; Questionnaire on Perception of Artificial Intelligence Integration (QPAII) and Questionnaire on Improved School Leadership Decision-Making (QISLDM) were used to collect data for the study. The instruments were subjected to face and construct validation. For the face validation, the instruments were validated by three experts in the Faculty of Education, Nnamdi Azikiwe University, Awka. On the other hand, construct validated was carried out with the help of Principal Component Analysis approach with Kaiser-Meyer-Olkin (KMO) as a measure of sampling adequacy to construct the Principal Component Analysis. The coefficient value of 0.87 was obtained. Furthermore, the instruments were subjected to a pilot test on 20 principals in public secondary schools in Enugu State. The application of Cronbach Alpha reliability method, yielded co-efficient values of 0.88 and 0.90 for QPAII and QISLDM respectively.

The instruments were administered by the researchers with the help of three research assistants who are teachers in public secondary schools. The instruments were administered to the respondents on the spot and retrieved after completion. In cases where it was impossible to retrieve the instruments immediately, appointment on the date of retrieval was made. This lasted for two weeks. Out of the 267 copies of the instruments administered, 223 were retrieved in good condition and used for the analysis of data. Pearson Product Moment Correlation statistics was used to answer the research question and test the hypothesis. The decision rule will be based on the following guidelines Price et al (2017) provided:

Correlation Coefficient	**Interpretations**
Plus (+) or minus (-) 0.00 to 0.20	Very Low Relationship
Plus (+) or minus (-) 0.20 to 0.40	Low Relationship
Plus (+) or minus (-) 0.40 to 0.60	Moderate Relationship

Plus (+) or minus (-) 0.60 to 0.80	High Relationship
Plus (+) or minus (-) 0.80 and above	Very High Relationship

While positive coefficient (+) indicate positive relationship between the variables, negative coefficient (-) indicates negative coefficient between the variables. In interpreting the values of the null hypothesis, when p-value is less than or equal to .05 ($p \leq .05$), the null hypothesis will be rejected. On the other hand, when the p-value is greater than .05 ($p > .05$), the null hypothesis will not be rejected, meaning that there is no significant relationship between the variables.

Research Question

What is the relationship between artificial intelligence integration and improved leadership decision-making in public secondary schools in Anambra State?

Table 1: Summary of Pearson Correlation Analysis on Correlation between Artificial Intelligence Integration and Improved Leadership Decision Making in Public Secondary Schools in Anambra State

		AI Integration	**Improved Leadership Decision-Making**	**Remark**
AI Integration	Pearson Correlation	1	.670**	High Positive relationship
	Sig, (2-tailed)		.008	
	N	223	223	
Improved Leadership Decision-Making	Pearson Correlation	.670**	1	
	Sig, (2-tailed)	.008		
	N	223	223	

** Correlation is significant at the 0.05 level (2-tailed).

Data in Table 1 reveals that the Pearson's Correlation Coefficient is r = 0.67. This shows that a high positive relationship exists between artificial intelligence integration and improved leadership decision-making in public secondary schools in Anambra State. This implies that the integration of artificial intelligence would lead to improved leadership decision-making in public secondary schools in Anambra State. Thus, the Pearson's Correlation Coefficient r of 0.67 indicate that a high positive relationship exists between artificial intelligence integration and improved leadership decision-making in public secondary schools in Anambra State.

Hypothesis

Artificial technology integration has no significant relationship with improved leadership decision-making in public secondary schools in Anambra State.

Table 2: Test of Significance of Relationship between Artificial Intelligence Integration and Improved Leadership Decision Making in Public Secondary Schools in Anambra State

Correlation

	AI Integration	**Improved Leadership**	**Remark**

			Decision-Making	
AI Integration	Pearson Correlation	1	.670**	Significant
	Sig, (2-tailed)		.009	
	N	223	223	
Improved Leadership Decision-Making	Pearson Correlation	.670**	1	
	Sig, (2-tailed)	.009		
	N	223	223	

** Correlation is significant at the 0.05 level (2-tailed).

Data presented on Table 2 indicates the correlation coefficient (r) as .670 with a p-value = 0.009. Since the P value of 0.009 is less than .05 (P<.05), it means that effect of artificial technology integration on improved leadership decision-making in public secondary schools in Anambra State is statistically significant. This means that there is a significant relationship between the artificial technology integration and improved leadership decision-making in public secondary schools in Anambra State. Thus, the null hypothesis was rejected.

Discussion

The finding of the study revealed that a high positive relationship exists between artificial intelligence integration and improved leadership decision-making in public secondary schools in Anambra State. The finding indicate that principals in public secondary schools in Anambra State believe that the integration of artificial intelligence would improve leadership decision-making. The finding of the study may have resulted because the integration of AI in secondary education will help school leaders in making informed data driven decision. This finding is in agreement with Mohammed (2024) who revealed that AI powered machines has the ability to automate administrative activities, enhance data management and assist decision-making processes which enables school leaders to concentrate on instructional leadership. In the same vein, Jarrahi (2018) observed that AI systems are particularly effective in handling complex problems in analytical decision-making contexts, while humans are better suited to leading intuitive decision-making in uncertain or ambiguous situations. Wang (2021) further suggested that AI excels in making data-driven or evidence-based decisions, whereas human judgment is more appropriate for value-based decisions. Furthermore, finding of the study revealed that there is a significant relationship between the artificial technology integration and improved leadership decision-making in public secondary schools in Anambra State. The finding implies that the integration of AI would enhance the decision making processes of school leaders. This is in line with Krafft et al. (2022) who reported that AI enabled system could offer school leaders with reach source of data that could help improve decision making in educational institutions.

Conclusion

Based on the findings of the study, the researchers conclude that there is a significant relationship between artificial intelligence integration and improved leadership decision-making in public secondary schools in Anambra State. The integration of AI would assist school leaders in making informed data-driven decision that would improve the quality of secondary education in Anambra State in particular and Nigeria in general. This

necessitates the need for the adoption of measures to facilitate the integration of AI tools in secondary education.

Recommendations

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

1. The Anambra State Ministry of Education in conjunction with the Post Primary Schools Service Commission (PPSSC) should prioritise the integration of artificial intelligence tools to assist school leaders in making data-driven decisions in public secondary schools. This would enhance the overall quality of leadership, leading to improved educational outcomes in secondary schools.
2. To fully integrate AI into leadership decision-making, the Anambra State Government should invest in the necessary technological infrastructure like reliable internet access and AI-enabled software in secondary schools in rural and urban areas.

REFERENCES

Agrawal, A., Gans, J., & Goldfarb, A. (2017). What to expect from artificial intelligence. MIT Sloan Management Review, 58(3), 23–26.

Akhibi, M. A., & Omenyi, A. S. (2024). Management strategies adopted by public and private secondary school principals for quality teaching and learning in secondary schools in Enugu State. Unizik Journal of Educational Management and Policy (UJOEMP), 6(3), 31-39.

Castelvecchi, D. (2016). Can we open the black box of AI? Nature, 538(7623), 20–23.

Davenport, T. H. (2018). The AI advantage: How to put the artificial intelligence revolution to work. MIT Press.

Duke, D. (2019). Judgment and the preparation of educational leaders. Journal of Research on Leadership Education, 14(3), 191–211.

Donasco, A., & Oliveros, S. T. R. (2024). AI's impact on educational leadership and learning. International Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence (IMJRISE), 1(8), 228-236. https://risejournals.org/index.php/imjrise/article/view/630

Eriksson, M., & Djoweini, C. (2020). Artificial intelligence's impact on management: A literature review covering artificial intelligence's influence on leadership skills and managerial decision-making processes [Master's thesis, KTH Royal Institute of Technology]. DiVA. Retrieved from https://www.diva-portal.org/smash/get/diva2:1461811/FULLTEXT01.pdf

Ezeugbor, C. O., & Emere, O. N. (2017). Appraisal of principals' managerial practices for teacher effectiveness in public secondary schools in Anambra State, Nigeria. European Journal of Education Studies, 399, 513-526.

Izuehie, I. O. (2024). Principals' management strategies as a correlate of teachers' effective teaching in public secondary schools in Enugu State [Unpublished doctoral dissertation, Department of Educational Management and Policy, Nnamdi Azikiwe University, Awka].

Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. Business Horizons, 61(4), 577–586. https://doi.org/10.1016/j.bushor.2018.03.007

Johansson, S., & Björkman, I. (2018). What impact will artificial intelligence have on the future leadership role? A study of leaders' expectations [Master's thesis, Lund University]. Lund University Publications. Retrieved from https://lup.lub.lu.se/student-papers/search/publication/8952603

Kemethofer, D., Helm, C., & Warwas, J. (2022). Does educational leadership enhance instructional quality and student achievement? The case of Austrian primary school leaders. International Journal of Leadership in Education, 1-25.

Krafft, T. D., Zweig, K. A., & König, P. D. (2022). How to regulate algorithmic decision-making: A framework of regulatory requirements for different applications. Regulation & Governance, 16(1), 119–136. https://doi.org/10.1111/rego.12369

Mazurkiewicz, G., & Fischer, J. M. (2021). The power of responsive educational leadership: Building schools for global challenges. Routledge.

Richardson, J. W., Watts, J. L. D., & Sterrett, W. L. (2021). Challenges of being a digitally savvy principal. Journal of Educational Administration, 59(3), 318–334. https://doi.org/10.1108/jea-10-2020-0215

Shrestha, Y. R., Ben-Menahem, S. M., & Von Krogh, G. (2019). Organizational decision-making structures in the age of artificial intelligence. California Management Review, 61(4), 66–83. https://doi.org/10.1177/0008125619862257

Sterrett, W. L., & Richardson, J. W. (2019). The change-ready leadership of technology-savvy superintendents. Journal of Educational Administration, 57(3), 227–242. https://doi.org/10.1108/jea-09-2018-0160

Satya, R., & Mohammed, L. A. (2023). Interdisciplinary insights: The convergence of AI and educational leadership. International Journal of Research and Innovation in Social Science (IJRISS), 8(4), 1872–1887.

Tyson, M. M., & Sauers, N. J. (2021). School leaders' adoption and implementation of artificial intelligence. Journal of Educational Administration, 59(3), 271-285.

Wang, Y. (2021). Artificial intelligence in educational leadership: A symbiotic role of human-artificial intelligence decision-making. Journal of Educational Administration, 59(3), 256-270.