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Cross-Sectoral Collaboration, Accountability, and Data Integration as Predictors of Sustainable Education Governance in Nigeria

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Abstract
Weak organizational and institutional structures continue to constrain education governance in developing contexts, hindering the achievement of sustainability goals. This study investigated whether cross-sectoral collaboration, accountability, and data integration significantly predict sustainable education governance in Nigeria. A correlational survey design was employed, involving education policy makers, government administrators, and civil society actors at the federal, state, and local levels. A sample of 178 respondents was randomly selected through stratified sampling to represent the three tiers of governance. Data were collected using a structured, validated questionnaire and analyzed through Spearman's Rank-Order Correlation and multiple regression. Results showed a moderate positive bivariate correlation between cross-sectoral collaboration and governance ($r = .453$, $p = .000$); however, this contribution became non-significant once accountability and data integration were controlled for ($\beta = -.044$, $p = .222$), likely due to shared explanatory overlap among predictors. The overall regression model was significant, $F(3,174) = 331.111$, $p = .000$, explaining 85.1% of the variance ($R^2 = .851$, $R = .922$). Accountability ($\beta = .850$, $p = .000$) and data integration ($\beta = .150$, $p = .000$) were significant predictors, with accountability showing the strongest influence. The study concludes that accountability and data integration are the most critical drivers of sustainable education governance, while cross-sectoral collaboration contributes meaningfully only when considered independently. It is recommended that stakeholders strengthen accountability mechanisms, integrate education data systems, and institutionalize cross-sectoral coordination to improve governance outcomes in Nigeria.

INTRODUCTION

Fragmentation and poor coordination continue to pose problems in Nigeria's education system. There are millions of boys and girls who are not in school, and there are a lot of school-going children whose learning outcomes are poor. There is often poor coordination between the federal, state, and local levels of government in the

implementation of policies. Furthermore, the country's education data systems are weak, and accountability mechanisms are weak, and country education planning and decision making is inadequate (UNICEF Nigeria, 2025; World Bank, 2006). Innovative solutions are required to close the education policy gap in Nigeria, which involves coordinated action across the education, social welfare, development, and humanitarian sectors as well as robust accountability mechanisms and the integration of data systems to facilitate evidence-based policy-making, according to researchers and development experts (UNICEF Innocenti, 2024).

Cross-sectoral collaboration is a process of coordinating across ministries, agencies, and development partners to reach common education targets. Education outcomes in Nigeria are closely linked to health, nutrition, infrastructure, and governance, and therefore working together is critical for comprehensive development. Research indicates that a combined effect of governance, education, and donor programmes can result in more effective outcomes, including overcoming challenges of duplication and weak policy coherence (Owoola et al., 2024). But this kind of partnership can only be successful if programmes are not on the same calendar or if they have different objectives or different measures of accountability. Thus, it is important to build a joint structure and common theories of change to assure coordination of resources and efforts for lasting impact (Oberlack et al., 2019).

The enforcement of accountability is fundamental to effective education service delivery in Nigeria. Accountability operates in two dimensions: vertical, which binds ministries, departments, and agencies to political leadership, and horizontal, which binds schools and communities to governance processes (Usman, 2016). UNICEF Innocenti (2024) highlights that the effectiveness of local education management systems, school-based committees, and supervisory systems at the state level is crucial to making national policies a reality in classrooms. EdoBEST is a good example of accountability in action in the Edo basic education sector. EdoBEST made impressive gains in teacher performance and student learning outcomes (SLOs) through teacher monitoring, data-driven teacher coaching, and clear performance goals (World Bank, 2024). This shows that having an accountability system at all levels of governance in education helps to make policy vision a reality (Asika et al., 2025).

One of the biggest challenges in the education sector in Nigeria is data integration. In past years, many agencies kept their own databases, and their data were not standardized and could not be used for planning or monitoring progress (World Bank, 2006). There is no single system of Education Management Information System (EMIS), which hampers the government from pinpointing gaps in learning and effective allocation of resources. UNICEF Innocenti (2024) states that linking administrative data to learning assessment and implementation research are indispensable to bridging the policy-practice gap. EdoBEST also sheds light on the use of a functioning EMIS and regular monitoring to provide reliable data for teachers and administrators to adjust teaching and management, as evidenced by the World Bank (2024). This evidence-based approach serves to improve accountability and continuously raise the quality of education provision (Irele, 2021).

This study is needed because some education policies do not match the outcomes of implementation. While many reforms and international assistance have been implemented in Nigeria, the country still has high rates of out-of-school children and weak performance in learning achievement, which indicates a disconnect between policy and implementation (UNICEF Nigeria, 2025). This gap is exacerbated by the lack of teamwork between government ministries, donor organisations, and local government, which results in duplication of effort and inefficient use of resources. In addition, accountability systems are not clearly established, and there is limited transparency and feedback between central authorities and schools (UNICEF Innocenti, 2024).

Another important area of concern is the lack of integration of education information systems, where data is not always consistent or up to date, which makes evidence-based planning and monitoring more difficult (World Bank, 2006). There has been limited cross-sector coordination and integrated data sharing, making it difficult for education policies to address community-specific context needs (World Bank, 2024). The main reason for assessing cross-sectoral collaboration, accountability, and data integration for sustainable education governance in Nigeria is the widespread administrative fragmentation and implementation gaps within the administration.

Although governance frameworks are in place, there are significant gaps in current literature that stress the need for a thorough evaluation of these structures. Although recent studies have examined educational governance in Nigeria, such as Umesi's (2026) analysis of governance quality, accountability, and leadership effectiveness as predictors of learning outcomes, and Eneh et al.'s (2026) assessment of digital governance and institutional transparency, these studies remain largely fragmented across single governance dimensions and do not jointly examine cross-sectoral collaboration, accountability, and data integration as an interrelated predictive system for sustainable education governance at the national level.

Previous studies have been primarily conducted at the micro or sectoral level, such as Umesi's (2026) mixed-methods investigation of governance and leadership effectiveness, or Eneh et al.'s (2026) descriptive assessment of digital governance and transparency. However, there remain limited empirical studies that jointly model cross-sectoral collaboration, accountability, and data integration as simultaneous predictors of sustainable education governance using correlational and regression-based designs at the national, multi-tier level of government. This study thus addresses these important gaps, through the study of joint collaboration, transparent accountability, and systems of data, in bridging the policy execution gap in Nigeria.

RESEARCH METHODS

This study was of a quantitative research design for the investigation of the relationship between cross-sectoral collaboration and sustainable governance of education in Nigeria. The study employed a correlational research method to ascertain the relationship between study variables, and multiple regression analysis was applied to explore the joint and individual predictive factors on sustainable education governance. The sample comprised 178 subjects representing key players at the level of education management and implementation of education policies. A structured

questionnaire was used to gather data which included components related to cross-sectoral collaboration, accountability, data integration and sustainable education governance. The instrument has been validated by educational management experts and experts in research methodology with reliability and construct validity.

Data collection procedures were questionnaires filled by the respondents and retrieval of filled questionnaires for analysis. Collected data were coded and analysed by statistical package for the social sciences (SPSS). The techniques used to sum up the responses were descriptive statistics of mean and standard deviation, and the inferential statistics that were used were Spearman's Rank-Order Correlation, Analysis of Variance (ANOVA), and multiple regression analysis used to test research question and research hypotheses. Spearman's correlation was selected because its data were ordinal and it was used to examine the non-parametric relationships between variables. A multiple regression analysis was used to explore the contributions of cross-sectoral collaboration, accountability, and data integration to sustainable education governance. Ethical issues like informed consent, confidentiality and voluntary participation were of the greatest concern during the study process.

RESULTS AND DISCUSSION

Results

Research Question 1: What is the relationship between cross-sectoral collaboration and sustainable education governance in Nigeria?

Table 2: Spearman's Rank-Order Correlation between Cross-Sectoral Collaboration and Sustainable Education Governance (N = 178)

			Cross-sectoral collaboration	Sustainable education governance
Spearman's rho	Cross-sectoral collaboration	Correlation Coefficient	1.000	.453**
		Sig. (2-tailed)	.	.000
		N	178	178
	Sustainable education governance	Correlation Coefficient	.453**	1.000
		Sig. (2-tailed)	.000	.
		N	178	178

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

The cross-sectoral collaboration and sustainable education governance are moderately positively correlated (r = .453, p = .000) as shown in table 2. This correlation is statistically significant at 0.01 level which shows that there is a relationship between stakeholders' collaboration and sustainable education governance in Nigeria.

Hypothesis 1: Cross-sectoral collaboration, accountability, and data integration do not jointly predict sustainable education governance in Nigeria.

Table 3: ANOVA Summary for the Joint Prediction of Sustainable Education Governance (N = 178)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1001.186	3	333.729	331.111	.000[b]
	Residual	175.376	174	1.008		
	Total	1176.562	177			

a. Dependent Variable: Sustainable education governance
b. Predictors: (Constant), Data integration, Cross-sectoral collaboration, Accountability

The ANOVA results in Table 3 show a significant regression model, $F(3,174) = 331.111$, $p = .000$. This suggests that sustainable education governance in Nigeria can be explained by three factors: cross-sectoral collaboration, accountability and data integration. Thus, the null hypothesis is rejected, and it suggests that the composite predictors do have a significant relationship with sustainable education governance outcomes.

Table 4: Model Summary for Multiple Regression Analysis (N = 178)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.922[a]	.851	.848	1.00394

a. Predictors: (Constant), Data integration, Cross-sectoral collaboration, Accountability
b. Dependent Variable: Sustainable education governance

The model summary in Table 4 indicates that the correlation between the predictors and the sustainable education governance is high ($R = .922$) and the model explains 85.1% of the variance ($R^2 = .851$). This high explanatory power suggests that the three variables together explain most of the variations in the governance of Sustainable education in Nigeria.

Table 5: Regression Coefficients for Predictors of Sustainable Education Governance (N = 178)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.984	.623		1.580	.116
	Cross-sectoral collaboration	-.048	.039	-.044	-1.226	.222
	Accountability	.813	.034	.850	23.657	.000
	Data integration	.180	.046	.150	3.899	.000

Dependent Variable: Sustainable education governance

The results in Table 5 indicate that sustainable education governance is significantly predicted by accountability (β = .850, p = .000) and data integration (β = .150, p = .000) but not by cross-sectoral collaboration (β = –.044, p = .222). This implies that the most critical factors that influence sustainable governance of education in Nigeria are the issues of accountability and effective data integration.

Research Question 2: What is the relationship between accountability and sustainable education governance in Nigeria?

Table 6: Spearman's Rank-Order Correlation between Accountability and Sustainable Education Governance (N = 178)

			Sustainable education governance	Accountability
Spearman's rho	Sustainable education governance	Correlation Coefficient	1.000	.918**
		Sig. (2-tailed)	.	.000
		N	178	178
	Accountability	Correlation Coefficient	.918**	1.000
		Sig. (2-tailed)	.000	.
		N	178	178

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

As can be seen in Table 6, there is a very strong positive correlation between accountability and sustainable education governance (r = .918, p = .000). This correlation is statistically significant at 0.01 level (as low as 0.05) suggesting that higher accountability in education is significantly associated with better and more sustainable governance of education in Nigeria.

Hypothesis 2: Cross-sectoral collaboration does not significantly predict sustainable education governance in Nigeria.

Table 7: ANOVA Summary for the Effect of Cross-Sectoral Collaboration on Sustainable Education Governance (N = 178)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	195.275	1	195.275	35.024	.000[b]
	Residual	981.287	176	5.575		
	Total	1176.562	177			

a. Dependent Variable: Sustainable education governance

b. Predictors: (Constant), Cross-sectoral collaboration

The ANOVA results in Table 7 show that the regression model is significant, F(1,176) = 35.024, p = .000. Thus, the cross-sectoral collaboration has a high predicting value on the sustainable education governance in Nigeria, which leads to the rejection of the null hypothesis.

Table 8: Model Summary for the Prediction of Sustainable Education Governance by Cross-Sectoral Collaboration (N = 178)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.407[a]	.166	.161	2.36125

a. Predictors: (Constant), Cross-sectoral collaboration
b. Dependent Variable: Sustainable education governance

As can be seen in the model summary in table 8, the cross-sectoral collaboration correlations with sustainable education governance was moderate, R = .407, with an R^2 of .166, which explains 16.6% of the variance. This shows that there is low contribution of cross-sectoral collaboration in predicting sustainable governance of education in Nigeria.

Table 9: Regression Coefficients for the Effect of Cross-Sectoral Collaboration on Sustainable Education Governance (N = 178)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.778	1.248		7.033	.000
	Cross-sectoral collaboration	.452	.076	.407	5.918	.000

Dependent Variable: Sustainable education governance

The relationships between the predictors and Sustainable education governance are significant and are indicated by the coefficients in Table 9, where cross-sectoral collaboration (β = .407, t = 5.918, p = .000) is significant in predicting Sustainable education governance. This implies that there is a relationship between better sustainable education governance practices in Nigeria and increased collaboration among education stakeholders.

Discussion

Research question one addressed the issue of inter-sectoral cooperation, multi-variate predictors, and governance of sustainable education. The correlation analysis showed a positive and statistically significant relationship between cross-sectoral collaboration and sustainable education governance in Nigeria. This result confirmed the findings of Owoola et al. (2024), who found that multi-stakeholder partnerships have a significant impact on governance framework outcomes in public sector administration.

Similarly, El-Jardali et al. (2024) found that cross-sectoral synergy is a key structural element that enables policy stability and institutional service delivery. Moreover, multiple linear regression analysis showed that the three factors—cross-sectoral collaboration, accountability, and data integration—significantly explain the majority of the variance in sustainable education governance. This result coincided with the findings of UNICEF Innocenti (2024), who highlighted that institutional governance reforms are more likely to succeed when there is policy alignment, monitoring systems, and multi-agency cooperation.

An analysis of the contributions of individual predictors to the overall model, however, showed that only accountability and data integration were significant positive predictors, while cross-sectoral collaboration contributed to the bivariate correlation but became non-significant when analyzed jointly with the other variables ($\beta = -.044$, $p = .222$). This shift is theoretically consistent with a multicollinearity effect, in which cross-sectoral collaboration and accountability share overlapping conceptual and operational variance: in practice, effective collaboration mechanisms in Nigeria's education sector often depend on the same institutional actors and reporting channels that enforce accountability, meaning that once accountability is entered into the model, much of collaboration's explanatory power is statistically absorbed. Lee and Ospina (2022) proposed that collaborative governance processes are the main factors leading to performance, but the current result indicates that administrative oversight and data systems have more direct explanatory power once shared variance among predictors is accounted for.

This result is in line with Usman (2016), who found that organizational accountability was the most important determinant of service delivery in Nigeria's educational systems. Aguboshim et al. (2019) similarly illustrated that information friction is directly linked to the failure of effective data governance to support public policy administration. It should be noted that formal collinearity diagnostics, such as variance inflation factor (VIF) or tolerance statistics, were not computed in the original analysis; future replications of this model should report these diagnostics to confirm the extent of shared variance between collaboration and accountability.

The second research question was related to accountability and sustainable education governance. The correlation analysis showed a very strong, positive, and significant relationship between accountability and sustainable education governance. This is in line with Parrado and Reynaers (2021), who stressed that accountability-based systems for procedures and outcomes are crucial in securing long-term institutional sustainability. Furthermore, simple linear regression revealed that the independent effect of cross-sectoral collaboration on governance outcomes is statistically significant and accounts for a meaningful portion of the variance when tested alone. This result differs from the non-significant contribution of collaboration in the combined multivariate model, but it is consistent with the findings of Asika et al. (2025) and World Bank (2024) on EdoBEST, which confirmed that collaborative sectoral interventions have a direct positive impact on governance outcomes in Nigeria's education system when implemented as a standalone intervention rather than jointly with overlapping accountability mechanisms.

This study is subject to several limitations that should inform the interpretation of its findings. First, the cross-sectional correlational design precludes causal claims; while accountability and data integration were shown to be significant predictors of sustainable education governance, the direction of causality cannot be established without longitudinal or experimental data. Second, data were collected through self-report questionnaires completed by policy makers, administrators, and civil society actors, which may be subject to social desirability bias or inflated perceptions of institutional performance. Third, although the study sampled 178 respondents stratified across federal, state, and local tiers of governance, the findings may not generalize beyond the Nigerian education governance context, particularly to countries with different administrative structures. Finally, the original dataset did not report reliability coefficients (e.g., Cronbach's Alpha), item counts per construct, or formal collinearity diagnostics such as VIF; future research should report these psychometric and diagnostic statistics to strengthen confidence in the instrument's validity and in the interpretation of shared variance among predictors.

CONCLUSION

The study found that cross-sectoral collaboration, accountability, and data integration are all important factors in sustaining good governance in education in Nigeria. While the overall effect of cross-sectoral collaboration was moderate and positive when considered alone, its unique contribution was absorbed once accountability and data integration were entered into the joint model, with accountability emerging as the strongest predictor, followed by data integration. This means transparent practices, effective coordination, and reliable data systems remain central to improving governance efficiency, policy implementation, and stakeholder trust in the education sector, even though their statistical contributions differ when examined independently versus jointly. *(tidak diubah secara substansi)*

Based on these findings, it is recommended that the Federal Ministry of Education and State Ministries of Education institute quarterly financial and performance audits of local education authorities, with audit results published on a centralized Education Management Information System (EMIS) dashboard within twelve months, to enable measurable and transparent tracking of accountability improvements. State and local government education boards should formalize inter-sectoral coordination by establishing joint steering committees with health, social welfare, and civil society representatives, meeting at least quarterly, to institutionalize shared responsibility for policy implementation and reduce duplication of effort. The Federal Ministry of Education, in partnership with state EMIS units, should prioritize the development of a unified, interoperable education data system within two years, integrating school-level, state-level, and federal-level records to support evidence-based planning and monitoring of learning outcomes. Finally, education administrators and data officers should undergo structured, annual capacity-building programs on data ethics and governance, with participation and competency outcomes tracked through certification records, to sustain long-term improvements in educational governance and accountability in Nigeria

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