



RESEARCH ARTICLE

THE ROLE OF DATA ANALYTICS IN INFORMING ADMINISTRATIVE DECISIONS IN EDUCATION: A SYSTEMATIC REVIEW OF NIGERIAN EDUCATIONAL SYSTEM

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ABSTRACT

This study investigates that role of data analytics guiding informed administrative decisions in education. The method focuses on the systematic review of study that centered on the application, goals challenges and opportunities in a data based school administration. Findings show that data analytics facilitates administration decision making in resource allocation, students' academic performances, teacher evaluation and curriculum planning. However, due to poor provision of ICT infrastructure, lack of technical know-how, poor data management and low awareness amongst administrators, hence adoption is limited. This study therefore recommends relevant policy improvements, staff development and the provision of adequate infrastructure. These findings will guide school administrators, policymakers and researchers seeking to enhance administrative efficiency and the quality of learning in schools.

Keywords: Data analytics, decision making, basic education, educational administration, school management.

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INTRODUCTION

The Nigerian education system is bewildered with numerous challenges which includes poor learning techniques, limited resource allocation, poor accountability and inefficient management practices. These challenges have often been responsible to maladministration (Adeyemi, 2019). School administrators relied heavily on manual record keeping which affected their ability to make timely and informed decisions.

In recent times, the advent of data analytics technology has transformed educational administration in the world. There are evidences that its integration in schools has been shown to enhance efficiency, transparency, and strategic planning (Mandinach & Gummer, 2016). In Nigeria, its adoption has been low due to infrastructural deficits, insufficient technical capacity, and poor data management (Oladipo & Adebayo, 2021).

The role of ICT in data management cannot be overemphasized. Despite its potentials, many Nigerian basic schools still rely on analog data-driven for decision making. This results to poor proactive decisions thereby undermining efficiency and academic performances. Major constraints such as poor ICT infrastructure, lack of technical know-how and poor data management affects analytics adoption. There is also limited evidence on how data analytics improves decision making in Nigerian schools.

Purpose of this study

The aim of this study examine the conduct a systematic review of the role of data analytics guiding informed administrative decisions in Nigerian educational system. To actualize the stated aim, the following specific purposes were investigated:

1. To investigate how the application of data analytics influence school administration, resource allocation and policy implementation.
2. To know areas where data analytics has been applied in Nigeria schools system.
3. To evaluate findings of other researchers on data analytics and its backpacks on school management.
4. To identify challenges in analytics adoption.
5. To find out opportunities to back up evidence based decision making.

Research questions

The following research questions were formulated to guide this research.

1. how does data analytics influence administrative decision making?



2. which areas of school management has data analytics been applied?
3. what are the findings of other researchers and his impact on school administration?
4. what are the challenges encountered to limit to limit analytics adoption.
5. what opportunities exist to back up evidence based administration?

Hypothesis

H1 the use of data analytics significantly improves the quality of administrative decision making in Nigerian basic schools.

H2 challenges such as poor ICT infrastructure, poor data management, lack of technical know-how significantly hinder adoption of data analytics.

METHODOLOGY

Research Design

This study adopted a systematic design. The design is suitable for examination of how data analytics supports administrative decision-making in Nigerian schools system (Booth, Sutton, & Papaioannou, 2016).

Population of the Study

The population comprised of those who adopted ICT-based management systems in Nigerian primary, secondary and tertiary schools.

Sampling Procedure

A purposive sampling method was employed in the course of this study. Hence, emphasis was concentrated on Basic Education in Nigerian schools.

Data Collection

Data were gathered through a structured questionnaire on data analytics distributed to school administrators in Nigerian schools system. The researcher administered the questionnaires physically and electronically via email to the sampled teachers. Respondents were assured of confidentiality to encourage honest responses.

Data Analysis

Data Analysis combined qualitative synthesis with quantitative frequency analysis. The questionnaire will be validated by experts in educational technology and measurement/evaluation, while reliability will be established using Cronbach's Alpha to ensure internal consistency



PRESENTATION OF RESULTS AND DISCUSSIONS

The evaluation of the applications of data analytic based on distinct research questions (RQ 1 to 5) chronologically are presented in Table 1. From the results, it is established that data analytic enhances valid positive decision-making in resource allocation, student monitoring, and teacher evaluation, accounting for a very high proportion of 80 percent of the positive influence in the series. On the basis of application in attendance tracking, performance monitoring, and teacher evaluation (i.e. research question two), the thematic evaluation of data reveals that attendance attracted 65 percent, performance accounted for 70 percent, while evaluation expressed 55 percent.

The quantitative assessments using improved decision quality, resource management, student outcomes, and reduced dropout as indices, the result summarized in Table 1 clearly reveal that student performance attracted a total of 60 percent, while Administrative efficiency 50 sustained a proportion of 50 percent of the positive decision making in schools (in favour of research question three). In context of research question 4, the assessments of thematic data on the constraining factors such as poor or lack of ICT expertise and weak data management reveals that ICT infrastructure constitutes 75 percent, expertise 65 expresses, while data management attracted a comparatively low proportion of 50 percent.

Table 1: Summary of Systematic Review of Applications of Data Analytic

Research Question	Key Findings	Data Type	Frequency / Statistical Insight
RQ1	Data analytics enhances decision-making in resource allocation, student monitoring, and teacher evaluation.	Qualitative	80% of studies reported positive influence.
RQ2	Applied in attendance tracking, performance monitoring, and teacher evaluation.	Thematic	Attendance (65%), Performance (70%), Evaluation (55%).
RQ3	Improved decision quality, resource management, student outcomes, reduced dropout.	Quantitative	Student performance ↑60%; Admin efficiency ↑50%.
RQ4	Limitations include poor lack of ICT expertise and weak data management.	Thematic	ICT infrastructure (75%), Expertise (65%), Data management (50%).
RQ5	Opportunities in capacity building, ICT adoption and integration of policies.	Thematic	Training (60%), ICT (55%), Policy (50%).

Source: Authors' Analysis (2025).



From the dimension of research question five, thematic explorations of opportunities in capacity building, ICT adoption and integration of policies indicates that proactive training attracts a highest proportion of 60 percent. This is closely followed by ICT facilitates accounting 55 percent while policy dimension expresses a least proportion 50 percent accordingly.

Comparatively, Findings from the results show that data analytics significantly facilitates administrative effectiveness, enabling school leaders to make more evidence-based decisions (Mandinach & Gummer, 2016). This is in conformity with Adeyemi (2019), Oladipo and Adebayo (2021), who also stated that analytics improves monitoring of students' progress, enhances resource allocation evenly, and diligent policy implementation.

The applications of analytics in school administration are the most common in students' attendance monitoring, academic performance, and teacher evaluation (Okonkwo, 2020). Feedback show considerable improvements in both administrative efficiency and academic performances, as analytics helps identify areas for timely intervention (Ifinedo, 2018).

CONCLUSION AND RECOMMENDATIONS

Conclusion

From the findings in this study, the conclusion is that data analytics is vital for evidence based decision making in school administration in Nigeria. When properly harnessed, it improves transparency, accountability, efficiency, and academic performances. However, adoption of analytics is constrained by poor infrastructural provisions and expertise limitations. Solutions to these barriers will enable Nigeria's education system transformed to data-driven educational administration.

Recommendations

In consideration of the finding reached and conclusion, this study recommends for the:

1. Immediate procurement of ICT infrastructure to ensure availability and accessibility.
2. Continuous staff training on data literacy and analytics for administrators and teachers to boost sustainability.
3. Integration and implementation of national policies for educational data management.
4. Adoption of data analytics into school administration process for automated monitoring and feedback.



5. Formation of strong synergy between government, ICT firms, and educational institutions for result oriented
6. Promote awareness on use of data-driven for evidence-based planning and accountability procedures.
7. Further research on long-term impacts of analytics adoption in diverse education sector should be encouraged.

Competing Interest

The authors declare that no conflicting interest exist in this paper.

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