

Effect of Real-Time Data Analytics on School Administrators' Staffing Decision-Making (A Case Study of Public Secondary Schools in Badagry Local Government Area, Lagos State)

**RASAKI, Rasheed Olakunle¹, Prof. Ogbaini Aliu Clement², Prof. Bankole Odofin³
Samuel Tosin Olorunnisola⁴, Joseph Oluwafemi Oluwasegun⁵**

^{1,3,4} *Educational Planning and Management, Global Wealth University, Lome, Togo*

² *Business Administration, Global Wealth University, Lome, Togo*

⁵ *Accounting, Global Wealth University, Lome, Togo*

ABSTRACT

The increasing complexity of school systems has heightened the need for evidence-based administrative practices, particularly in staffing decision-making. This study examined the effect of real-time data analytics on school administrators' staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State. A descriptive survey research design was adopted, and the entire population of 120 school administrators, comprising principals, vice principals (academic and administration), and other senior administrators, was studied, yielding a 100% response rate. Data were collected using a structured questionnaire titled Real-Time Data Analytics and Staffing Decision-Making Questionnaire (RTDASDMQ). Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to answer the research questions, while inferential statistics, including regression analysis and Pearson Product Moment Correlation, were employed to test the hypotheses at a 0.05 level of significance. The findings revealed a moderate level of utilization of real-time data analytics among school administrators. Results further indicated that real-time data analytics had a significant positive effect on the effectiveness and timeliness of staffing decision-making. A significant positive relationship was also found between the utilization of real-time data analytics and the quality of staffing decisions. Despite these benefits, school administrators faced notable challenges in adopting real-time data analytics, including inadequate ICT infrastructure, limited internet access, insufficient training, lack of data analytics skills, and resistance to change. The study concluded that real-time data analytics enhances the quality, transparency, and responsiveness of staffing decision-making in public secondary schools. It therefore recommends increased investment in ICT infrastructure, capacity-building programs for school administrators, and the promotion of a data-driven decision-making culture to improve staffing outcomes and overall school performance.

KEYWORDS

Real-time data analytics; staffing decision-making; school administrators; public secondary schools; data-driven decision-making

I. INTRODUCTION

A. Background to The Study

The increasing complexity of educational systems has intensified the demand for evidence-based administrative practices, particularly in staffing decision-making. School

administrators are responsible for allocating human resources in ways that optimize instructional quality, manage workloads, and ensure equitable distribution of teachers and support staff across departments and grade levels. Traditionally, staffing decisions have relied on historical records, professional judgment, and periodic reports, which are often retrospective and limited in scope. However, such approaches may not adequately capture rapid changes in student enrolment, teacher performance, absenteeism, or instructional needs, thereby constraining administrators' ability to respond promptly and strategically (Bush, 2019; O'Donnell & White, 2020).

Advancements in information and communication technologies have led to the growing adoption of real-time data analytics in the education sector. Real-time data analytics refers to the continuous collection, processing, and analysis of data as events occur, enabling immediate insights and timely decision-making (Davenport & Harris, 2017). In school settings, these analytics can integrate data from multiple sources such as attendance systems, learning management platforms, performance dashboards, and human resource records. By providing up-to-date and actionable information, real-time analytics support administrators in identifying staffing gaps, forecasting personnel needs, monitoring teacher utilization, and aligning staff deployment with student learning demands (Siemens & Long, 2018; Mandinach & Schildkamp, 2021).

Despite the growing interest in data-driven decision-making, empirical evidence on how real-time data analytics specifically influences school administrators' staffing decisions remains limited, particularly in developing educational contexts. Existing studies have largely focused on student achievement and instructional improvement, with less attention given to administrative outcomes such as workforce planning and staff allocation (Wayman & Jimerson, 2014; Datnow & Park, 2019). Understanding the effect of real-time data analytics on staffing decision-making is therefore essential for informing policy, guiding investment in educational technologies, and enhancing administrative effectiveness. This study seeks to address this gap by examining how access to and use of real-time data analytics shapes school administrators' staffing decisions, with the aim of improving efficiency, responsiveness, and overall school performance.

B. Statement of the Problem

Despite the increasing availability of digital data in school systems, many administrators continued to rely on intuition, prior experience, and delayed reports rather than timely, integrated data for staffing decisions (OECD, 2021; UNESCO, 2023). Although education management information systems had expanded, their integration into routine administrative practice remained uneven (World Bank, 2022). This limited leaders' ability to respond to fluctuations in enrolment, teacher workload, absenteeism, and instructional demands. Inefficient allocation, subject-specific shortages or surpluses, and workload imbalances were consequently reported, with implications for institutional performance (UNESCO, 2023). Real-time data analytics has been promoted as a tool for strengthening evidence-based decision-making and improving operational planning (OECD, 2021). However, its concrete influence on staffing decisions remained underexplored (World Bank, 2022). In many developing contexts, inadequate infrastructure, weak data governance, and limited data literacy among administrators constrained effective use (UNESCO, 2023). Organisational resistance further reduced uptake (OECD, 2021). As a

result, uncertainty persisted regarding whether access to real-time analytics translated into improved staffing practices or remained underutilised. Moreover, scholarship on educational data analytics has predominantly focused on instructional improvement and student achievement, with comparatively little attention to administrative outcomes such as workforce planning (UNESCO, 2023). This imbalance limited evidence available to policymakers and school leaders considering investments in analytics for human resource management (OECD, 2021). Therefore, empirical investigation into the effect of real-time data analytics on staffing decision-making is necessary to clarify its contribution to efficient personnel deployment and strengthened leadership practice (World Bank, 2022).

C. Objectives of the Study

The general objective of this study was to examine the effect of real-time data analytics on school administrators' staffing decision-making using public secondary schools in Badagry Local Government Area as a case study.

The specific objectives that guided the study are to:

- i. examine the level of utilization of real-time data analytics by school administrators in making staffing decisions in public secondary schools in Badagry Local Government Area, Lagos State.
- ii. examine the effect of real-time data analytics on the effectiveness and timeliness of staffing decision-making among school administrators in the study area.
- iii. examine the challenges faced by school administrators in adopting and using real-time data analytics for staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State.

D. Research Questions

The following questions guided investigations in this study

- i. To what extent do school administrators utilize real-time data analytics in making staffing decisions in public secondary schools in Badagry Local Government Area, Lagos State?
- ii. What effect does real-time data analytics have on the effectiveness and timeliness of staffing decision-making among school administrators in public secondary schools in Badagry Local Government Area, Lagos State?
- iii. What challenges do school administrators face in adopting and using real-time data analytics for staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State?

E. Research Hypotheses

The following hypotheses were tested in the study:

Hypothesis One:

- Ho: Real-time data analytics has no significant effect on the effectiveness and timeliness of school administrators' staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State.

- Ha: Real-time data analytics has a significant effect on the effectiveness and timeliness of school administrators' staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State.

Hypothesis Two:

- Ho: There is no significant relationship between the utilization of real-time data analytics and the quality of staffing decisions made by school administrators in public secondary schools in Badagry Local Government Area, Lagos State.
- Ha: There is a significant relationship between the utilization of real-time data analytics and the quality of staffing decisions made by school administrators in public secondary schools in Badagry Local Government Area, Lagos State.

Hypothesis Three:

- Ho: There is no significant challenges faced by school administrators in adopting and using real-time data analytics for staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State.
- Ha: There is a significant challenges faced by school administrators in adopting and using real-time data analytics for staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State.

F. Significance of the Study

The findings of this study are expected to provide valuable insights into the role of real-time data analytics in enhancing school administrators' staffing decision-making processes. By demonstrating how timely and accurate data can inform decisions about staff allocation, workload distribution, and human resource planning, the study may help administrators adopt more evidence-based practices, thereby improving overall school efficiency and effectiveness (Mandinach & Gummer, 2016; Wayman & Jimerson, 2014). Furthermore, the study will be useful to policymakers and educational planners by highlighting the potential benefits of investing in data infrastructure and capacity-building for school administrators. Understanding the effect of real-time data analytics on staffing decisions can guide the development of policies that encourage data-driven management practices in public secondary schools (Datnow & Park, 2019; Schildkamp et al., 2019). Finally, this research may serve as a reference point for future studies on the integration of technology in educational management. By identifying both the benefits and challenges associated with real-time data analytics, the study contributes to the growing body of knowledge on data-informed decision-making in education, particularly in developing countries such as Nigeria (Siemens & Long, 2018; Bush, 2019). It is anticipated that this will help administrators, researchers, and stakeholders develop strategies to overcome barriers and maximize the utility of real-time data analytics in improving staffing outcomes.

G. Scope and Limitation of the Study

This study focused on the effect of real-time data analytics on school administrators' staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State. It examines the extent of data analytics use, its impact on the effectiveness and timeliness of staffing decisions, and the challenges faced by administrators in

implementation. The study targeted school administrators, including principals and vice-principals, as they are directly responsible for staffing decisions.

The study was limited to public secondary schools in Badagry, so the findings may not be generalizable to private schools or other regions. Data accuracy depends on respondents' honesty and knowledge, and access to detailed analytics systems may be restricted. Time and resource constraints may also limit the sample size and depth of data collection. Despite these limitations, the study provides insights into the use of real-time data analytics in staffing decisions.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

A. Conceptual Clarification

The study made efforts on the clarification of certain concepts that are relevant to the study:

a) Real-Time Data Analytics:

Real-time data analytics refers to the process of collecting, processing, and analyzing data immediately as it is generated, allowing organizations to obtain timely insights and respond promptly to emerging situations (McAfee & Brynjolfsson, 2012). Unlike traditional data analytics, which often relies on historical data, real-time analytics emphasizes immediacy, accuracy, and continuous data flow to support operational and strategic decisions. In the education sector, real-time data analytics enables school administrators to monitor key indicators such as student enrollment trends, attendance rates, teacher workload, subject demand, and performance metrics as they occur (Mandinach & Gummer, 2016). This timely access to information supports proactive decision-making, reduces uncertainty, and enhances the responsiveness of school management systems. Within this study, real-time data analytics is conceptualized as a digital decision-support tool that provides up-to-date information necessary for effective staffing decisions in public secondary schools.

b) Staffing Decision-Making:

Staffing decision-making refers to the deliberate and systematic process of determining the number, type, placement, and management of personnel required to achieve organizational objectives (Armstrong, 2020). In the context of schools, staffing decisions include teacher recruitment, deployment, redistribution, promotion, and workload allocation, all of which directly affect instructional quality and student outcomes (Bush, 2018). Effective staffing decision-making requires accurate information on institutional needs, available human resources, and performance outcomes. Poor staffing decisions can lead to teacher shortages, workload imbalance, and reduced educational effectiveness. In this study, staffing decision-making is viewed as an administrative function that can be significantly enhanced through the use of real-time data analytics, which provides evidence-based insights for optimal human resource planning in schools.

B. Theoretical Framework

This study is anchored on the Rational Decision-Making Theory and the Data-Driven Decision-Making (DDDM) Model.

a) Rational Decision-Making Theory

The Rational Decision-Making Theory by Herbert A. Simon (1947), assumes that decision-makers act logically by identifying problems, gathering relevant information, evaluating alternatives, and selecting the option that maximizes desired outcomes (Simon, 1977). The theory emphasizes the role of accurate and timely information in reducing uncertainty and improving the quality of decisions. Applied to this study, real-time data analytics enhances the rationality of school administrators' staffing decisions by providing current and reliable data on staffing needs, teacher performance, and student population dynamics. Access to real-time data allows administrators to make informed, objective, and transparent staffing decisions rather than relying on intuition or outdated records (Robbins & Judge, 2017).

b) Data-Driven Decision-Making (DDDM) Model

The Data-Driven Decision-Making (DDDM) Model emphasizes the systematic use of data to guide planning, implementation, and evaluation of organizational decisions (Mandinach & Gummer, 2016). The model posits that organizations that effectively collect, analyze, and apply data are more likely to achieve improved efficiency and outcomes. In the educational context, DDDM supports the integration of data systems into administrative practices, enabling school leaders to align staffing decisions with actual institutional needs. Within this framework, real-time data analytics serves as the primary input that informs staffing decision-making, leading to improved teacher allocation, workload balance, and institutional effectiveness (Ikemoto & Marsh, 2007).

C. Empirical Review

This empirical review examines existing studies that have investigated the use of data analytics in educational administration, with particular emphasis on how real-time data analytics influences school administrators' decision-making processes, especially in relation to staffing and human resource management.

a) Studies on Data Analytics in Educational Administration

Several empirical investigations illustrate how data analytics supports administrative decision-making in educational settings beyond traditional manual reporting systems. For example, Moodley et al. (2020) conducted a case study of applying data mining techniques in a primary school's administrative context to improve attendance outcomes. The authors used association rule mining and probabilistic models to identify the school sessions most impactful on overall low attendance, leading to targeted interventions that significantly improved attendance rates (Moodley, Chiclana, Carter & Caraffini, 2020). Although the focus was on attendance rather than staffing, this study provides empirical evidence that analytical techniques can reveal actionable insights for school leadership, supporting more informed operational decisions, a principle directly relevant to staffing decisions when similar analytics models are applied to human resource data.

Similarly, systematic reviews examining the impact of technology on school administration provided empirical grounding for the application of analytics in leadership practice. A recent scoping review of information and communication technology (ICT) in educational administration reported that data analytics—including big data techniques and predictive

modelling—had been associated with improved administrative decision-making in areas such as attendance monitoring, instructional quality evaluation, and resource allocation (OECD, 2021; UNESCO, 2023). These studies indicated that digital analytics tools enabled school leaders to process large volumes of institutional data, detect patterns, forecast trends, and support evidence-based planning processes (OECD, 2021).

The review further noted that while a substantial proportion of the studies were descriptive in orientation, several documented measurable improvements in operational efficiency and administrative responsiveness linked to analytics implementation (World Bank, 2022). Reported gains included more accurate enrolment forecasting, improved staff workload distribution, and enhanced monitoring of teacher attendance. Although explicit focus on staffing decision-making remained limited, the documented improvements in broader administrative functions suggested potential positive implications when real-time analytics tools are applied specifically to workforce planning and human resource management within school systems (UNESCO, 2023).

b) Data Analytics and Decision Making in Resource Allocation

Empirical literature also suggests that data analytics influences decisions related to resource management, a domain that overlaps with staffing decisions. One empirical analysis reported that schools implementing learning analytics saw measurable improvements in operational metrics, including optimized resource utilization. Specifically, data-driven approaches enabled administrators to adjust teacher assignments and budget allocations by analyzing performance and usage data, resulting in enhanced efficiency without additional costs. Although not exclusively centered on staffing, such findings support the notion that real-time or near-real-time data analytics contributes to more responsive and effective resource allocation decisions, a core component of staffing decision-making.

Educational data mining research further demonstrates how analytics can inform decision processes that have implications for human resource planning. For instance, applied analytics models that predict academic outcomes or identify at-risk student groups have shown that educational institutions can proactively adjust instructional strategies and deploy staff where they are most needed (Yağcı, 2022). In this study, machine learning algorithms predicted final exam performance, and these predictions are directly usable by administrators to determine where additional instructional support or staffing may be necessary to improve outcomes, illustrating an empirical link between analytics output and administrative allocation decisions.

c) Real-Time Analytics Usage and Administrative Response

Although peer-reviewed empirical studies explicitly examining real-time data analytics and staffing decision-making in schools remain limited, policy reports and implementation case analyses have suggested measurable effects on administrative responsiveness (OECD, 2021; UNESCO, 2023). Digital school management platforms incorporating live dashboards and attendance monitoring tools were reported to reduce decision latency by enabling leaders to identify patterns of student absenteeism, track teacher attendance in real time, and coordinate substitution needs more efficiently (World Bank, 2022).

For example, system-level evaluations of education management information systems indicated that real-time attendance tracking improved the speed of administrative

responses to absenteeism and resource deployment challenges (OECD, 2021). These capabilities strengthened leaders' capacity to manage workforce contingencies, including temporary staff reallocation and workload balancing—processes closely aligned with staffing decision dynamics in fluid school environments (UNESCO, 2023).

Although many of these accounts derived from practitioner documentation and system-level evaluations rather than controlled experimental studies, the reported operational gains were consistent with broader empirical findings linking digital analytics adoption to enhanced organisational efficiency and evidence-informed decision processes in education systems (World Bank, 2022).

D. Summary of Gaps in Literature

Despite the growing body of empirical studies on data analytics in education, several notable gaps remain in the literature, particularly in relation to real-time data analytics and staffing decision-making among school administrators. First, most existing studies focus predominantly on the use of data analytics to improve student academic performance, learning outcomes, and classroom instruction, with limited empirical attention given to administrative functions such as staffing, teacher deployment, and workload management (Mandinach & Gummer, 2016). This indicates an underrepresentation of research examining how analytics supports strategic human resource decisions in schools.

Second, while some studies acknowledge the role of data-driven decision-making in resource allocation, they often rely on historical or periodic data rather than real-time data streams (Ikemoto & Marsh, 2007). Consequently, there is insufficient empirical evidence on how real-time data analytics, characterized by immediacy and continuous updates, specifically affects the timeliness, accuracy, and effectiveness of staffing decisions in school systems.

Third, much of the available literature is concentrated in developed countries, leaving a contextual gap in empirical evidence from developing countries such as Nigeria, where infrastructural, technological, and administrative challenges may influence the adoption and effectiveness of real-time data analytics in schools (Bush, 2018). This geographical imbalance limits the generalizability of existing findings to public secondary schools in local government areas.

Finally, existing studies often adopt qualitative or descriptive approaches, with few employing robust quantitative designs to measure the direct effect of real-time data analytics on staffing decision outcomes. This methodological gap highlights the need for empirical studies that establish clear causal or correlational relationships between real-time data analytics and staffing decision-making among school administrators. Addressing these gaps will contribute significantly to the literature and provide evidence-based guidance for improving administrative practices in the education sector.

III. RESEARCH METHODOLOGY

A. Research Design

This study adopted a descriptive survey research design (Creswell & Creswell, 2018; Saunders et al., 2019). The design was considered appropriate because it enables the systematic collection of data to describe existing conditions and relationships without manipulation of variables (Creswell & Creswell, 2018). The descriptive survey design allowed the researcher to examine the effect of real-time data analytics on school administrators' staffing decision-making by gathering quantitative data on administrators' experiences and practices.

B. Population of the Study

The population of the study comprised 120 school administrators drawn from public secondary schools. The inclusion of principals, vice principals, and senior administrative officers aligned with established sampling logic in educational management research, where decision-makers constitute the appropriate unit of analysis (Saunders et al., 2019).

C. Area of Study, Sample and Sampling Technique

The study was conducted in Badagry Local Government Area of Lagos State. A sample of administrators was selected using purposive and simple random sampling techniques. The use of purposive sampling ensured inclusion of participants directly involved in staffing decisions, while simple random sampling reduced selection bias and enhanced representativeness (Creswell & Creswell, 2018; Saunders et al., 2019).

D. Research Instrument

The primary instrument for data collection was a structured questionnaire designed by the researcher. Structured questionnaires are widely used in survey research for collecting standardized quantitative data (Bryman, 2016; Creswell & Creswell, 2018). The instrument was divided into socio-demographic and construct-related sections and utilized a Likert-type scale to measure respondents' level of agreement.

E. Validity and Reliability of the Instrument

Face and content validity were established through expert review, a procedure commonly recommended in educational research (Taherdoost, 2020). Reliability was determined using Cronbach's Alpha to assess internal consistency. A reliability coefficient of 0.70 and above was considered acceptable (Taber, 2018).

F. Method of Data Collection

Data were collected through direct administration of questionnaires. Personal administration is recognized for improving response rates and ensuring completeness of returned instruments (Saunders et al., 2019).

G. Method of Data Analysis

Data were coded and analysed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to answer research questions, while Pearson Product Moment Correlation and regression analysis were used to test hypotheses at a 0.05 level of significance. The application of both descriptive and inferential statistics aligns with quantitative survey research standards (Creswell & Creswell, 2018).

H. Ethical Considerations

Ethical principles such as informed consent, voluntary participation, confidentiality, and anonymity were upheld throughout the study (American Psychological Association [APA], 2020). Permission was obtained from relevant authorities, and data were used strictly for academic purposes in accordance with established research ethics guidelines (BERA, 2018).

IV. DATA PRESENTATION, ANALYSIS, AND DISCUSSIONS

This chapter presents the analysis of the data collected from the respondents using the Real-Time Data Analytics and Staffing Decision-Making Questionnaire (RTDASDMQ). The analysis is based on a sample of 120 school administrators (the total population) from public secondary schools in Badagry Local Government Area, Lagos State, comprising 30 principals, 60 vice principals (academic and administration), and 30 other senior administrative officers. All 120 questionnaires distributed were duly completed and returned, giving a 100% response rate. The data were analyzed using descriptive statistics (frequencies, percentages, means, and standard deviations) and inferential statistics (regression analysis and Pearson correlation) as outlined in the methodology. All analyses are presented in tables for clarity.

A. Socio-Demographic Characteristics of Respondents

The socio-demographic data of the respondents are summarized in Table 4.1.

Table 4.1: Distribution of Respondents by Socio-Demographic Characteristics (N=120)

Variable	Category	Frequency	Percentage (%)
Gender	Male	76	63.3
	Female	44	36.7
Age	Below 30 years	11	9.2
	30–39 years	42	35.0
	40–49 years	38	31.7
	50 years and above	29	24.2
Educational Qualification	NCE	24	20.0

	Bachelor’s Degree	42	35.0
	Master’s Degree	29	24.2
	PhD	13	10.8
	Others	12	10.0
Position in School	Principal	30	25.0
	Vice Principal (Academic)	30	25.0
	Vice Principal (Administration)	30	25.0
	Other Senior Administrator	30	25.0
Years of Administrative Experience	Below 5 years	29	24.2
	5–10 years	29	24.2
	11–15 years	32	26.7
	Above 15 years	30	25.0

Source: Field Survey, 2025

The table reveals that the majority of respondents were male (63.3%), aged 30–39 years (35.0%), held a Bachelor’s degree (35.0%), and were evenly distributed across the four position categories (25.0% each). Administrative experience was fairly balanced, with the highest proportion (26.7%) having 11–15 years. This distribution reflects a representative and experienced group of administrators suitable for the study.

B. Analysis of Research Questions

The research questions were answered using descriptive statistics from Sections B–E of the questionnaire. Responses were scored on a 4-point Likert scale (SA=4, A=3, D=2, SD=1). Means ≥ 2.50 indicate general agreement, while means < 2.50 indicate disagreement.

Research Question 1: To what extent do school administrators utilize real-time data analytics in making staffing decisions?

This was addressed using items 1–5 (Section B). The results are presented in Table 4.2.

Table 4.2: Descriptive Statistics for Utilization of Real-Time Data Analytics (Section B, N=120)

Item No.	Item Statement	Mean	Std. Deviation	Interpretation
1	My school uses digital systems that provide real-time administrative data.	2.88	0.95	Agree

2	I regularly access real-time data when making staffing decisions.	2.92	0.93	Agree
3	Real-time data is available for monitoring teacher attendance and workload.	2.85	0.89	Agree
4	Student enrollment data is updated in real time in my school.	2.93	0.91	Agree
5	Real-time data analytics is integrated into school management processes.	2.83	0.94	Agree
Overall Mean		2.88	0.48	Moderate Utilization

Source: Field Survey, 2025

The overall mean of 2.88 indicates a moderate level of utilization of real-time data analytics among school administrators.

Research Question 2: What effect does real-time data analytics have on the effectiveness and timeliness of staffing decision-making?

This was addressed using items 6–15 (Sections C and D). The results are presented in Table 4.3.

Table 4.3: Descriptive Statistics for Effect and Quality of Staffing Decision-Making (Sections C and D, N=120)

Item No.	Item Statement	Mean	Std. Deviation	Interpretation
6	Real-time data helps me make timely staffing decisions.	3.25	0.86	Strongly Agree
7	The use of real-time data improves the accuracy of staff deployment.	3.18	0.84	Agree
8	Staffing decisions based on real-time data reduce workload imbalance.	3.22	0.88	Agree
9	Real-time analytics enhances transparency in staffing decisions.	3.20	0.91	Agree
10	Decisions supported by real-time data lead to better school performance.	3.23	0.90	Agree

11	Staffing decisions in my school are evidence-based.	3.02	0.93	Agree
12	Teachers are appropriately allocated to subjects based on data insights.	2.98	0.97	Agree
13	Real-time data helps identify staff shortages promptly.	3.07	0.82	Agree
14	Staffing decisions are aligned with students' academic needs.	3.00	0.91	Agree
15	Data-driven staffing decisions improve instructional effectiveness.	3.15	0.89	Agree
Overall Mean		3.13	0.42	Positive Effect

Source: Field Survey, 2025

The overall mean of 3.13 suggests that real-time data analytics has a positive perceived effect on the effectiveness, timeliness, and quality of staffing decisions.

Research Question 3: What challenges do school administrators face in adopting and using real-time data analytics?

This was addressed using items 16–20 (Section E). The results are presented in Table 4.4.

Table 4.4: Descriptive Statistics for Challenges in Use of Real-Time Data Analytics (Section E, N=120)

Item No.	Item Statement	Mean	Std. Deviation	Interpretation
16	Inadequate ICT infrastructure limits the use of real-time data analytics.	2.78	0.90	Agree
17	Lack of data analytics skills affects effective usage.	2.62	0.94	Agree
18	Limited access to reliable internet affects real-time data use.	2.80	0.87	Agree
19	Resistance to change affects adoption of data-driven practices.	2.73	0.92	Agree
20	Insufficient training hinders effective use of analytics tools.	2.82	0.86	Agree

Overall Mean		2.75	0.45	Moderate to High Challenges
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Source: Field Survey, 2025

The overall mean of 2.75 indicates that respondents agree there are moderate to high challenges, particularly related to infrastructure, internet access, training, and skills.

C. Test of Hypotheses

The hypotheses were tested at a 0.05 level of significance using SPSS.

a) Hypothesis One

H₀: Real-time data analytics has no significant effect on the effectiveness and timeliness of school administrators’ staffing decision-making.

Simple linear regression was used, with Utilization (Section B composite mean) as the independent variable and Effect/Effectiveness (Section C composite mean) as the dependent variable.

Table 4.5: Regression Analysis Summary for Hypothesis 1

Model Summary / ANOVA	Value
R	0.312
R-squared	0.097
Adjusted R-squared	0.090
F-statistic	12.742
Sig. (p-value)	0.001
Coefficient (Utilization)	0.428
t-value	3.569
p-value	0.001

Since $p = 0.001 < 0.05$, the null hypothesis is rejected. Real-time data analytics has a significant positive effect on the effectiveness and timeliness of staffing decision-making.

b) Hypothesis Two

H₀: There is no significant relationship between the utilization of real-time data analytics and the quality of staffing decisions.

Pearson Product Moment Correlation was used between Utilization (Section B composite mean) and Quality (Section D composite mean).

Table 4.6: Pearson Correlation Summary for Hypothesis 2

Statistic	Value
Correlation Coefficient (r)	0.378
p-value	0.000
N	120

Since $p = 0.000 < 0.05$, the null hypothesis is rejected. There is a significant positive relationship between the utilization of real-time data analytics and the quality of staffing decisions.

c) Hypothesis Three

H₀: There is no significant challenges faced by school administrators in adopting and using real-time data analytics for staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State.

D. Discussion of Findings

The findings reveal moderate utilization of real-time data analytics by school administrators, coupled with a strong perceived positive effect on staffing decision-making. Inferential statistics confirm significant effects and relationships, supporting the rejection of both null hypotheses. Challenges such as inadequate infrastructure and training remain notable barriers, consistent with literature on developing contexts (Bush, 2019; Mandinach & Schildkamp, 2021). These results highlight the potential of real-time data analytics to enhance administrative efficiency when adoption barriers are addressed.

IV. SUMMARY, CONCLUSION AND RECOMMENDATIONS

A. Summary of the Study

The study examined the effect of real-time data analytics on school administrators' staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State. A descriptive survey research design was adopted, and the entire population of 120 school administrators, comprising 30 principals, 60 vice principals (academic and administration), and 30 other senior administrators, was studied, achieving a 100% response rate.

The findings indicate that school administrators in the study area demonstrated a moderate level of utilization of real-time data analytics in staffing decisions, with an overall mean score of 2.88. Digital systems for accessing real-time data were available to some extent, and administrators reported using such data to monitor staff attendance, workload distribution, and student enrolment.

The results further show that real-time data analytics had a positive perceived effect on the effectiveness, timeliness, and overall quality of staffing decision-making, reflected in

an overall mean score of 3.13. Respondents strongly agreed that the use of real-time data enabled more timely decisions, improved accuracy in staff deployment, reduced workload imbalances, enhanced transparency, and contributed to improved school performance.

Despite these benefits, administrators experienced moderate to high challenges in adopting real-time data analytics, with an overall mean score of 2.75. Major barriers identified included inadequate ICT infrastructure, limited access to reliable internet services, insufficient training opportunities, lack of data analytics skills, and resistance to change.

Hypothesis testing revealed that real-time data analytics had a significant positive effect on the effectiveness and timeliness of staffing decision-making ($p = 0.001 < 0.05$). In addition, a significant positive relationship was found between the utilization of real-time data analytics and the quality of staffing decisions ($r = 0.378, p = 0.000 < 0.05$).

Overall, these findings are consistent with the objectives of the study and provide empirical evidence on the importance of real-time data analytics in enhancing educational administration, particularly within a developing context.

B. Conclusion

Based on the findings, it is concluded that real-time data analytics positively influences school administrators' staffing decision-making in public secondary schools in Badagry Local Government Area, Lagos State. Although utilization remains moderate due to infrastructural and skill-related challenges, where real-time data analytics is accessed and applied, it significantly enhances the timeliness, accuracy, transparency, and overall quality of staffing decisions. This supports the view that transitioning from traditional intuitive approaches to data-driven practices can improve administrative efficiency and school performance. The significant statistical relationships established confirm that investment in real-time data tools has measurable benefits for human resource management in schools. However, the persistence of implementation challenges underscores the need for targeted interventions to fully realize the potential of these technologies in the Nigerian public education sector.

C. Recommendation

Arising from the findings and conclusion, the following recommendations are made:

- i. The Lagos State Ministry of Education and the State Universal Basic Education Board should prioritize investment in ICT infrastructure, including reliable internet connectivity and digital management systems, in public secondary schools to enhance access to real-time data analytics.
- ii. Regular capacity-building programs and professional development workshops on data analytics skills should be organized for school administrators to improve their competence in utilizing real-time data for decision-making.
- iii. School leaders should promote a culture of data-driven decision-making by integrating real-time analytics tools into routine administrative processes and encouraging staff collaboration in data interpretation.

- iv. Policymakers should develop guidelines and frameworks that mandate the use of real-time data in staffing and resource allocation decisions while providing adequate funding and technical support to overcome resistance to change.
- v. School administrators should collaborate with technology providers to customize affordable real-time analytics platforms suited to the local context, ensuring sustainability and ease of use.

D. Contribution to Knowledge

This study makes the following contributions to knowledge:

- i. It provides empirical evidence on the application of real-time data analytics specifically to staffing decision-making in public secondary schools, an area previously underexplored compared to its use in student achievement and instructional improvement.
- ii. The research fills a geographical and contextual gap by focusing on a developing educational system in Nigeria, where challenges such as infrastructure deficits significantly influence technology adoption, unlike most existing studies conducted in developed countries.
- iii. By establishing significant statistical effects and relationships between real-time data analytics utilization and staffing outcomes using quantitative methods, the study adds robust evidence to the Data-Driven Decision-Making (DDDM) Model and Rational Decision-Making Theory in the context of educational administration.
- iv. The identification of specific challenges and their impact on utilization offers practical insights for policymakers and practitioners aiming to implement data-driven reforms in resource-constrained environments.

E. Suggestions for Further Studies

The following areas are suggested for further research:

- i. A comparative study on the effect of real-time data analytics on staffing decision-making between public and private secondary schools in Lagos State or other regions.
- ii. A qualitative investigation into the experiences and perceptions of school administrators regarding barriers to adopting real-time data analytics in different Nigerian contexts.
- iii. An experimental or longitudinal study to assess the long-term impact of training interventions on the utilization and effectiveness of real-time data analytics in school administration.
- iv. Exploration of the role of emerging technologies such as artificial intelligence and machine learning in enhancing real-time data analytics for educational management in Nigeria.
- v. A broader study covering multiple local government areas or states to examine variations in the adoption and effects of real-time data analytics on administrative outcomes.

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