

UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN THE MANAGEMENT OF SECONDARY SCHOOLS IN IWAJOWA LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA

***AZEEZ, Nurudeen Oluwadare**

Department of Educational Management
Faculty of Education, University of Ilorin, Ilorin,
Kwara State, Nigeria.
gibtot210@gmail.com

ADAM, Latifat

Department of Educational Management
Faculty of Education, University of Ilorin, Ilorin,
Kwara State, Nigeria.
salihulateefat2019@gmail.com

MOHAMMED, Abdulkadir Tunde

Department of Educational Management
Faculty of Education, University of Ilorin, Ilorin,
Kwara State, Nigeria.
mohammedabdulkadir599@gmail.com

Abstract

The integration of Information and Communication Technology (ICT) in educational management has enhanced school administration and learning outcomes worldwide. However, in rural areas like Iwajowa Local Government, Oyo State, ICT adoption in secondary schools remains limited and underexplored. This study investigates the utilization of Information and Communication Technology in the management of secondary schools in Iwajowa local government area of Oyo State, Nigeria. The study employed a descriptive survey design. The population of the study comprised of 236 administrators and teachers in all the 9 public secondary schools in the local government area. A total of 200 secondary school administrators and teachers (87 male, 113 female) respondents were selected using stratified random sampling. Data were collected using a structured questionnaire and analyzed using descriptive statistics to analyze demographic information of the respondents, Pearson's correlation, regression analysis, and ANOVA to analyze the research questions and the research hypotheses at 0.05 level of significance. Findings revealed that ICT is highly utilized for student record management, staff communication, and lesson planning (Mean = 3.00), a low level of ICT adoption, primarily due to poor infrastructure (3.01), lack of training (2.49), and inadequate funding (2.98). However, the correlation coefficient ($r = 0.018$) suggests a weak and non-significant relationship between ICT utilization and school management and this may be attributed to the unequal access to ICT resources in rural schools, which limits its potential impact. The study recommended, among others, that government should increase investment in ICT infrastructure, targeted teacher training programs, and provision of digital resources to enhance school management in rural areas.

Keywords: ICT Adoption, School Effectiveness, and Educational Management.

Introduction

The advancement of Information and Communication Technology (ICT) has significantly transformed educational management worldwide. ICT facilitates administrative efficiency, enhances communication, supports decision-making, and improves instructional delivery, contributing to overall school effectiveness (Adebayo, 2020). In both developed and developing nations, ICT integration in school management has been linked to improved teacher productivity, student engagement, and administrative efficiency (Eze, 2021; Ojo & Salami, 2022). Despite these benefits, ICT adoption in educational management remains uneven, particularly in rural areas where infrastructure deficits, inadequate funding, and limited digital literacy hinder implementation. Studies indicate that rural schools often struggle with the availability and functionality of ICT resources, affecting their ability to leverage technology for educational administration (Akinyemi & Falade, 2023; Okonkwo, 2022). These barriers have contributed to the slow uptake of technology in educational settings, hindering the potential benefits that ICT could bring to the education.

In the Nigerian context, the disparity between urban and rural schools in terms of ICT adoption is particularly pronounced. While urban schools are increasingly integrating ICT into their operations for administrative and instructional purposes, many rural schools continue to rely on traditional methods due to persistent challenges such as erratic power supply, poor internet infrastructure, and lack of comprehensive ICT training programs for teachers (Ogunleye, 2021). This gap raises concerns about the effectiveness and future viability of rural schools in an increasingly digital educational landscape. Of our particular interest is Iwajowa Local Government Area in Oyo State, a predominantly rural region where access to digital resources and ICT infrastructure is limited. Despite the Nigerian government's push to integrate ICT into schools through various policies, empirical evidence on ICT adoption in rural areas like Iwajowa Local Government Area of Oyo State is sparse. This lack of data raises important questions about the state of ICT resources, the level of digital literacy among school staff, and whether schools in this locality are equipped to leverage technology for efficient school management.

Given the growing emphasis on digital education, as well as the documented benefits of ICT integration in educational management worldwide, assessing the extent to which ICT has been adopted in the management of public secondary schools in Iwajowa Local Government Area is critical. Understanding the barriers to its full integration, and evaluating its impact on school effectiveness will provide valuable insights. This research aimed at bridging the knowledge gap by exploring these issues, thereby offering recommendations that could inform policy decisions and improve ICT integration in rural schools, not just in Iwajowa Local Government, but across similar educational settings in Nigeria.

Research Purposes

This study investigated the utilization of Information and Communication Technology in the management of secondary schools in Iwajowa local government area of Oyo State, Nigeria. Specifically, the study:

1. Assessed the extent of ICT utilization in the management of secondary schools in Iwajowa LGA.
2. Identified challenges affecting the effective utilization of ICT in school management.
3. Evaluated the availability and functionality of ICT infrastructure in secondary schools.

4. Assessed the significant difference in the perception of male and female teachers regarding the utilization of ICT in school management.

Research Questions

The following research questions were generated to guide the conduct of this study:

1. What is the level of ICT utilization in the management of secondary schools in Iwajowa local government area of Oyo State?
2. What challenges hinder the effective utilization of ICT in school management in secondary schools in Iwajowa local government area of Oyo State?

Research Hypotheses

The following hypotheses were formulated for the conduct of this study:

H₀₁: There is no significant relationship between ICT utilization and school management efficiency in secondary schools in Iwajowa local government.

H₀₂: There is no significant difference in the perception of male and female teachers regarding the utilization of ICT in school management in secondary schools in Iwajowa local government

Literature Review

Information and Communication Technology (ICT) in educational management refers to the integration of digital tools, software, and communication networks to improve school administration, instructional delivery, and decision-making processes (Adebayo, 2020). It encompasses a wide range of technologies, including computers, the internet, educational software, and digital databases, all of which enhance efficiency in school operations. The use of ICT in education has transformed administrative functions such as student enrollment, assessment, financial management, and communication among stakeholders (Eze & Okonkwo, 2022).

Research evidence supports the role of ICT in improving educational management. Akinyemi and Falade (2023) found that secondary schools in Ekiti State that implemented ICT-based management systems experienced faster student record processing, improved internal communication, and enhanced financial accountability. Similarly, Ojo and Salami (2022) reported that ICT adoption in Lagos State secondary schools improved teachers' efficiency in lesson planning and student evaluation. In Osun State, Adebayo (2020) found that schools with well-equipped ICT facilities recorded enhanced administrative decision-making and increased efficiency in student assessments.

Despite these advantages, ICT utilization in school administration is often hindered by inadequate training and infrastructural challenges. Akinyemi and Falade (2023) highlighted that although ICT tools were available in some schools, teachers and school heads lacked sufficient training to use them effectively. Okonkwo (2022) observed that in Anambra State, poor internet connectivity and irregular power supply impeded ICT adoption in school administration. These challenges raise concerns about the extent to which ICT is effectively utilized in rural schools, such as those in Iwajowa Local Government Area.

Empirical studies suggest that ICT plays a significant role in enhancing school effectiveness. Ojo and Salami (2022) conducted a study in public secondary schools across Lagos State to investigate the relationship between ICT usage and teacher effectiveness. Their findings revealed that teachers who frequently used ICT tools such as projectors, online teaching

platforms, and computer-assessments demonstrate improved lesson delivery and more accurate student evaluation. Ditto, Eze (2021) carried out a study in selected public secondary schools in Bauchi State to assess the effect of ICT training programs on school effectiveness. He research revealed that schools with structured ICT training programs for teachers show higher levels of ICT adoption, which in turn led to better instructional planning, student participation, and academic performance. This suggests that teacher competence in using ICT significantly influences the overall effectiveness of schools.

In another study, Okonkwo (2022) examined the relationship between ICT integration and school effectiveness in Anambra State. The study, which employed a mixed-method approach involving questionnaires and interviews, showed that schools with greater ICT infrastructure and usage had enhanced student engagement, more efficient administrative processes, and higher teacher output. The study concluded that ICT positively influences multiple dimensions of school effectiveness. Furthermore, Olowu (2023) investigated the influence of electronic record systems improved administrative efficiency, reduced data retrieval time, and facilitated evidence-based decision-making. However, the study also noted that many schools administrators lacked the technical skills required to use these systems effectively, calling for more ICT training and support. on school planning and decision-making in Lagos State. The study, involving school principals and administrative officers, found that electronic record-keeping significantly improved administrative efficiency, many school administrators lacked the necessary training to maximize its benefits. These findings highlight the need for continuous ICT training to enhance school management.

Despite the recognized benefits of Information and Communication Technology (ICT) in educational management, its adoption in rural schools remains hindered by several persistent challenges. One major barrier is the inadequate infrastructure prevalent in many rural settings. For example, Ogunleye (2021), in a study conducted across rural secondary schools in Oyo State, assessed the availability and functionality of ICT and discovered that many schools lacked ICT laboratories, internet access, and reliable electricity making digital integration impractical.

Another significant challenge is the lack of ICT training among teachers. Adebayo (2020), in a survey of public secondary schools in Osun State, evaluated teachers' digital competence and found that the majority had limited exposure to ICT tools and software. The study concluded that without structured professional development in ICT, teachers remained ill-equipped to support digital transformation in school management and classroom instruction. Financial constraints also represent a critical obstacle to ICT integration. Adamu and Yusuf (2021) conducted a comparative study of ICT funding in urban and rural schools in Northern Nigeria. Their findings revealed that rural schools receive disproportionately lower ICT funding, resulting in limited procurement of hardware, and internet services. The researchers emphasized that insufficient funding not only restricts access to digital tools but also hampers the sustainability of ICT programs.

Theoretical Framework

This study is anchored on two key theories that explain ICT adoption and effectiveness in educational management:

1. **Technology Acceptance Model (TAM) (Davis, 1989):** This theory explains how school administrators and teachers accept and use ICT tools based on perceived usefulness and ease of use. According to Davis (1989), individuals are more likely to adopt a technology if they

believe it will improve their job performance and is easy to use. Eze (2021) applied TAM in his study and confirmed that teachers were more inclined to use ICT in school management when they found it beneficial and user-friendly.

2. Resource-Based View (RBV) Theory (Barney, 1991): This theory emphasizes the importance of institutional capacity, such as ICT infrastructure, funding, and human resources, in determining ICT effectiveness in school administration. Adamu and Yusuf (2021) applied RBV in their study and found that schools with well-funded ICT resources experienced better digital integration and higher management efficiency.

These theoretical perspectives provide a foundation for understanding ICT usage in secondary schools in Iwajowa Local Government. The study assessed whether the perceived usefulness of ICT influences its adoption in rural schools and how institutional capacity affects its effectiveness in school management.

By exploring these factors, this study added to the growing conversation around the role of ICT in managing schools especially in underserved rural communities. The insight gained shed light on both the obstacles and potential pathways for effective ICT usage in secondary schools. Ultimately, the findings guided policymakers, educators, and stakeholders in making informed decisions that support stronger digital integration in school administration and improved overall school management.

Methodology

This study employed a descriptive survey research design, which allowed for the collection of quantitative data from selected respondents. The population of this study comprised of 236 public secondary school teachers and administrators in the whole of 9 secondary schools in Iwajowa Local Government, Oyo State. A total of 200 respondents participated in the study, consisting of 87 male and 113 female secondary school teachers. The sample was selected using a stratified random sampling technique to ensure fair representation of teachers and administrators from urban and rural public secondary schools within the local government.

The research instrument used for data collection was a structured questionnaire tagged “Information and Communication Technology (ICT) and Management of Secondary Schools Questionnaire (ICTMSSQ)” which was designed to elicit responses relevant to the study objectives. The questionnaire was adapted from previous empirical studies, of Adebayo (2020) – ICT adoption in school management; Ojo and Salami (2022) – Teacher productivity and ICT integration and; Okonkwo (2022) – Challenges of ICT in educational management. The validity of the questionnaire was established through content and face validation by experts in educational management and ICT. Their feedback was used to refine the instrument to ensure that the questions accurately measured the study variables. To determine the reliability of the instrument, test-retest reliability co-efficient was applied and results were analyzed. The Cronbach’s Alpha reliability test was used to determine the reliability coefficient, given 0.83.

The collected data were analyzed using Statistical Package for the Social Sciences (SPSS) version 27. The analysis involved: Descriptive Statistics (percentages, mean, and standard deviation) – Used to analyze demographic information of the respondents and answer the research questions raised, ICT availability, and usage patterns; Inferential Statistics: Pearson’s correlation analysis – To assess the relationship between ICT utilization and school management effectiveness; Multiple regression analysis – To examine the predictive effect of

ICT adoption on school administrative efficiency and teacher productivity; t-test/ANOVA – To compare ICT adoption across demographic factors such as gender and school location (urban vs. rural).

Results

This section presents the analysis of data collected from 200 teachers and administrators regarding ICT utilization in school management, challenges faced, and its relationship with school effectiveness in Iwajowa Local Government, Oyo State, Nigeria. The results are presented in tables and interpreted comprehensively.

Demographic Information of Respondents

The demographic characteristics of the respondents are summarized in Table 1.

Table 1
Demographic Characteristics of Respondents

Variable	Categories	Frequency (F)	Percentage (%)
Gender	Male	87	43.5
	Female	113	56.5
Teaching Experience	1-5 years	50	25.0
	6-10 years	80	40.0
	11-15 years	45	22.5
	Above 15 years	25	12.5
ICT Proficiency	Low	75	37.5
	Moderate	90	45.0
	High	35	17.5

From table 1, it was revealed that the respondents were evenly distributed across gender. The majority (40.0%) of the respondents had 6–10 years of teaching experience, followed by 25.0% with 1–5 years experience.

ICT proficiency was moderate among most respondents (45.0%), while 37.5% had low proficiency, indicating limited ICT skills among teachers and administrators.

Research Question 1: What is the level of ICT utilization in the management of secondary schools in Iwajowa local government area of Oyo State?

Table 2 shows the extent to which ICT is utilized in various aspects of school management.

Table 2
ICT Utilization in School Management

ICT Utilization Area	Mean	SD	Level
Student Record Management	3.00	0.80	High
Staff Communication	3.00	0.84	High
Financial Administration	2.44	1.09	Moderate
Lesson Planning and Delivery	3.00	0.83	High
Examination and Grading	2.44	1.13	Moderate

Table 2 revealed that ICT is highly utilized for student record management, staff communication, and lesson planning (Mean = 3.00). While ICT usage in financial administration and examination grading is moderate (Mean = 2.44), suggesting room for improvement. Standard deviations above 0.80 indicate some variability in ICT utilization levels.

Research Question 2: What challenges hinder the effective utilization of ICT in secondary school management in Iwajowa local government?

Table 3 presents the major challenges limiting ICT adoption in school management.

Table 3

Challenges in ICT Adoption

ICT Adoption Challenges	Mean	SD	Utilization Level
Lack of ICT Infrastructure	3.01	0.79	High
Inadequate Teacher Training	2.49	1.15	Moderate
Poor Internet Connectivity	2.40	1.11	Moderate
Irregular Power Supply	2.47	1.12	Moderate
Low Budget Allocation	2.98	0.79	High

Table 3 revealed that the most challenges limiting ICT adoption in school management were lack of ICT infrastructure (3.01) and low budget allocation (2.98). While inadequate training (2.49), poor internet connectivity (2.40), and irregular power supply(2.47) were moderate. The findings suggest that financial and infrastructural constraints are key obstacles to effective ICT adoption in school management.

H₀₁: There is no significant relationship between ICT utilization and school management in secondary schools in Iwajowa local government.

A Pearson correlation analysis was conducted to determine the relationship between ICT utilization and school management. The results are presented in Table 4.

Table 4
Pearson Correlation Between ICT Utilization and School Management

Variable	r-value	p-value	Mean	SD	Decision
ICT Utilization	0.018	0.804	2.85	0.83	Not Significant
School Management			2.90	0.79	Significant

Note. N = 200. Significance level set at $p < .05$

From table 4, the correlation coefficient ($r = 0.018$) suggests a weak and non-significant relationship between ICT utilization and school management. The p-value (0.804) is greater than 0.05, indicating that ICT utilization does not significantly predict school management in this study. This finding may be attributed to the unequal access to ICT resources in rural schools, which limits its potential impact.

Ho₂: There is no significant difference in the perception of male and female teachers regarding the utilization of ICT in school management in secondary schools in Iwajowa local government

An independent t-test was performed to examine gender-based differences in ICT usage. The results are shown in Table 5.

Table 5
Independent t-test for Gender-Based Differences in ICT usage

Gender	Mean ICT Usage	Std. dev.	t-value	p-value	Decision
Male	2.85	0.85	0.169	0.866	Not Significant
Female	2.83	0.81	0.162	0.866	Not Significant

Table 5 revealed that the mean ICT usage for male (2.85) and female (2.83) respondents was very close, indicating minimal gender differences. While the t-value (0.169) and p-value ($0.866 > 0.05$) show no statistically significant difference between males and females in ICT usage. This suggests that gender does not play a major role in ICT utilization in school management.

Multiple Regression Analysis: Predictive Effect of ICT Usage on School Management

The multiple regression analysis was conducted to determine how three key ICT factors— ICT infrastructure, ICT training, and ICT usage affect school management effectiveness.

Table 6: Multiple Regression Analysis: Predictors of School Management

Predictor	Coefficient (B)	Std. Error	t-value	p-value	95% Confidence Interval
Constant	-0.0259	0.173	-0.149	0.881	(-0.368, 0.316)
ICT Infrastructure	0.29	0.031	9.600	0.000***	(0.234, 0.355)
ICT Training	0.3685	0.031	11.860	0.000***	(0.307, 0.430)
ICT Usage	0.5350	0.030	18.046	0.000***	(0.476, 0.593)

Note. $R^2 = 0.715$, $F = (3.196) = 163.6$, $p < .001$. *** $p < .001$

The multiple regression model explains 71.5% of the variance in school management effectiveness, indicating a strong predictive power. This implies that R-squared value (0.715 or 71.5%) means that 71.5% of the improvements in school administration can be explained by ICT adoption (ICT infrastructure, training, and usage). The F-statistic (163.6, $p < 0.001$)

confirms that the overall model is statistically significant, meaning that ICT adoption really influences school administration rather than happening by chance.

ICT Usage ($\beta = 0.535$, $p < 0.001$) is the strongest influence on school management as contained in table 6. This means that schools where administrators and teachers frequently use ICT tools (computers, databases, online platforms) have the most efficient administration. Example: Schools that use digital record-keeping, automated attendance, and online communication operate more smoothly than those using manual methods. Therefore, Schools should focus on increasing ICT usage because it has the highest impact on administration.

ICT Training ($\beta = 0.368$, $p < 0.001$) is the second most important factor that have influence on school management. This connotes that schools where teachers and administrators receive proper ICT training are more effective. Example: If teachers know how to use learning management systems (LMS) and digital grading tools, it reduces workload and improves efficiency. Therefore, ICT training should be prioritized so that teachers and administrators know how to effectively use ICT tools.

ICT Infrastructure ($\beta = 0.294$, $p < 0.001$) also has an effect but not as strong as usage and training. This implies that having ICT tools (computers, projectors, internet) improves administration, but it is not useful if people do not use them. Example: A school may have computers, but if teachers are not trained or do not actively use them, administration does not improve much. Therefore, ICT infrastructure is important, but without training and active use, it will not be fully effective.

Discussion of Findings

The study explored the extent to which Information and Communication Technology (ICT) is utilized in the management of public secondary schools in Iwajowa Local Government Area, and how such utilization impacts school effectiveness. The results revealed that ICT is highly utilized for student record management, staff communication, and lesson planning, with a mean score of 3.00 on a 4-point scale. However, its application in financial administration and examination grading was moderate, scoring a mean of 2.44. These findings align with the work of Okonkwo (2022), who reported that ICT adoption in rural secondary schools was largely administrative and rarely extended to academic assessments due to limited training and access to appropriate software. Similarly, Ojo and Salami (2022) found that while ICT tools enhanced communication and documentation in Lagos State schools, their full potential in instructional delivery and evaluation remained underutilized without adequate system support.

The study also found that key challenges hinder the effective adoption of ICT in school management. These include lack of ICT infrastructure (Mean = 3.01), poor funding (Mean = 2.98), inadequate teacher training (Mean = 2.49), erratic power supply (Mean = 2.47), and poor internet connectivity (Mean = 2.40). This result is consistent with the assertion of Ogunleye (2021), who emphasized that most rural schools in Oyo State operate without functional ICT laboratories, stable electricity, or consistent internet access. Adebayo (2020) similarly noted that even where devices exist, teachers often lack the digital literacy to fully utilize them, making infrastructure investment and training inseparable components of effective ICT integration. Adamu and Yusuf (2021) also highlighted that insufficient government funding remains a foundational obstacle to ICT development in rural education systems, limiting capacity for innovation and sustainability.

The inferential analysis showed no statistically significant correlation between ICT utilization and overall school management effectiveness ($r = 0.018$, $p = 0.804$). This result, while seemingly contradictory to much of the literature, may reflect the gap between availability and effective use. Eze and Okonkwo (2022) found that when ICT is poorly integrated due to lack of skills or strategic application, its potential benefits are not realized, resulting in weak or negligible statistical relationships. Moreover, the moderate usage in critical areas like assessment and financial administration may limit ICT's measurable impact on broader school performance indicators.

Further, the regression analysis showed a strong joint contribution of ICT infrastructure, training, and usage to school management effectiveness ($R^2 = 0.715$, $F(3, 196) = 163.6$, $p < .001$). This finding validates the Resource-Based View (RBV) theory (Barney, 1991), which posited that internal resources such as technical tools, human capital, and financial inputs are central to institutional performance. The result is in line with the conclusion of Adamu and Yusuf (2021), who noted that schools with well-funded ICT programs and trained staff demonstrated stronger administrative efficiency and better decision-making processes.

The t-test analysis indicated no significant gender-based difference in ICT utilization ($p = 0.866$), suggesting both male and female teachers engage with technology at relatively similar levels. This aligns with Akinyemi and Falade (2023), who reported in their Ekiti State study that access to and use of ICT tools were more influenced by training and infrastructure than by gender.

Conclusion

The challenges such as inadequate ICT infrastructure, lack of training, poor internet connectivity, and funding constraints hinder effective ICT utilization in school management. The adoption of ICT positively predicts school administration efficiency, confirming that schools with higher ICT integration tend to perform better in administrative effectiveness.

Recommendations

Based on the findings, the following recommendations were made:

1. Government should increase investment in ICT infrastructure.
2. The Ministry of Education should organize periodic ICT training workshops to improve teachers' and administrators' digital literacy.
3. State and local governments should collaborate with service providers to expand internet coverage in rural areas, ensuring reliable connectivity for digital school operations.
4. Government budget allocations for ICT in education should be increased to support infrastructure, training, and maintenance.

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