THE ROLE OF EDUCATION MANAGEMENT INFORMATION SYSTEM (EMIS) IN NIGERIAN EDUCATION SECTOR

OJOMA, Attah Emmanuel[1]

IFIORA, Ifeyinwa Nancy[2]

[1 & 2]Ave Maria University, Piyanko, Nasarawa State, Nigeria

Corresponding author's email: *fadaemmanuelattah@gmail.com*

Abstract

The study examined the role of the Education Management Information System (EMIS) in the Nigerian education sector, focusing on its effectiveness, challenges, best practices, and stakeholder perceptions. A quantitative research design was employed, and data were collected from 100 administrators and educators across primary, secondary, and tertiary institutions in Abuja and Nasarawa State through convenience sampling. Statistical analyses, including correlation and regression, were used to examine relationships between EMIS deployment, student outcomes, and institutional management. The findings revealed that while EMIS has the potential to improve institutional effectiveness, its impact on student performance and retention rates is limited. Key challenges identified include inadequate infrastructure, poor data quality, resistance to change, and lack of staff training. However, the adoption of best practices such as continuous staff training, data validation, and stakeholder engagement was found to positively correlate with the perceived effectiveness of EMIS. Stakeholders valued data accessibility and accuracy but acknowledged that these alone did not significantly contribute to perceived system benefits. The study highlights the need for targeted interventions to address implementation challenges, promote best practices, and improve data quality to enhance the overall effectiveness of EMIS. The findings suggest that the successful integration of EMIS in Nigerian educational institutions requires strong leadership support, adequate infrastructure, and continuous professional development. The study recommends enhanced infrastructure, policy alignment, and continuous professional development to optimize EMIS integration in Nigerian educational institutions.

Keywords: Education Management Information System (EMIS), Nigerian education sector, institutional effectiveness, stakeholder perceptions

Introduction

In the contemporary educational scene, the effective management of information is paramount for enhancing the quality and accessibility of education. Education Management Information Systems (EMIS) have emerged as essential tools for educational institutions, governments, and policymakers to collect, analyze, and utilize data for informed decision-making. EMIS encompasses a range of technologies and processes that facilitate the systematic collection and management of educational data, including student enrollment, attendance, performance metrics, and resource allocation. Historically, the education sector

has faced challenges related to data fragmentation, inefficiencies in reporting, and a lack of real-time information, which hinder effective planning and policy implementation. Traditional methods of data management often resulted in delays and inaccuracies, limiting the ability of stakeholders to respond to emerging educational needs. As a response to these challenges, many countries have adopted EMIS to streamline data processes and improve educational outcomes.

Recent studies stress the transformative potential of EMIS in various educational contexts. For instance, a study by Karam et al. (2021) highlights how EMIS can enhance data-driven decision-making, leading to improved resource allocation and better educational outcomes in developing countries. The authors argue that by providing timely and accurate data, EMIS enables educational leaders to identify areas of need, monitor progress, and implement targeted interventions (Karam, A., et al., 2021). Similarly, a report by the Global Partnership for Education (2020) emphasizes the role of EMIS in promoting transparency and accountability within educational systems, thereby fostering trust among stakeholders and enhancing community engagement.

Moreover, the COVID-19 pandemic has further accentuated the importance of robust EMIS. As educational institutions transitioned to remote learning, the need for accurate data on student engagement and performance became critical. EMIS provided the necessary infrastructure to track these metrics, allowing educators and administrators to adapt their strategies in real-time (UNESCO, 2021). This adaptability is crucial in ensuring that educational disruptions do not disproportionately affect vulnerable populations.

Despite the clear benefits, the implementation of EMIS is not without challenges. Issues such as data privacy concerns, technological infrastructure deficits, and the need for training among educators and administrators can impede the effective use of EMIS. A study by Al-Mahmood and Al-Mansoori (2022) identifies these barriers and suggests that comprehensive training programs and stakeholder engagement are essential for the successful adoption of EMIS in educational settings (Al-Mahmood, S., & Al-Mansoori, A., 2022).

Objectives of the Study

1. To Assess the Impact of EMIS on Educational Outcomes
2. To Identify Challenges in the Implementation of EMIS
3. To Explore Best Practices for Effective EMIS Utilization
4. To Evaluate Stakeholder Perceptions of EMIS

Research Questions

1. What is the impact of the Education Management Information System (EMIS) on educational outcomes in Nigerian educational institutions?
2. What challenges are encountered in the implementation of EMIS in Nigerian educational institutions?
3. What best practices have been adopted to enhance the effective utilization of EMIS in Nigerian educational institutions?

4. How do stakeholders perceive the benefits and effectiveness of EMIS in Nigerian educational institutions?

Literature Review

Concept of Education Management Information System

Educational management information systems (EMIS) provide valuable insights to school administrator through the systematic collection and analysis of data pertaining to student demographics, academic performance, teacher credentials, and overall school operations. In turn, these insights allow for informed decision-making to improve the educational process in terms of efficiency, effectiveness, and overall quality. The Educational Management Information System (EMIS) is an online hub that provides vital data to influential people in the education sector, allowing them to improve education at all levels (Niar, 2022). Helai, Ahmed, and Bhuiyan, (2021) noted that EMIS stands for education management information system, and it is a system for managing educational data. This system is known by a variety of names in various situations. According to EMIS, an EMIS can handle a wide range of data, including demographics, enrollment, discipline, and other functional elements for students; learning data such as assessment and achievement data, teacher evaluations, curriculum effectiveness data, and other factors related to progression through educational institutions. Assessing the status of education in a nation requires knowledge about the educational system's inputs, resources, governance, operations, and results.

An education management information system (EMIS) offers systematic, high-quality data in a well-structured enabling environment that makes it easier to use the data in planning and policy discussions. An educational Management information system (EMIS) is an organized integration of hardware and software technologies, data, processes, and human elements deploys in the educational system for easy planning, administration and quality control. EMIS is a software system that focuses on the management of information technology to provide efficient and effective strategic decision-making in schools. Education Management Information System (EMIS) refers to a system for the collection, integration, processing, maintenance and dissemination of data and information to support decision-making, planning, policy analysis, monitoring and evaluation of all levels of the education system. EMIS is a system of people, technology, models, methods, processes, procedures, rules and regulations that function together to provide a comprehensive, integrated set of relevant and timely educational Data to planners, decision-makers and managers of education at all levels (Guru, 2016).

The objectives of the Education Management Information System (EMIS) according to Matthews (2016) include; strengthening the education statistical system in Nigeria by linking and assembling different existing information systems, integrating and synthesizing them in one single system of all education data quantitatively and qualitatively; and to produce more relevant, reliable and timely data needed at every tier of government for strategic planning, policy formulation and decision support initiative in education in Nigeria

Impact of Education Management Information System and Educational Administration in Nigeria

The impact of Education Management Information System (EMIS) on educational administration in Nigeria is multifaceted and significant. EMIS has facilitated various aspects of educational administration, leading to improvements in educational planning, administration, data management, decision-making, accountability, and resources management.

Educational planning

The implementation of Educational Management Information Systems (EMIS) has significantly contributed to enhancing the effectiveness of educational planning in Nigerian educational institutions. Educational planning, as defined by Ogunode, EyiolorunseAiyedun, and Olatunde-Aiyedun (2021), encompasses the process of outlining future objectives, programs, and activities in education and identifying the means to achieve them.

Educational planning in Nigeria spans across various levels and dimensions, including early childhood education, primary and secondary education, higher education, special needs education, mass education, women's education, girl child education, adult education, and gender education. It also encompasses aspects such as manpower planning, infrastructure planning, student planning, curriculum planning, human resource planning, and instructional materials planning (Ogunode et al., 2021).

Aceng (2020) and NEMIS (2021) emphasize that EMIS empowers school administrators, managers, and educational planners to effectively plan education and make sound decisions to enhance the provision of educational services nationwide. Moreover, Tamir and Arar (2019) highlight that EMIS enables schools to plan for upgrades, maintenance, and the acquisition of necessary resources, contributing to creating a conducive learning environment and addressing infrastructure gaps.

Effective Educational Administration

Effective educational administration within the Nigerian educational sector, across all levels of government, can be attributed to the proficient utilization of Educational Management Information Systems (EMIS). Educational administration, as described by Hoy and Miskel (2001), Kimani (2010), and Ogunode (2020a), encompasses the strategic allocation and utilization of resources to achieve predetermined educational goals. It involves the application of principles, methods, and practices to establish, maintain, and develop educational institutions in alignment with their objectives.

The integration of EMIS has catalyzed transformative changes in educational administration within Nigeria. EMIS serves as a catalyst for improved policy formulation, decision-making, and educational planning by providing timely and accurate data to education administrators. The system has facilitated a more open, accountable, and efficient management of educational resources, as noted by Danso, Adjei, and Yaokumah (2021). It fosters a culture of continuous improvement by supporting both day-to-day administrative tasks and the development of long-term initiatives. The integration of EMIS has brought about various positive changes in administrative processes within schools, as highlighted by Ogochukwu (2022). One significant advantage is the automation of routine administrative tasks, as

recognized by Jurs et al. (2023). EMIS enhances communication and collaboration among administrative staff by providing a centralized platform for sharing information and coordinating activities.
Furthermore, EMIS streamlines processes such as enrollment, attendance tracking, grading, and scheduling, as noted by Peng and Pei (2022) and Kalu and Sa'ad (2018). This automation reduces manual workload, minimizes errors, and allows administrative staff to focus on strategic activities.

Data management

Poor data management has long been identified as a significant challenge within the Nigerian educational sector. However, the implementation and integration of Educational Management Information Systems (EMIS) across all levels of education in Nigeria have contributed to significant improvements in addressing this issue. EMIS serves as a centralized platform that ensures the generation, analysis, storage, and dissemination of quality data to education administrators for effective planning and administration purposes.
As highlighted by Balram (2018), EMIS functions as a centralized vault for collecting, organizing, and storing data, thereby streamlining the data management process. Moreover, EMIS has the capability to analyze data and generate various reports based on this analysis, facilitating informed decision-making within educational institutions. The adoption of EMIS represents a fundamental shift from traditional, labor-intensive record-keeping practices to a modern and flexible system in school administration. Danso et al. (2021) emphasize that this transition has resulted in enhanced openness, accountability, and efficiency in the management of educational resources.

Decision making

Educational management information systems (EMIS) have been very useful for decision making in the Nigerian educational sector. Decision making according to Ogunode, Pajo and Akhmedov (2021) and Ogunode, Samuel, Audu and Musa (2021) decision making process in education flows from the top level of educational administration down to the management level. Mostly, decision in education is taken by the educational administration and managers. Effective decision making in education depends on availability of accurate data. Ogunode (2021) described data as the life wire of decision-making process because without the data no any meaningful decision can be taken. At various points across the educational system, data-driven decision-making is the primary objective of EMIS. Researches by Odusanya (2019); Odhiambo (2017) and Obiakor Oguejiofor and Ezenwagu (2021) confirmed positive relationship between Educational Management Information Systems (EMIS) and effective decisions in educational institutions.

Accountability

Accountability in the Nigerian education institutions is a problem demanding immediate response by them (Ogunode, Obioma, & Bello 2023). The implementation of Educational management information systems (EMIS) in Nigeria has helped to institutionalize the culture of accountability and transparency in almost all the educational institutions across the

country. EMIS plays a crucial role in fostering communication and collaboration among various stakeholders in the education ecosystem that promotes accountability in resources allocation and distribution (Valery, 2020). Wangang, (2023) opined that the implementation of EMIS marks a paradigm shift in educational management, moving away from traditional, manual record-keeping methods toward a more sophisticated and dynamic approach. This shift brings about increased transparency, accountability, and efficiency in the management of educational resources. EMIS not only assists in the day-to-day administrative tasks of schools but also contributes to long-term planning, fostering a culture of continuous improvement within the education sector. Mariono and Sabar, (2023) also maintained that EMIS is an all-inclusive system that helps with management, monitoring, and planning at every level of the education system by collecting, combining, analysing, and distributing data and information.

Effective Resources management

Resources wastage is part and parcel of the Nigerian education. It is common in all the educational institutions especially at the management level. It has cost the federal and state government a lot. The deployment of Educational management information systems (EMIS) in the educational management has helped to reduce educational wastage (Ogunode, Ndubuisi & Jegede 2022). Samsuri, (2021) observed that one of the key advantages of EMIS is the ability to analyse demographic data, enrolment trends, and student needs. This information enables schools to allocate teachers, classrooms, and materials efficiently, ensuring that resources match the demand and diversity of the student population. Balram (2018), noted that the purpose of EMIS is to manage the distribution and allocation of educational resources and to keep an eye on how well the institute's courses are implemented. Agung and Hidayati (2022) remarked that the implementation of EMIS has positively impacted the allocation of school resources in numerous ways. EMIS provides a systematic and data-driven approach to resource management, allowing administrators to make informed decisions.

Methodology

The survey adopted a quantitative research design to examine the impact of Education Management Information Systems (EMIS) on educational outcomes, challenges in implementation, best practices for utilization, and stakeholder perceptions. The quantitative approach enabled the systematic collection and statistical analysis of numerical data, allowing hypotheses to be tested and findings generalized to a wider population. A total of 100 participants were drawn conveniently from primary, secondary, and tertiary institutions in Abuja and Nasarawa State, comprising educators, administrators, and policymakers directly involved in EMIS implementation and management.

Data collection was conducted using a structured questionnaire designed to capture demographic details, perceptions of EMIS impact on student performance and retention rates, challenges experienced in its implementation, observed best practices, and stakeholder perceptions of data accessibility, accuracy, and benefits. The questionnaire items were informed by a comprehensive review of relevant literature and underwent pilot testing with a

small sample to enhance clarity and reliability. This process ensured that the instrument was well-suited to capture the multifaceted aspects of EMIS usage and effectiveness across educational contexts.

The quantitative data gathered were analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize demographic characteristics, while inferential statistical techniques specifically correlation and multiple regression analyses were applied to explore relationships between EMIS implementation variables, student outcomes, and stakeholder perceptions. Statistical significance was set at $p < 0.05$, providing a robust basis for interpreting the findings and drawing evidence-based conclusions about the role and effectiveness of EMIS in the Nigerian education sector.

Results and Findings

This section presents the results of the statistical analyses conducted to address the study's four research objectives. The analyses were organized sequentially to assess the impact of the Education Management Information System (EMIS) on educational outcomes, identify challenges in its implementation, explore best practices for effective utilization, and evaluate stakeholder perceptions of the system. Findings are reported using appropriate inferential statistics, including correlation and regression analyses, and are discussed in relation to the study's objectives.

Impact of EMIS on Educational Outcomes

Table 1: ANOVA[a]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	.357	2	.178	.501	.608[b]
Residual	34.189	96	.356		
Total	34.545	98			

a. Dependent Variable: Overall, how effective do you believe EMIS has been in improving institutional effectiveness?
b. Predictors: (Constant), Since the implementation of EMIS, how would you rate the change in student retention rates in your institution?, Since the implementation of EMIS, how would you rate the change in student performance in your institution?

- **Sum of Squares (Regression) = 0.357**: This shows the amount of variation in the dependent variable (effectiveness of EMIS) explained by the independent variables (student performance and retention).
- **Mean Square (Regression) = 0.178**: The average variation explained by the independent variables.
- **F = 0.501**: The F-statistic tests whether the model is a good fit. In this case, it is quite low, suggesting that the overall model does not provide a strong explanation for the variance in EMIS effectiveness.
- **Sig. = 0.608**: This value represents the p-value of the F-test. Since the p-value is greater than the common alpha threshold of 0.05, it indicates that the model is not statistically significant. In other words, the relationship between the independent variables and the dependent variable is likely due to random chance rather than a meaningful connection.

Table 2: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.846	.172		10.731	.000
	Since the implementation of EMIS, how would you rate the change in student performance in your institution?	.050	.095	.056	.523	.602
	Since the implementation of EMIS, how would you rate the change in student retention rates in your institution?	-.082	.084	-.106	-.979	.330

a. Dependent Variable: Overall, how effective do you believe EMIS has been in improving institutional effectiveness?

- **Constant = 1.846**: The intercept term, which represents the baseline value of the dependent variable (EMIS effectiveness) when the predictors are zero.
- **Since the implementation of EMIS, how would you rate the change in student performance?**

- **B = 0.050**: This indicates a very small positive impact of changes in student performance on the perceived effectiveness of EMIS.

- **Beta = 0.056**: The standardized coefficient, which shows the strength of the relationship between student performance and EMIS effectiveness. Again, this value is very low.
- **t = 0.523**: The t-value tests the null hypothesis that the coefficient is equal to zero. Since this value is low, it suggests that the change in student performance is not significantly contributing to the effectiveness of EMIS.
- **Sig. = 0.602**: The p-value is greater than 0.05, indicating that the change in student performance does not significantly affect the effectiveness of EMIS.

- **Since the implementation of EMIS, how would you rate the change in student retention rates?**

- **B = -0.082**: This negative value suggests that any changes in student retention rates are negatively associated with the perceived effectiveness of EMIS, but the effect is minimal.
- **Beta = -0.106**: Again, a very weak relationship between retention rates and EMIS effectiveness.
- **t = -0.979**: The t-value suggests that this coefficient is not significantly different from zero.
- **Sig. = 0.330**: This p-value is also greater than 0.05, indicating that changes in student retention rates do not significantly influence the effectiveness of EMIS.

Challenges In Implementation of EMIS

Table 3: Correlations

Pearson Correlation	1	.512**
Sig. (2-tailed)		.000
N	100	100
Pearson Correlation	.512**	1
Sig. (2-tailed)	.000	
N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Key Results:

- **Pearson Correlation Coefficient** = 0.512

This value shows a moderate positive correlation between the type of challenges faced and how significant they are perceived to be. A coefficient of 0.512 indicates that as the number or type of challenges increase, so does the perceived severity or significance of these challenges in hindering EMIS effectiveness.

- **Significance (2-tailed) = 0.000**

This p-value is less than 0.01, indicating that the correlation is statistically significant. In simpler terms, there's a very low probability that this correlation happened by chance we can confidently say there is a real relationship between the variables.

- Sample Size (N) = 100

- A solid sample size helps ensure reliability and generalizability of the findings.

Best Practices for Effective EMIS Utilization

Table 5: Correlations

Pearson Correlation	1	.571**
Sig. (2-tailed)		.000
N	100	100
Pearson Correlation	.571**	1
Sig. (2-tailed)	.000	
N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Key Statistical Findings:

- Pearson Correlation Coefficient = 0.571
  This indicates a moderate to strong positive correlation. It means that as more best practices are observed in EMIS deployment and management, the perceived effectiveness of EMIS also tends to increase.
- Significance (2-tailed) = 0.000
  The p-value is well below the 0.01 threshold, indicating that the correlation is statistically significant the observed relationship is very unlikely to have occurred by chance.
- N = 100
  The sample size is adequate, which supports the reliability and generalizability of the results.

Stakeholder Perceptions of EMIS

Table 5: ANOVA[a]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	12.302	2	6.151	3.018	.054[b]
Residual	197.698	97	2.038		
Total	210.000	99			

a. Dependent Variable: What benefits do you perceive from the use of EMIS in your institution? (Select all that apply)
b. Predictors: (Constant), How accessible do you find the data generated by EMIS?, How would you rate the accuracy of data provided by EMIS in your institution?

- **Pearson Correlation = 0.571**
  This indicates a moderate to strong positive correlation. In simple terms, as more best practices are observed in EMIS implementation, the perceived effectiveness of EMIS also tends to increase.
- **Significance (2-tailed) = 0.000**
  The p-value is less than 0.01, which means the result is highly statistically significant the relationship is unlikely to be due to chance.
- **N = 100**
  A solid sample size, which adds credibility to the statistical result.

Table 6: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.306	.798		2.891	.005
	How would you rate the accuracy of data provided by EMIS in your institution?	.285	.172	.170	1.652	.102
	How accessible do you find the data generated by EMIS?	.240	.190	.130	1.264	.209

a. Dependent Variable: What benefits do you perceive from the use of EMIS in your institution

- **F = 3.018**, **Sig. = 0.054**

This is *just above* the typical significance threshold of 0.05. So, the model is marginally insignificant**,** but borderline. This suggests that while there is some effect, we can't conclusively say that the predictors significantly explain differences in perceived benefits though it is *very close*.

- **Constant = 2.306**, **p = 0.005**: Baseline perceived benefit rating is statistically significant.

1. ***Accuracy of EMIS Data***

- **B = 0.285**, **p = 0.102**

Positive influence on perceived benefits, but not statistically significant ($p > 0.05$). Stakeholders who rate data accuracy higher tend to perceive more benefits, but this trend is not strong enough to be conclusive**.**

2. **Accessibility of EMIS Data**

- **B = 0.240**, **p = 0.209**

Also shows a positive but weaker relationship with perceived benefits and is not statistically significant either.

Regression analysis revealed a weak relationship between EMIS use and improvements in student performance or retention rates ($R^2 = 0.010$, $p > 0.05$). Correlation analysis showed a moderate positive relationship ($r = 0.512$, $p < 0.01$) between the number of challenges faced and their perceived severity. A strong positive correlation ($r = 0.571$, $p < 0.01$) was observed between adherence to best practices and perceived EMIS effectiveness. Regression results indicated a marginally insignificant relationship ($p = 0.054$) between data accuracy, accessibility, and perceived benefits of EMIS.

Discussions of Findings

This research examined the role of the Education Management Information System (EMIS) in the Nigerian education sector, focusing on its effectiveness, challenges, best practices, and stakeholder perceptions. The findings suggest several key insights into the current state of EMIS implementation and its perceived impact on institutional effectiveness. These results are compared with existing studies in the Nigerian context to highlight similarities, differences, and implications for policy and practice.

Effectiveness of EMIS Implementation

One of the key findings from this research is that the relationship between the implementation of EMIS and the perceived improvements in student performance and retention rates is relatively weak. The analysis revealed a low R-squared value (0.010), indicating that changes in student performance and retention rates explain only a minimal portion of the variation in EMIS effectiveness. This suggests that other factors might be influencing EMIS effectiveness beyond the scope of the variables considered.

This result aligns with studies by Ogunyemi (2018) and Ajayi and Afolabi (2020**)**, who found that while EMIS holds potential for improving educational outcomes, its actual impact has been limited due to challenges in implementation, inadequate infrastructure, and insufficient data utilization. Ogunyemi (2018) specifically noted that while EMIS was expected to improve educational planning and management, its effectiveness was often undermined by poor data quality, lack of staff training, and inadequate infrastructure. Similarly, Ajayi and

Afolabi (2020) found that despite the widespread adoption of EMIS in Nigerian educational institutions, the system's contribution to improving student outcomes remained inconclusive due to inconsistent data entry and lack of institutional support.

Challenges in EMIS Implementation

The challenges associated with EMIS implementation were another prominent theme in this study. The correlation between the challenges faced during EMIS implementation and the perceived significance of those challenges in hindering EMIS effectiveness was moderately significant ($r = 0.512$, $p < 0.01$)**.** This suggests that institutions encountering more challenges, such as inadequate infrastructure, resistance to change, and poor data quality, tend to perceive EMIS as less effective. These findings are consistent with those of Ige et al. (2019), who highlighted the difficulties related to poor internet connectivity, unreliable electricity supply, and inadequate technical skills among staff as major barriers to effective EMIS use in Nigerian schools.

The ANOVA results further confirmed that the implementation challenges faced by institutions are not just minor inconveniences but critical obstacles that impede the broader goals of EMIS, particularly in enhancing institutional effectiveness. These findings corroborate Akinyemi (2021)**,** who reported that technical and administrative challenges are among the key factors limiting the full potential of EMIS in Nigerian educational settings. There is a moderate and statistically significant correlation between the challenges encountered in EMIS implementation and their perceived impact on EMIS effectiveness. This highlights the critical need to address implementation challenges not just in quantity, but in depth and significance. For EMIS to truly support institutional improvement, efforts should focus on mitigating these high-impact barriers through better planning, infrastructure, training, and policy alignment.

Best Practices in EMIS Deployment

In contrast to the challenges, the findings regarding best practices in EMIS deployment were more positive. A moderate to strong positive correlation ($r = 0.571$, $p < 0.01$) was observed between the adoption of best practices and the perceived effectiveness of EMIS. Institutions that implemented best practices such as staff training**,** data validation, and stakeholder engagement tended to report higher effectiveness in their EMIS systems. This finding echoes the work of Ogunyemi (2018), who identified the importance of continuous training and proper system management in ensuring the success of EMIS. Ogunyemi emphasized that institutions that invested in ongoing professional development for staff were better able to leverage EMIS to enhance educational management.

Also, Olugbenga and Adebayo (2020) found that best practices such as regular updates to data systems, user engagement, and strategic planning were pivotal in improving EMIS

outcomes. The positive correlation found in this study reinforces the conclusion that institutional commitment to best practices is crucial for maximizing the potential of EMIS.

The study found a statistically significant and moderately strong positive correlation (***r*** **=** 0.571, $p < 0.01$) between the best practices observed in EMIS deployment and the perceived effectiveness of those practices. This means that the more best practices are followed**,** the greater the perceived benefit of EMIS. Institutions that emphasize quality implementation practices are more likely to have users who view EMIS as an effective tool for educational data management. These findings highlight the critical role of systematic, well-managed deployment strategies in unlocking the full potential of EMIS in the Nigerian education sector.

Stakeholder Perceptions of EMIS

The study also examined stakeholder perceptions of the benefits of EMIS. The regression analysis, however, revealed a marginally significant relationship between data accessibility, accuracy, and the perceived benefits of EMIS, with only a small portion of the variance in perceived benefits explained by these two factors ($R^2 = 0.059$). This finding suggests that while stakeholders generally value the accessibility and accuracy of data generated by EMIS, these factors alone do not significantly drive the perception of EMIS benefits.

This result is in line with findings from Okunoye (2017), who noted that while data accuracy and accessibility are essential for effective EMIS use, external factors such as institutional support, government policies, and the broader educational environment play a larger role in shaping stakeholder perceptions. Okunoye (2017) concluded that institutional factors and leadership commitment often have a greater influence on the success and adoption of EMIS than data-related factors alone.

Moreover, the marginal significance of the regression model suggests that further exploration into other institutional and contextual factors, such as policy alignment**,** financial resources, and government support, is necessary to fully understand the drivers of EMIS success. This finding aligns with the study by Bello and Mohammed (2021)**,** who argued that the **e**ffectiveness of EMIS is not solely dependent on the technical aspects of the system but also on how well it aligns with educational policies, the level of government support, and the engagement of key stakeholders.

Conclusion

The study examined the role of the Education Management Information System (EMIS) in the Nigerian education sector, with a particular focus on its effectiveness, challenges, best practices, and stakeholder perceptions. The findings revealed several key insights into the current state of EMIS implementation and its perceived impact on institutional effectiveness.

First, the study found that the relationship between EMIS implementation and improvements in student performance and retention rates was weak, with other factors likely influencing the system's effectiveness. The challenges encountered during EMIS implementation were found to be significant obstacles, with issues such as poor infrastructure, resistance to change, and inadequate training limiting the effectiveness of the system. However, the adoption of best practices, including staff training, data management, and stakeholder involvement, was positively correlated with the perceived effectiveness of EMIS. Moreover, the study highlighted that while data accessibility and accuracy were valued by stakeholders, they alone did not significantly drive perceptions of the system's benefits. The findings align with previous research that emphasized the importance of addressing broader institutional and contextual factors, such as leadership commitment, government support, and policy alignment, in ensuring the success of EMIS.

The findings from this study provide valuable insights into the strengths and limitations of EMIS in the Nigerian education sector. While EMIS has the potential to improve educational management and outcomes, its actual effectiveness is often hindered by implementation challenges**,** including inadequate infrastructure and insufficient staff training. However, the adoption of best practices, such as effective staff training, stakeholder involvement, and data management, is strongly associated with higher perceptions of EMIS effectiveness.

These results suggest that Nigerian educational institutions and policymakers should focus on addressing the barriers to successful EMIS implementation, such as improving infrastructure**,** enhancing staff training, and ensuring data accuracy. Furthermore, the promotion of best practices should be prioritized to maximize the system's benefits. Future research could explore the role of government policy and institutional leadership in enhancing the effectiveness of EMIS in Nigeria, as well as consider qualitative studies to gain deeper insights into the lived experiences of EMIS users.

Recommendations

Based on the findings of this study, several recommendations can be made to enhance the effectiveness of EMIS in the Nigerian education sector:

1. **Address Implementation Challenges:** To ensure the successful deployment and utilization of EMIS, it is essential to tackle the key challenges identified in this study, such as inadequate infrastructure, unreliable internet connectivity, and electricity supply. The government and educational institutions should invest in improving these infrastructural gaps to support the smooth operation of EMIS.
2. **Staff Training and Capacity Building**: A comprehensive, ongoing training program should be developed for staff at all levels to improve their technical skills and understanding of EMIS. This will ensure that users can effectively interact with the system and make the most of its features.
3. **Promote Best Practices in EMIS Deployment:** Institutions should prioritize the adoption of best practices such as regular system updates, data validation protocols, and stakeholder engagement to enhance the effectiveness of EMIS. These practices

not only improve the system's functionality but also ensure that the data generated is accurate and reliable.

4. **Institutional Collaboration**: Collaboration between educational institutions, government agencies, and private sector players should be encouraged to share knowledge and resources, facilitating the implementation of best practices across the sector.
5. **Improve Data Accessibility and Accuracy:** While data accessibility and accuracy are important, they should be part of a broader strategy that includes improving the overall system infrastructure and user support. Institutions should invest in user-friendly platforms and ensure that data is regularly updated and validated for accuracy.
6. **Government Policy and Support**: It is recommended that policymakers strengthen their support for EMIS through clear policies that prioritize its role in educational management and improvement. This includes providing adequate funding, infrastructure, and technical support.
7. **Incorporate Institutional and Leadership Support:** The success of EMIS is not solely dependent on technical factors; institutional commitment and leadership **support** are equally critical. Educational administrators should actively engage with stakeholders to foster a culture of data-driven decision-making and ensure that EMIS is integrated into the broader educational management framework.
8. **Stakeholder Engagement**: It is vital to engage all stakeholders, including educators, administrators, and policymakers, in the decision-making process regarding EMIS implementation and management. Their insights and feedback will help tailor the system to meet the specific needs of each institution.

Further Research

Future research should explore the role of government policies, institutional leadership, and teacher involvement in enhancing the effectiveness of EMIS. Qualitative studies could provide deeper insights into the experiences of key stakeholders, identifying specific barriers and enablers that affect the system's success. Research should also focus on the long-term impact of EMIS on educational outcomes, such as student learning achievements and institutional performance, to better assess its true potential.

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