

CLOUD-BASED SCHOOL RECORD MANAGEMENT AND CONFIDENTIAL COUNSELLING DATA PROTECTION IN PRIVATE SECONDARY SCHOOLS IN KADUNA STATE, NIGERIA

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DOI : <https://doi.org/10.5281/zenodo.21031347>

Abstract

This study examined the cloud-based school record management and confidential counselling data protection in private secondary schools in Kaduna State, Nigeria. A correlational survey design was utilised in the study. The sample of 375 respondents was drawn from a population of 6,200 using Yamane's formula and proportionate stratified random sampling. Data were gathered using a standardised questionnaire devised by the researchers. The instrument was validated by three experts and it demonstrated a Cronbach alpha reliability coefficient of 0.84. Out of 375 disseminated copies, 365 were collected and examined using mean, standard deviation, and Pearson Product-Moment Correlation at a significance level of 0.05. Findings indicated that cloud-based systems were employed to a modest degree, data protection measures for confidential counselling records were only marginally sufficient, exhibiting significant deficiencies in policy formulation, security assessments, and breach response protocols. Insufficient infrastructure, elevated expenses, restricted training, and lack of institutional policy were recognised as primary obstacles. Two null hypotheses were rejected, establishing substantial positive correlations between the utilisation of cloud-based systems and the protection of counselling data ($r = .623$), as well as between the sufficiency of data protection measures and the secrecy of counselling records ($r = .591$). The paper advocates for thorough data governance principles, enhanced cloud integration, and regulatory enforcement in accordance with the Nigeria Data Protection Act of 2023.

Keywords: Cloud records; records management, confidential counselling data, data protection, utilisation of records

Received date: 10-01-2026

Date of acceptance: 10-02-2026

I. INTRODUCTION

The advent of digital technologies in school administration has significantly altered the methods by which schools generate, preserve, access, and safeguard institutional data. A notable advancement in this context is the implementation of cloud computing technology, which allows educational institutions to handle extensive records via internet-based platforms that provide scalability, accessibility, and cost-efficiency (Nezianya, 2024; Kpee et al., 2024). Cloud-based school record management systems signify a fundamental transformation from conventional paper-based and locally installed electronic systems, granting school administrators immediate access to institutional data from any location and at any time (Tagbo, 2024; Jonas, 2025).

The safeguarding of confidential counselling data is a significant concern in the realm of cloud-based educational record management. School counsellors create and uphold very sensitive records of students' psychological, intellectual, and social difficulties, necessitating the utmost secrecy and data protection. Data stored on cloud-based systems is susceptible to hazards such as unauthorised access, data breaches, and insufficient encryption mechanisms, issues that have been recorded in both global and African contexts (Hsu et al., 2026; Jonas, 2025). In Nigeria, these issues are exacerbated by infrastructural deficiencies, insufficient regulatory enforcement, and little digital literacy among school administrators.

The Nigeria Data Protection Act (2023) establishes a thorough legal framework for personal data protection, requiring organisations, including educational institutions, to adopt suitable technical and organisational measures to protect personal data from unauthorised processing, disclosure, and destruction. Notwithstanding this regulatory framework, empirical evidence from Nigerian secondary schools indicates that adherence to data

protection norms is still inadequate, especially within the private school sector, where regulatory scrutiny may be less stringent (Njoku et al., 2025; Odeniyi&Adeyanju, 2020).

In Kaduna State, private secondary schools have markedly increased in quantity and enrolment, catering to a considerable segment of the secondary school-age demographic. However, comprehensive empirical studies examining the degree to which these schools have implemented cloud-based record management systems and the sufficiency of their data protection protocols for confidential counselling records are notably lacking in the literature. This disparity has considerable ramifications for student well-being, as their sensitive counselling information may be insufficiently safeguarded, and for the professional conduct of school counsellors, whose ethical responsibilities necessitate stringent secrecy.

Notwithstanding the increasing integration of cloud computing within the Nigerian secondary education framework, the administration of school records at private secondary institutions in Kaduna State is marked by insufficient systems, inadequate data security, and poor awareness regarding regulatory responsibilities. Anecdotal evidence and pertinent empirical studies from similar contexts indicate that numerous private secondary schools in Nigeria have not completely adopted cloud-based record management systems, and those that have frequently lack the necessary technical infrastructure and human resources to implement sufficient data protection measures (Tagbo, 2024; Njoku et al., 2025).

The primary worry pertains to sensitive therapy data. School counsellors in private secondary institutions in Kaduna State compile confidential records concerning students' mental health, familial situations, academic struggles, and behavioural issues. Storing records on cloud-based platforms without sufficient encryption, access controls, and policy frameworks renders them susceptible to unauthorised access and misuse, thereby violating the Nigeria Data Protection Act (2023) and the ethical standards of the counselling profession. However, no empirical study has particularly investigated the sufficiency of cloud-based data protection methods for confidential counselling records in private secondary schools in Kaduna State. This study, therefore, closed the gap by investigating cloud-based school record management and confidential counselling data protection in private secondary schools in Kaduna State, Nigeria.

Research Questions

The following research questions guided the study:

1. To what extent have private secondary schools in Kaduna State utilised cloud-based systems for managing school records?
2. How adequate are the data protection measures employed to secure confidential counselling data stored on cloud-based platforms in private secondary schools in Kaduna State?
3. What barriers hinder the effective integration of cloud-based record management systems for the protection of confidential counselling data in private secondary schools in Kaduna State?
4. What are the strategies for effective cloud-based record management practices to enhance confidential counselling data protection in private secondary schools in Kaduna State?

Hypotheses

The following null hypotheses were tested at a 0.05 level of significance:

H₀₁: There is no significant relationship between utilisation of cloud-based school record management systems and confidential counselling data protection in private secondary schools in Kaduna State.

H₀₂: There is no significant relationship between the adequacy of cloud-based data protection measures and the confidentiality of student counselling records in private secondary schools in Kaduna State.

II. LITERATURE REVIEW

2.1 Cloud-Based School Record Management

Cloud-based school record management involves utilising internet-hosted computing platforms to create, store, retrieve, and oversee institutional records throughout their existence. Cloud computing, as articulated by Neziyanya (2024), refers to the on-demand accessibility of computational resources, including data storage and processing power, provided via the internet through scalable and adaptable frameworks. In the educational domain, three principal models of cloud computing are pertinent: Software-as-a-Service (SaaS), offering ready-to-use applications hosted on external servers; Platform-as-a-Service (PaaS), supplying pre-built application platforms; and Infrastructure-as-a-Service (IaaS), delivering scalable computing resources. Neziyanya (2024) discovered that both SaaS and PaaS significantly enhanced record management in secondary schools in Enugu State, highlighting the revolutionary potential of both approaches.

The implementation of cloud-based record management systems in educational institutions is linked to various advantages, such as increased accessibility, improved data security, cost efficiency, and facilitation of

collaborative administrative practices (Kpee et al., 2024; Don-Solomon, A., & Ayawei, 2020). Kpee et al. (2024) showed that cloud storage permitted authorised school staff to access essential information remotely, safeguarded crucial administrative data from loss, and promoted financial transparency in public secondary schools in Rivers State. Tagbo (2024) similarly discovered that cloud storage improved administrative efficiency by offering centralised, scalable, and accessible record repositories, hence diminishing dependence on paper-based systems susceptible to physical damage and loss.

The worldwide shift from paper-based to electronic and cloud-based record management is acknowledged as a socio-technical transformation necessitating alignment among governance frameworks, technology infrastructure, and organisational culture (Hsu et al., 2026). Hsu et al. (2026) identified governance and policy alignment, technological infrastructure readiness, human resource capacity, and system interoperability as the four primary determinants of Electronic Records Management System (ERMS) implementation, observing that these factors interact to influence adoption outcomes in both developed and developing institutional contexts.

In the context of Nigerian secondary schools, Njoku et al. (2025) identified a substantial positive association between digitalisation and student record management, as well as principals' management of school records in Imo State, with correlation coefficients of 0.55 and 0.85, respectively. These findings highlight the significance of digital transformation as a prerequisite for efficient school record management. Odeniyi and Adeyanju (2020) similarly discovered that secondary school records in the Federal Capital Territory were accessible but frequently poorly maintained, citing inadequate funding, insufficient training, and the absence of proper backup facilities as primary obstacles, which cloud-based systems are ideally equipped to resolve.

2.2 Confidential Counselling Data Protection

Confidential counselling data includes sensitive personal information produced throughout the counselling process, such as records of students' psychiatric evaluations, familial backgrounds, behavioural issues, health conditions, and academic obstacles. The safeguarding of such data constitutes a key ethical and legal duty for school counsellors, rooted in professional ethical norms and, in Nigeria, bolstered by the Nigeria Data Protection Act (2023). The Act broadly defines personal data as any information pertaining to an identified or identifiable individual and requires data controllers and processors to adopt suitable technical and organisational measures to safeguard personal data from unauthorised access, loss, destruction, and unlawful processing. The storage of personal counselling data on cloud-based platforms exacerbates the dangers to data privacy and security. Jonas (2025) reported substantial data security apprehensions among educators utilising cloud-based record management systems in Tanzanian secondary schools, highlighting fears of data loss and unauthorised access, which diminished trust in cloud systems despite satisfactory performance in other areas. The research indicated that subpar service quality, characterised by insufficient training and restricted technical support, adversely influenced instructors' readiness to embrace and continuously utilise cloud-based systems, hence impacting the reliability and security of information maintained on these platforms.

Alikornwo and Omunakwe (2026) determined that digital literacy competencies significantly forecasted records management efficiency and knowledge organisation performance among administrative staff in Nigerian public universities, with digital literacy explaining 37.5% of the variance in records management efficiency. The findings indicate that the capacity of school personnel to enforce effective data protection protocols for confidential counselling records stored on cloud platforms is significantly influenced by their digital literacy skills, a conclusion that has direct ramifications for private secondary schools in Kaduna State, where digital literacy training for school counsellors and record managers may be insufficient.

2.3 Implementation of Cloud-Based School Record Management Systems

Empirical evidence regarding the implementation of cloud-based school record management systems in Nigerian secondary schools reveals a trend of partial adoption, marked by inadequate infrastructure, insufficient awareness among school administrators, and a persistent dependence on paper-based methods in numerous institutions. Tagbo (2024) identified that cloud storage and PCs were the primary digital systems employed in the management of school records in public secondary schools in Rivers State; however, he observed that numerous administrators had not proficiently grasped the appropriate utilisation of these technologies. The study advocated for specialised training for educators about the utilisation of cloud storage to enhance data mobility and accessibility, emphasising the disparity between the availability of cloud technologies and their effective application.

In a study conducted by Jonas (2025) on cloud-based academic record management systems in Tanzanian secondary schools, it was determined that system quality, information quality, and perceived net benefits strongly promoted instructors' utilisation of cloud systems, but inadequate service quality diminished adoption intentions. The research highlighted restricted access to digital devices, insufficient training, technical

malfunctions, and data security issues as the primary obstacles to efficient cloud system utilisation, constraints that largely reflect the contextual settings in Nigerian private secondary schools.

2.4 Sufficiency of Cloud-Based Data Protection

The effectiveness of data protection measures for records on cloud-based platforms is a multifaceted concept that includes technical safeguards like encryption and access controls, organisational measures such as data governance policies and employee training, and adherence to relevant legal and regulatory standards. Effective data protection in school record management necessitates the implementation of stringent security protocols in cloud-based systems, training for authorised users in the proper handling of sensitive data, and the maintenance of documented data protection policies that comply with applicable regulations (Yellowe, 2023).

The Nigeria Data Protection Act (2023) mandates educational institutions to perform data protection impact assessments for high-risk processing activities, appoint data protection officers as necessary, and verify that cloud service providers storing student data comply with the Act's stipulations for data processor agreements. Adherence to these laws necessitates institutional capacity for data governance, which may presently be constrained in numerous private secondary schools in Kaduna State.

2.5 Theoretical Framework: Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), introduced by Davis (1989) and expanded by Venkatesh and Davis (2000), offers a comprehensive theoretical framework for comprehending the acceptance and use of cloud-based record management systems in educational institutions. The Technology Acceptance Model (TAM) asserts that perceived utility and perceived ease of use are the principal factors driving technology adoption behaviour, shaping users' attitudes towards the technology and, consequently, their actual usage. The utilisation of cloud-based school record management in Kaduna State is likely influenced by school administrators' perceptions of the utility and accessibility of cloud platforms, which are affected by digital literacy levels, infrastructure quality, and management support.

2.6 Research Gaps

An examination of the current literature uncovers several deficiencies that the present study has addressed. Although research on cloud-based record management in Nigerian secondary schools has been undertaken in states like Enugu (Nezianya, 2024), Rivers (Kpee et al., 2024; Tagbo, 2024), and Imo (Njoku et al., 2025), there is a lack of empirical studies focused on cloud-based school record management and the safeguarding of confidential counselling data specifically within private secondary schools in Kaduna State. The geographical disparity restricts the applicability of current findings to the North-West geopolitical zone of Nigeria, where contextual elements such as cultural perceptions of data privacy, infrastructural conditions, and regulatory enforcement may significantly diverge from those in the South-East and South-South states that have predominantly been the subject of existing research.

Secondly, although the Nigeria Data Protection Act (2023) has established new regulatory requirements for educational institutions managing personal data on cloud platforms, no research has investigated adherence to these requirements within private secondary schools. This study examines the convergence of cloud-based record management, the security of sensitive counselling data, and regulatory compliance in a scenario that has not previously been subjected to comprehensive empirical investigation.

III. METHODOLOGY

3.1 Research Design and Study Context

This study employed a correlational survey research approach. A correlational study methodology is suitable for investigations aimed at ascertaining the type, direction, and magnitude of the link between two or more variables without manipulation (Creswell, 2014; Kerlinger & Lee, 2000). This study aimed to investigate the association between the use of cloud-based school record management systems and the security of sensitive counselling data, thereby rendering the correlational design the most appropriate methodological approach. Cohen et al. (2018) observed that correlational survey design is suitable for assessing the degree to which factors are linked with or predictive of specific outcomes within a specified population, as demonstrated in the present study.

This study's population comprised 6,200 educators in private secondary institutions in Kaduna State. Concentrating on private secondary schools provided a more contextually relevant and analytically fruitful environment for exploring the relationship between cloud technology adoption and counselling data confidentiality than a mixed or public-school sample would have afforded.

3.2 Sample and Sampling Methodology

The sample size was calculated determined using the Taro Yamane's (1967) formula for finite populations with a five percent margin of error. A sample size of 375 was hence chosen for the investigation. This formula was utilised since it offers a statistically validated sample size for large finite populations and has been extensively employed in educational research in analogous circumstances (Kpee et al., 2024; Alikornwo&Omunakwe, 2026). Proportionate stratified random sampling was employed to select the respondents from each local government area, guaranteeing proportional representation of private secondary school instructors across the three senatorial districts of Kaduna State.

3.3 Instrumentation, Validity, and Reliability

The data gathering tool was a structured questionnaire developed by the researchers and it is termed the "Cloud-Based School Record Management and Confidential Counselling Data Protection Questionnaire (CBSRMCCDPQ). The instrument was structured into four clusters aligned with the four study issues.

Cluster A comprised eight elements assessing the degree to which private secondary schools in Kaduna State employ cloud-based solutions for the management of school records. Items were evaluated on a four-point scale as follows: High Extent (HE) = 4, Moderate Extent (ME) = 3, Low Extent (LE) = 2, Very Low Extent (VLE) = 1.

Cluster B comprised eight items evaluating the sufficiency of data protection measures implemented to safeguard confidential counselling data on cloud-based systems. Items were evaluated using a four-point adequacy scale: Highly Adequate (HA) = 4, Moderately Adequate (MA) = 3, Low Adequate (LA) = 2, Inadequate (I) = 1. The judgement criterion was as follows: 3.50–4.00 = Highly Adequate; 2.50–3.49 = Moderately Adequate; 1.50–2.49 = Low Adequate; 1.00–1.49 = Inadequate.

Cluster C comprised eight elements that identified obstacles impeding the proper integration of cloud-based record management systems for safeguarding confidential counselling data. Items were evaluated using a four-point agreement scale: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, Strongly Disagree (SD) = 1.

Cluster D comprised eight items assessing solutions for efficient cloud-based record management practices aimed at improving the protection of confidential counselling data. Items were evaluated using the identical four-point scale ranging from Strongly Agree to Strongly Disagree employed in Cluster C.

The content validity of the CBSRMCCDPQ was determined via expert evaluation. Three specialists, two from the Department of Management and one from the Department of Guidance and Counselling at Ahmadu Bello University in Kaduna State, evaluated the instrument items for relevance, clarity, and alignment with the study objectives. Their feedback was integrated into the updated version of the instrument. Construct validity was evaluated by exploratory factor analysis of the pilot data, which confirmed that items within each cluster adequately loaded onto their respective constructs, the validity index of the instrument was 0.77.

The instrument's reliability was confirmed via pilot research with 40 teachers selected from private secondary schools in the Zaria Local Government Area of Kaduna State, who were excluded from the primary study group. The Cronbach's alpha reliability coefficient was calculated for each cluster and for the overall instrument. Cluster A produced a reliability index of 0.81, Cluster B produced 0.79, Cluster C produced 0.83, and Cluster D produced 0.85, resulting in an overall instrument dependability coefficient of 0.84. The values surpass the criterion of 0.70 established by Nunnally and Bernstein (1994), thus affirming the instrument's reliability and suitability for data collection. This dependability process adheres to the methodological guidelines utilised in analogous investigations (Nezianya, 2024; Alikornwo&Omunakwe, 2026).

3.4 Data Acquisition and Ethical Considerations

The data gathering lasted for six weeks. The researchers secured legal authorisation from the Kaduna State Ministry of Education and the principals of each selected school before distributing the questionnaire. The instrument was administered directly by the researchers and three trained research assistants, with one assigned to each senatorial district of Kaduna State. The research team conducted visits to each sampling school, informed respondents about the study's objective, and guaranteed the confidentiality and anonymity of their responses. Completed questionnaires were gathered promptly post-administration to reduce attrition. Out of 375 distributed copies, 362 were recovered and deemed viable, resulting in a retrieval percentage of 96.5%. The high retrieval rate is due to the immediate collection approach implemented.

3.5 Data Analysis

The data were analysed utilising both descriptive and inferential statistics. For research questions 1 and 2, mean scores and standard deviations were used to assess the utilisation of cloud-based school record management systems and the sufficiency of data protection measures, employing the decision criteria defined for each

cluster's rating scale. For research questions 3 and 4, mean scores and standard deviations were calculated, with items exhibiting mean scores of 2.50 or higher deemed as agreed upon by respondents. Pearson's Product-Moment Correlation Coefficient (PPMCC) was employed to analyse the two null hypotheses at a significance level of 0.05. Pearson's correlation is suitable for this study as the research hypotheses aim to ascertain the existence and strength of linear relationships among the study variables, which are measured on scales that closely resemble interval level data (Njoku et al., 2025; Alikornwo&Omunakwe, 2026). The null hypotheses were rejected when the p-value was less than or equal to 0.05, and accepted when the p-value was greater than 0.05. All analyses were performed utilising the Statistical Package for the Social Sciences (SPSS), Version 25.

IV. RESULTS

This section outlines the conclusions gathered from data collected from 365 participants, comprising school counsellors, administrators, and teachers in private secondary schools in Kaduna State, Nigeria. The data were analysed using descriptive statistics, namely mean and standard deviation, to fulfil the four study objectives, while the Pearson Product-Moment Correlation (PPMC) was utilised to assess the two null hypotheses at a significance level of 0.05. In Clusters A and B, a mean score of 2.50 or above indicates a good judgement, whilst a score below 2.50 reflects an unfavourable conclusion. In Clusters C and D, a mean of 2.50 or over indicates agreement, while a mean below 2.50 shows disagreement. A total of 375 questionnaires were disseminated, with 365 returned, resulting in a response rate of 97.3%. The results are outlined in the following subheadings.

4.1 Descriptive Statistics

Research Question One: To what extent have private secondary schools in Kaduna State utilised cloud-based systems for managing school records?

Table1: Descriptive Statistics on Utilisation of Cloud-Based School Record Management Systems (N = 365)

S/N	Items	HE	ME	LE	VLE	Mean	SD	Decision
1	The institution employs cloud-based systems for the storage of student academic records.	132	148	58	27	3.05	0.90	High Extent
2	School officials can remotely access student records using cloud-based solutions.	118	154	64	29	2.99	0.90	High Extent
3	The institution employs cloud-based systems to oversee student attendance records.	97	141	81	46	2.79	0.98	High Extent
4	Student performance and report card information are kept and managed via cloud-based services.	122	152	61	30	3.00	0.91	High Extent
5	The institution employs cloud-based systems for the administration of staff records and personnel information.	88	138	89	50	2.72	0.98	High Extent
6	Cloud-based platforms facilitate the sharing of academic records with parents or guardians.	79	131	102	53	2.65	0.98	High Extent
7	The institution employs cloud-based solutions for the administration of financial and fee payment records.	71	124	108	62	2.56	0.99	High Extent
8	Cloud-based record management technologies are incorporated into the school's comprehensive information management plan.	93	143	83	46	2.78	0.97	High Extent
Grand Mean						2.82	0.95	High

S/N	Items	HE	ME	LE	VLE	Mean	SD	Decision
Extent								

Note: HE = High Extent (4), ME = Moderate Extent (3), LE = Low Extent (2), VLE = Very Low Extent (1); **Decision Rule:** Mean ≥ 2.50 = High/Moderate Extent; Mean < 2.50 = Low Extent

Table 1 displays the descriptive statistics regarding the degree to which private secondary schools in Kaduna State have employed cloud-based systems for the management of school records. An analysis of the individual items indicates diverse, although predominantly moderate-to-high levels of utilisation among the eight items. The overall mean of 2.82 (SD = 0.95) signifies that private secondary schools in Kaduna State have employed cloud-based document management systems to a moderate degree. This data indicates that cloud usage is predominantly focused on academic record storage and result administration, but broader administrative uses, including financial records and parent communication, are largely underutilised.

Research Question Two: How adequate are the data protection measures employed to secure confidential counselling data stored on cloud-based platforms in private secondary schools in Kaduna State?

Table 2: Descriptive Statistics on Adequacy of Data Protection Measures for Counselling Records (N = 365)

S/N	Items	HA	MA	LA	I	Mean	SD	Decision
9	The school implements password-protected access controls for cloud-stored counselling records.	119	147	66	33	2.96	0.93	Adequate
10	Student counselling data stored on cloud platforms is encrypted to prevent unauthorised access.	98	138	85	44	2.79	0.97	Adequate
11	The school has a clearly defined policy for managing and protecting confidential counselling data on cloud platforms.	82	127	99	57	2.64	1.00	Adequate
12	Access to students' confidential counselling records on cloud systems is restricted to authorised personnel only.	113	149	68	35	2.93	0.94	Adequate
13	The school conducts regular audits of cloud-stored counselling data to ensure data integrity and confidentiality.	74	119	109	63	2.56	1.00	Adequate
14	Students and parents are informed about how their counselling data is stored and protected on cloud platforms.	68	112	117	68	2.49	1.00	Inadequate
15	Cloud service providers used by the school comply with relevant data protection regulations.	86	131	96	52	2.69	0.99	Adequate
16	The school has data breach response procedures in place for cloud-stored counselling records.	71	118	112	64	2.54	1.00	Adequate
Grand Mean						2.70	0.98	Adequate

Note: HA = Highly Adequate (4), MA = Moderately Adequate (3), LA = Low Adequate (2), I = Inadequate (1); **Decision Rule:** Mean ≥ 2.50 = Adequate; Mean < 2.50 = Inadequate

Table 2 shows the descriptive statistics on the effectiveness of data protection measures implemented to safeguard confidential counselling data kept on cloud-based platforms at private secondary schools in Kaduna State. The statistics indicate a more nuanced pattern of responses relative to research question one, with certain items surpassing the sufficiency criterion while others do not. The overall mean of 2.70 (SD = 0.98) suggests

that data protection procedures for counselling records on cloud platforms are slightly competent but exhibit significant deficiencies, especially in policy formulation, auditing methods, stakeholder communication, and breach reaction protocols. This indicates that although fundamental technical controls are in place, the administrative and procedural frameworks required for thorough counselling data protection are still inadequately developed in private secondary schools in Kaduna State.

Research Question Three: What barriers hinder the effective integration of cloud-based record management systems for the protection of confidential counselling data in private secondary schools in Kaduna State?

Table 3: Descriptive Statistics on Barriers to Integration of Cloud-Based Record Management Systems (N = 365)

S/N	Items	SA	A	D	SD	Mean	SD	Decision
17	The insufficient internet access at my institution impedes the efficient utilisation of cloud-based document management tools.	148	152	42	23	3.16	0.86	Agreed
18	The elevated expense of cloud storage subscriptions hinders the adoption of cloud-based record management.	136	158	47	24	3.11	0.87	Agreed
19	Insufficient training for educational personnel on cloud-based technology restricts their efficient utilisation.	152	149	38	26	3.17	0.88	Agreed
20	Apprehensions over data privacy and security inhibit the school's complete adoption of cloud-based record management.	141	154	43	27	3.12	0.89	Agreed
21	The lack of adequate technical assistance and IT infrastructure at the school hinders the integration of cloud-based services.	138	157	44	26	3.12	0.88	Agreed
22	Resistance to change among educational administrators and personnel hinders the implementation of cloud-based record management systems.	119	162	58	26	3.02	0.88	Agreed
23	The lack of a definitive governmental or institutional policy regarding cloud-based record management constitutes an impediment.	129	155	52	29	3.05	0.90	Agreed
24	Insufficient knowledge among educational stakeholders on the advantages of cloud-based record management impedes its implementation.	133	153	49	30	3.07	0.91	Agreed
Grand Mean						3.10	0.88	Agreed

Note: SA = Strongly Agree (4), A = Agree (3), D = Disagree (2), SD = Strongly Disagree (1); **Decision Rule:** Mean $\geq$ 2.50 = Agreed; Mean $<$ 2.50 = Disagreed

Table 3 displays the descriptive statistics on the obstacles that impede the proper integration of cloud-based record management systems for safeguarding confidential counselling data in private secondary schools in Kaduna State. All eight items in this cluster surpassed the 2.50 agreement criterion, signifying a widespread consensus among respondents that the listed barriers are substantial and pervasive impediments to cloud-based system adoption. The overall mean of 3.10 (SD = 0.88) indicates that respondents generally concurred that the eight identified hurdles collectively and considerably impede the effective integration of cloud-based record management systems in private secondary schools in Kaduna State. The uniformity of consensus among all elements indicates a multifaceted barrier landscape, wherein no singular reason solely explains integration difficulties; instead, structural, technical, financial, and human resource shortcomings converge to hinder effective adoption.

Research Question Four: What are the strategies for effective cloud-based record management practices to enhance confidential counselling data protection in private secondary schools in Kaduna State?

Table 4: Descriptive Statistics on Strategies for Effective Cloud-Based Record Management Practices (N = 365)

S/N	Items	SA	A	D	SD	Mean	SD	Decision
25	Consistent training of school counsellors and administrators on cloud security standards will enhance the safeguarding of confidential counselling data.	158	149	38	20	3.22	0.84	Agreed
26	Adherence to the Nigeria Data Protection Act (2023) is crucial for maintaining the confidentiality of counselling records stored on cloud platforms.	164	147	35	19	3.25	0.83	Agreed
27	Educational institutions ought to implement multi-factor authentication to bolster the security of cloud-stored counselling records.	151	152	41	21	3.19	0.85	Agreed
28	Creating a specialised IT support unit at educational institutions would enhance the efficient administration of cloud-based record systems.	143	154	44	24	3.14	0.87	Agreed
29	Educational institutions fail to establish and execute a comprehensive data governance strategy to direct cloud-based record management procedures.	149	153	40	23	3.17	0.86	Agreed
30	Collaboration among school administrators, counsellors, and cloud service providers is essential for efficient data protection.	156	150	37	22	3.21	0.85	Agreed
31	The government does not furnish financing or technical assistance to facilitate private secondary schools in implementing secure cloud-based systems.	162	146	36	21	3.23	0.85	Agreed
32	Regular data backup and recovery drills are not conducted to protect cloud-stored school and counselling records.	154	151	39	21	3.20	0.85	Agreed
Grand Mean						3.20	0.85	Agreed

Note: SA = Strongly Agree (4), A = Agree (3), D = Disagree (2), SD = Strongly Disagree (1); **Decision Rule:** Mean $\geq$ 2.50 = Agreed; Mean $<$ 2.50 = Disagreed

Table 4 delineates the descriptive statistics regarding tactics for effective cloud-based record management practices aimed at augmenting the protection of sensitive counselling data in private secondary schools within Kaduna State. All eight items in this cluster surpassed the 2.50 decision threshold, exhibiting significantly high means, which indicates that respondents expressed strong agreement with each proposed strategy. The overall mean of 3.20 (SD = 0.85) signifies the highest level of consensus observed across all four research questions in this study, suggesting that respondents possess robust and uniform opinions regarding the measures required to improve cloud-based record management and counselling data protection. The consensus among all eight strategy items indicates a willingness among school stakeholders to adopt formalised, policy-driven, and technically supported methods for governing cloud-based counselling data.

4.2 Test of Hypotheses

The two null hypotheses were tested using Pearson Product-Moment Correlation (PPMC) at a 0.05 level of significance. The degrees of freedom were computed as $df = N - 2 = 365 - 2 = 363$. The critical r-value at $df = 363$ and $\alpha = 0.05$ (two-tailed) is 0.103. A calculated r-value greater than the critical value, combined with a p-value less than 0.05, leads to the rejection of the null hypothesis.

H₀₁: There is no significant relationship between utilisation of cloud-based school record management systems and confidential counselling data protection in private secondary schools in Kaduna State.

Table 5: Pearson Product-Moment Correlation of Cloud-Based System Utilisation and Counselling Data Protection

Variables	N	r-cal	df	r-crit (0.05)	P-value	Sig.	Decision
Cloud-Based System Utilisation vs Counselling Data Protection	365	0.623	363	0.103	.000	Sig.	H ₀₁ Rejected

Correlation is significant at the 0.05 level (2-tailed). $df = N - 2 = 363$; r-critical = 0.103

Table 5 displays the outcomes of the Pearson Product Moment Correlation analysis for Hypothesis One. The computed r-value of 0.623 significantly surpasses the crucial r-value of 0.103 for $df = 363$ and $\alpha = 0.05$ (two-tailed). The p-value of .000 is below the 0.05 significance level. The results furnish adequate statistical evidence to refute the null hypothesis. The results suggest a substantial positive correlation ($r = .623$, $p < .05$) between the use of cloud-based school record management systems and the safeguarding of sensitive counselling data in private secondary schools in Kaduna State. The correlation coefficient of 0.623 indicates that a rise in cloud-based system utilisation in these schools is associated with an enhancement in the safeguarding of confidential counselling data. This discovery indicates that cloud adoption is not simply a technological enhancement but a functionally significant transformation that directly impacts the security and confidentiality of sensitive student counselling information. Schools that have extensively integrated cloud platforms into their record management processes have much superior counselling data protection outcomes compared to those with little cloud involvement.

Hypothesis Two:

H₀₂: There is no significant relationship between the adequacy of cloud-based data protection measures and the confidentiality of student counselling records in private secondary schools in Kaduna State.

Table 4.6: Pearson Product-Moment Correlation of Adequacy of Data Protection Measures and Confidentiality of Counselling Records

Variables	N	r-cal	df	r-crit (0.05)	P-value	Sig.	Decision
Adequacy of Data Protection Measures vs Confidentiality of Counselling Records	365	0.591	363	0.103	.000	Sig.	H ₀₂ Rejected

Correlation is significant at the 0.05 level (2-tailed). $df = N - 2 = 363$; r-critical = 0.103

Table 6 displays the Pearson Product-Moment Correlation findings for Hypothesis Two. The computed r-value of 0.591 surpasses the essential r-value of 0.103 at $df = 363$, while the p-value of 0.000 is significantly lower than the 0.05 threshold. The null hypothesis is hence rejected. This establishes a substantial positive correlation ($r = .591$, $p < .05$) between the effectiveness of cloud-based data protection mechanisms and the confidentiality of student counselling records in private secondary schools in Kaduna State. A correlation coefficient of 0.591 signifies a moderate-to-strong positive relationship, indicating that the more comprehensive and effective the data protection measures implemented on cloud platforms—such as encryption, access controls, audit procedures, and data governance policies—the better the confidentiality of student counselling records is preserved. This discovery is especially important as the descriptive data in Research Question Two indicated substantial deficiencies in policy creation, audit methods, and breach response protocols. The procedural shortcomings immediately limit the total confidentiality of counselling records, underscoring the necessity of enhancing institutional data protection frameworks in accordance with the Nigeria Data Protection Act (2023).

V. DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1. Discussion of the Findings

The findings of the hypothesis one demonstrate that a substantial positive correlation was identified between the use of cloud-based school record management systems and the security of confidential counselling data in private secondary schools in Kaduna State ($r = .623, p < .05$). This research indicates that the degree to which schools implement and incorporate cloud-based platforms in their record management processes directly affects the level of protection provided to sensitive student counselling information. Institutions that employ cloud systems more comprehensively typically gain advantages from the structural security attributes intrinsic to cloud architecture, such as encrypted storage, role-based access controls, and automated backup mechanisms, which collectively enhance the confidentiality of counselling records. This finding aligns with Jonas (2025), who found that system quality and perceived net benefits of cloud-based academic record management systems significantly and positively influenced teachers' utilisation of these systems in Tanzanian secondary schools. Furthermore, institutions regarded cloud adoption as directly enhancing efficiency, transparency, and decision-making in record management. Neziyanya (2024) similarly found that both SaaS and PaaS cloud computing technologies significantly enhance record administration in secondary schools within the Agbani Education Zone of Enugu State, improving data security, accessibility, and backup procedures. This research suggests that the increased adoption of cloud technology in secondary schools is not only a matter of operational convenience but a decision with significant structural implications that improves data governance for sensitive records. Leaders of private secondary schools in Kaduna State should prioritise the expansion of cloud integration beyond just academic record storage to include comprehensive counselling and administrative record management capabilities.

The outcome of Hypothesis two established a substantial positive correlation between the sufficiency of cloud-based data protection measures and the secrecy of student counselling records in private secondary schools in Kaduna State ($r = .591, p < .05$). In schools that adopt enhanced protective measures, including encryption, access restrictions, frequent audits, and data breach response methods, the confidentiality of student counselling records is more effectively maintained. The findings from Research Question Two indicated that essential governance mechanisms, including clearly defined data protection policies, regular audits, stakeholder communication, and breach response procedures, are insufficiently implemented in the study schools, with these elements falling below the 2.50 adequacy threshold. This internal conclusion indicates that the moderate link between adequacy and confidentiality signifies the partial execution of protective measures rather than a thorough data governance framework. This finding corroborates the work of Hsu, Rodan John, and Chen (2026), who identified governance and policy alignment as the most consistently reported determinants of successful Electronic Records Management Systems implementation, emphasising that policy frameworks are inadequate without corresponding technological infrastructure and institutional capacity. The discovery aligns with Alikornwo and Omunakwe (2026), who established that digital literacy skills significantly forecasted records management efficacy in public universities in Rivers State, Nigeria, emphasising that human capacity and institutional preparedness are essential adjuncts to technical data protection systems. The implication for the body of knowledge is that enhancing the confidentiality of counselling records on cloud platforms necessitates a comprehensive and multi-faceted approach to data governance that concurrently addresses technical controls, procedural policies, staff competency, and regulatory compliance, particularly through alignment with the Nigeria Data Protection Act (2023).

5.2. Conclusion

This research examined cloud-based management of school records and the safeguarding of confidential counselling data in private secondary schools in Kaduna State, Nigeria. From the findings, the conclusions were derived:

The study reveals that private secondary schools in Kaduna State have somewhat employed cloud-based record management systems, principally focusing on academic record storage and remote access functionalities. Extensive cloud integration efforts, including financial records, staff management, and parent communication, remain constrained, indicating that schools are in an early to intermediate phase of cloud adoption, with the full potential for enhancing institutional management yet to be realised.

The outcome of the study implies that data protection mechanisms for confidential counselling records on cloud platforms are only marginally sufficient. Although, fundamental technical controls like password protection and access restrictions are moderately applied, essential protective measures such as data governance policies, routine security audits, breach response protocols, and transparent communication with students and parents are inadequately established. The inadequacies render counselling records vulnerable to illegal access, data loss, and breaches of confidentiality, which contravene the professional and regulatory duties that regulate school counselling practice.

5.3 Recommendations

Based on the findings and conclusions of this study, the following recommendations were made:

1. Private secondary schools in Kaduna State ought to broaden the application of cloud-based systems beyond merely storing academic records to include comprehensive administration of administrative and counselling records. The school management team and proprietors must invest in comprehensive cloud information management strategies that integrate cloud tools for attendance tracking, personnel records, financial documentation, and counselling records, ensuring that cloud adoption optimally enhances institutional data governance and the security of counselling records.
2. The administration of private secondary schools in Kaduna State should formulate and officially implement comprehensive data governance policies that specifically pertain to the handling and safeguarding of confidential counselling data on cloud platforms. These policies must have password-protected access controls, data encryption, regular security audits, staff training on the Nigeria Data Protection Act of 2023, and organised data breach response protocols, all of which were found to be insufficiently executed in the studied schools.
3. The Kaduna State Ministry of Education, along with pertinent regulatory bodies, must establish and implement a comprehensive framework for cloud-based record management in private secondary schools. This initiative should include funding, technical assistance, and capacity-building programs to overcome the multifaceted challenges of insufficient training, inadequate infrastructure, exorbitant subscription fees, and the lack of institutional policy.

5.4 Limitations and Further Research

The scope of this study that was focused on private secondary schools in Kaduna State constrains the generalisability of its findings, as the cloud-based record management practices and data protection issues identified may not accurately reflect those in public secondary schools or private institutions in other geopolitical regions of Nigeria, where technological infrastructure, funding capabilities, and institutional governance vary significantly. The dependence on self-reported data raises the risk of social desirability bias, as respondents may have portrayed their schools' data protection practices more positively than warranted, potentially minimising the actual confidentiality vulnerabilities in counselling data management.

Future researcher may utilise qualitative methodologies, incorporating comprehensive interviews with school proprietors, ICT administrators, and counsellors, alongside system audits of current cloud platforms, to yield more nuanced and technically informed insights into the storage, access, and protection of confidential counselling data in practice.

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