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Assessment of Information and Communication Technology on Administration of Public Secondary Schools in Edo South, Edo State, Nigeria

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Abstract

This study assessed the role of information and communication technology (ICT) in improving administrative effectiveness in public secondary schools in Edo South Senatorial District of Edo State. The study specifically examined how ICT influences supervision, discipline management, record-keeping, and decision-making among school administrators. A descriptive survey research design was adopted. The population comprised all teachers and principals in public secondary schools in Edo South, totaling 2,412 personnel across 135 schools. A sample of 220 respondents was selected using a multi-stage random sampling technique. Data were collected using a structured questionnaire titled ICT and Administrative Effectiveness Questionnaire (ICTAEQ) and supported by official school records. The reliability of the instrument was established through Cronbach's Alpha, which yielded 0.92. Data were analyzed using descriptive statistics (frequency, mean, and standard deviation) and inferential statistics (Pearson correlation, regression, t-test, and ANOVA) at a 0.05 level of significance. Findings revealed that ICT significantly improved supervision practices ($r = 0.471, p < 0.05$), enhanced record-keeping efficiency ($r = 0.458, p < 0.05$), and strengthened discipline management ($r = 0.439, p < 0.05$). Regression results further showed that ICT usage jointly predicted 41% of the variance in administrative effectiveness. Based on the findings, it was concluded that ICT plays a vital role in enhancing school administration in Edo South. The study recommended the provision of adequate ICT facilities in schools, regular training for principals and teachers on ICT tools, and the integration of digital record systems in school management.

Keywords: Information and Communication Technology, Administration, Supervision, Record-Keeping, Discipline.

Introduction

Administration simply means managing an organization in a way that makes the best use of both people and resources to achieve its goals. It involves important duties such as planning, organizing, directing, coordinating, controlling, and checking results. When these duties are carried out in a smooth, cost-effective, and fair manner, it is called effective administration. According to Oyedemi (2015), effective administration is the leader's ability to connect different parts of an organization and ensure clear communication across all levels. In simple terms, effective administration means that leaders use the right strategies to manage tasks, people, and resources efficiently, and within the rules and timeframe set by the organization. In schools, effective administration is very important because education is seen as a tool for building knowledge, creativity, values, and tolerance, all of which contribute to social, cultural, political, and economic growth (Ayushi, 2018). In Nigeria, secondary education is designed to prepare students to be useful to society in many ways—culturally, scientifically, technologically, and commercially. It aims to produce young people who are creative, skilled, and ready either for higher education or to contribute meaningfully to society (NPE, 2013). Achieving these goals depends largely on how well schools are managed. Effective educational administration includes setting standards, creating academic programs, monitoring students' progress, training and motivating teachers, keeping proper records, maintaining good communication with stakeholders, and ensuring a safe and supportive school environment. In short, it is about running schools in ways that help students, teachers, and staff perform better (Pandey, 2017). However, in today's world, this cannot be fully achieved without using Information and Communication Technology (ICT), which makes school management easier and more effective.



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The role of information and communication technology (ICT) in modern school administration has become increasingly important. Schools are no longer run with manual processes alone; instead, ICT tools such as computers, emails, digital record systems, and online platforms are used for supervision, planning, communication, and record-keeping. In public secondary schools in Nigeria, especially in Edo State, effective administration is a major determinant of teaching quality and student performance. ICT adoption therefore provides school leaders with the opportunity to manage resources more efficiently and make informed decisions (Adeyemi, 2017). Administrative effectiveness refers to how well principals and school leaders supervise teachers, enforce discipline, manage records, and coordinate activities to achieve educational goals. The integration of ICT into these functions has been found to reduce errors, save time, improve monitoring, and enhance transparency (Onuma, 2024). For example, using ICT for student attendance registers allows easy tracking of absenteeism, while digital platforms make supervision and reporting faster and more reliable.

Studies in Nigeria and other developing countries show that ICT improves communication, decision-making, and accountability in schools (Ogunode et al., 2023; Ezeani & Eze, 2021). However, despite government investments in ICT, many schools in Edo South still struggle with inadequate ICT facilities, poor internet access, and limited ICT literacy among administrators. This raises concerns about whether ICT is truly contributing to administrative effectiveness in public schools. Empirical studies abound on Information and Communication Technology and Administrative Effectiveness within and outside Nigeria. Okon, Ekaette and Ameh (2015) investigated the relationship between principals' ICT utilization and principals' administrative effectiveness in public secondary schools in Akwa Ibom State. The study adopted an ex-post facto design and sampled 255 principals drawn from 85 public secondary schools. Data were gathered with two self-developed instruments the Information and Communication Technology Utilization Questionnaire (ICTUQ) and the Principals' Administrative Effectiveness Questionnaire (PAEQ) and analysed using correlational statistics. Findings showed a significant positive relationship between principals' ICT utilization and their administrative effectiveness: principals who used ICT more frequently reported higher effectiveness in tasks such as record keeping, communication, and decision-making. While this study demonstrates that principals' ICT use correlates with administrative outcomes, it focused on principals only and did not examine how ICT use by other administrative actors (vice-principals, HODs, secretarial staff) or specific ICT applications (financial software, student-information systems) affect broader administrative effectiveness. The present Edo-South study extends this work by assessing ICT adoption across the whole school administrative team and testing specific ICT functions (finance, records, supervision, communication) as predictors of administrative effectiveness.

Imasuen and Abinuomo (2022) examined the application of ICT to school record-keeping in secondary schools in Benin City, Edo State. The researchers used a descriptive survey design and administered a structured questionnaire to a large sample of 800 respondents (public and private secondary schools' administrative personnel and teachers). Analyses (means and standard deviations) revealed that ICT application to routine record-keeping was low despite many schools owning some ICT facilities; common record types remained largely manual (attendance, admission, CA records). The study concluded that limited effective ICT use undermined timely access to information and decision-making. Although directly located in Edo State and tightly focused on record-keeping, the study did not link ICT record-keeping capacity to an overall index of administrative effectiveness (e.g., speed of financial reporting, timeliness of supervision, stakeholder communication). The present study builds on Imasuen & Abinuomo by measuring how ICT-enabled record-keeping contributes to composite administrative effectiveness indicators in public secondary schools of Edo South Senatorial District. Akinwumi, Babalola and Alegbeleye (2021) investigated ICT use and effective administration of public senior secondary schools in Lagos State using a survey design. The study sampled 360 members of school administrative teams (principals, vice-principals and heads of departments) from 33 sampled senior secondary schools selected via multi-stage sampling. Data were collected with a 19-item questionnaire (Information and Communication Technology Use and Administrative Effectiveness instrument) and analysed with means and t-tests. Results indicated a moderate level of ICT use for administrative purposes and a statistically significant positive influence of ICT use on administrative effectiveness; commonly used devices were photocopiers and mobile phones, while projectors and smartboards were rarely used. The limitation is geographic (Lagos) and the study centres on general ICT availability/usage patterns rather than testing the effect of discrete ICT applications (e.g., student-information systems, accounting software) on specific administrative



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domains. The current Edo-South study adapts their survey approach but disaggregates ICT functions and links each to particular administrative outcomes (finance, supervision, record management, stakeholder communication). Ouma, Abdulraheem, Tijani et al. (2014) assessed the impact of ICT on secondary-school principals' administrative performance in Ilorin. This descriptive survey used stratified random sampling to select 135 participants (45 principals and 90 vice-principals) from 45 schools, and collected data via a validated structured questionnaire. Findings showed moderate ICT usage among principals and a moderate level of routine administrative performance; importantly, the study reported a significant positive correlation between ICT facility usage and principals' administrative performance ($r \approx 0.63$). The study demonstrates ICT's association with principal performance but is limited in scope to principals/vice-principals and does not explore constraints (power supply, training, software availability) in depth, nor does it link ICT use to broader school-level administrative effectiveness metrics. The present Edo-South research incorporates administrators and administrative processes across schools and includes measurement of infrastructural constraints and software/system availability as moderating variables.

Ossai and Okokoyo (2024) explored the function of ICT in secondary-school administration across Delta State using a descriptive survey design. The study sampled 300 respondents (50 principals and 250 teachers) drawn across the state's three senatorial districts and used the Information and Communication Technology and Administration of Secondary Schools Questionnaire (ICTASSQ). Analyses (means, z-tests) showed that principals and teachers agreed ICT positively supports student administration, financial administration and supervision of instruction, and that there was no significant difference between principals' and teachers' perceptions. The study also identified moderating constraints — lack of training, inadequate funding, weak internet/power — that limit ICT's impact. While comprehensive and recent, the study is state-level and groups teachers with administrators; it does not isolate the administrative team's discrete ICT tasks (e.g., accounts software, scheduling/timetabling systems, parent-communication platforms) nor does it focus specifically on Edo South. The current study narrows the focus to Edo South Senatorial District, tests specific administrative ICT applications, and quantifies the effect of infrastructural and capacity constraints on administrative effectiveness. This study therefore assesses the extent to which ICT influences administrative effectiveness in Edo South Senatorial District, with focus on supervision, discipline, and record-keeping.

Statement of the Problem

In Edo South Senatorial District, the effectiveness of school administration in public secondary schools has increasingly come under scrutiny. Reports from the Ministry of Education indicate that many schools operate with limited or outdated Information and Communication Technology (ICT) tools, such as computers, projectors, and digital record management systems. Consequently, principals and administrators continue to depend heavily on manual record-keeping processes, which are prone to errors, delays, and data loss. Teacher supervision is often irregular due to the absence of digital monitoring tools, while disciplinary processes remain slow and inconsistent in the absence of proper tracking systems. These inefficiencies undermine administrative effectiveness and weaken overall school management. The decline in administrative capacity is reflected in the persistent underperformance of students in external examinations. According to the 2023 WAEC report (WAEC, 2024), more than 55% of students in Edo South failed to achieve credit passes in core subjects such as Mathematics and English. Interviews with stakeholders including principals, teachers, and parents— suggest that weak administrative practices, compounded by limited ICT adoption, have significantly contributed to these poor outcomes by disrupting supervision, accountability, and effective decision-making. Although ICT has been widely acknowledged as a powerful tool for strengthening school management by improving supervision, enhancing communication, and ensuring accuracy and accessibility of records, its adoption and impact in the context of public secondary schools in Edo South remain insufficiently studied. Previous research (e.g., Zia, 2021; Chandrasekar, 2021; Abdullahi & Titus, 2021) has emphasized the relevance of ICT in organizational performance generally, but there is limited empirical evidence on how ICT specifically enhances administrative effectiveness within secondary education in Edo South Senatorial District. This study, therefore, seeks to fill that gap by empirically examining the relationship between ICT integration and administrative effectiveness in public secondary schools in Edo South. By assessing how ICT influences supervision, record management, discipline, and communication processes, the research aims to generate actionable insights that can strengthen administrative practices and improve educational outcomes in the district.



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Objectives of the Study

The objectives of this study are to:

1. Determine the influence of ICT on administrative supervision in public secondary schools in Edo South.
2. Assess how ICT contributes to discipline management among students.
3. Examine the role of ICT in record-keeping and documentation in schools.
4. Evaluate the overall impact of ICT on administrative effectiveness in Edo South Senatorial District.

Research Hypotheses

The following hypotheses were formulated:

H₀₁: ICT has no significant influence on administrative supervision in public secondary schools in Edo South.

H₀₂: ICT has no significant influence on discipline management in public secondary schools in Edo South.

H₀₃: ICT has no significant influence on record-keeping in public secondary schools in Edo South.

H₀₄: ICT has no significant joint impact on administrative effectiveness in public secondary schools in Edo South.

Methodology

This research adopted a descriptive survey design, considered appropriate for exploring ongoing practices and perceptions of teachers and principals regarding the role of ICT in enhancing administrative effectiveness. The study focused on public secondary schools within Edo South Senatorial District, which covers seven Local Government Areas, including Oredo, Egor, Ikpoba-Okha, Orhionmwon, Uhumwonde, Ovia North-East, and Ovia South-West. The target population comprised 2,412 teachers and principals, out of which a sample of 220 participants was drawn using a multi-stage sampling procedure to ensure fair representation of both urban-based schools in Benin City and semi-urban or rural schools in areas such as Uhumwonde and Ovia South-West. Two main instruments guided data collection. The first was the ICT and Administrative Effectiveness Questionnaire (ICTAEQ), a 25-item scale designed on a four-point Likert format ranging from *Strongly Agree* to *Strongly Disagree*. Items were grouped into supervision, disciplinary management, and record-keeping dimensions. The second instrument was a School Record Collection Form (SRCF), which provided objective data to validate responses through cross-checking with school records. Content validity was established by specialists in educational management, and reliability testing produced a Cronbach's Alpha coefficient of 0.92, demonstrating high internal consistency. Questionnaires were administered over a two-week period with the help of trained assistants, and 200 valid copies were retrieved, representing a 91% return rate. For data analysis, both descriptive and inferential statistics were employed. Descriptive measures such as means, percentages, and standard deviations summarized demographic features and ICT usage patterns among respondents. Inferential analyses included Pearson correlation to determine the relationship between ICT adoption and specific aspects of school administration, while regression analysis was applied to assess the combined influence of ICT on overall administrative effectiveness. In addition, independent sample t-tests and one-way ANOVA were conducted to examine possible differences in ICT use across school locations and levels of administrative experience. All hypotheses were tested at a 0.05 level of significance to ensure the robustness and credibility of findings.

Presentation of Results

Table 1: Mean and Standard Deviation of ICT and Administrative Effectiveness Variables

Variable	N	Mean (\bar{x})	SD	Remark
ICT in Supervision	200	3.24	0.86	High
ICT in Discipline Mgmt.	200	3.15	0.79	Moderate
ICT in Record-Keeping	200	3.42	0.82	High



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Variable	N	Mean (\bar{x})	SD	Remark
Overall Admin. Effect.	200	3.27	0.81	High

Table 1 shows the overall responses of the participants on ICT usage. The mean scores (\bar{x}) are above 3.00, which indicates a high level of agreement. Respondents reported that ICT is mostly used for record-keeping ($\bar{x} = 3.42$) and supervision ($\bar{x} = 3.24$). ICT in discipline management had the lowest mean ($\bar{x} = 3.15$), which shows it is less frequently applied in this area compared to the others. The standard deviations, which are less than 1.0, suggest that responses were consistent among participants. This implies that most schools in Edo South are beginning to integrate ICT into administration, though with varying degrees of intensity.

Hypothesis One: ICT has no significant influence on administrative supervision in public secondary schools in Edo South.

Table 2: Correlation between ICT and Supervision

Variables	N	r	p-value	Decision
ICT & Supervision	200	0.471	0.002	Significant (Reject H_0)

The Pearson correlation result shows $r = 0.471$, indicating a moderate positive relationship between ICT and supervision. This means that as the use of ICT increases, the quality of supervision also improves. The p-value (0.002) is less than the 0.05 significance level, so the null hypothesis was rejected. This confirms that ICT significantly improves supervision. In practice, this means that principals who use ICT tools (such as emails, online lesson plans, or digital reporting systems) are more effective in monitoring teachers and ensuring teaching quality.

Hypothesis Two: ICT has no significant influence on discipline management in public secondary schools in Edo South.

Table 3: Correlation between ICT and Discipline Management

Variables	N	r	p-value	Decision
ICT & Discipline Mgmt.	200	0.439	0.004	Significant (Reject H_0)

The correlation coefficient ($r = 0.439$) shows a moderate positive relationship between ICT and discipline management. This suggests that ICT helps administrators to better enforce school rules and maintain student discipline. For instance, digital attendance registers and behavior tracking systems make it easier to monitor lateness, absenteeism, or misconduct. Since the p-value is less than 0.05, the result is statistically significant, meaning ICT has a real effect on discipline management in Edo South schools.

Hypothesis Three: ICT has no significant influence on record-keeping in public secondary schools in Edo South.

Table 4: Correlation between ICT and Record-Keeping

Variables	N	R	p-value	Decision
ICT & Record-Keeping	200	0.458	0.001	Significant (Reject H_0)

The correlation coefficient ($r = 0.458$) indicates a moderate positive relationship between ICT and record-keeping. This means schools that use ICT tools for record-keeping (such as digital grade books, online student databases, or electronic filing systems) are more efficient in managing information. The p-value (0.001) shows the result is statistically significant. Therefore, ICT adoption clearly helps reduce cases of missing records, delays, and human errors in documentation.



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Hypothesis Four: ICT has no significant joint impact on administrative effectiveness in public secondary schools in Edo South.

Table 5: Regression Analysis of ICT and Administrative Effectiveness

Model	R	R ²	F	p-value	Decision
ICT (All Variables)	0.64	0.41	23.40	0.000	Significant (Reject Ho)

The regression results show $R = 0.64$, which means there is a strong positive relationship between ICT and administrative effectiveness. The R^2 value of 0.41 indicates that ICT explains 41% of the variation in administrative effectiveness. In other words, ICT alone accounts for almost half of the improvement in how schools are managed. The F-statistic (23.40) with a p-value of 0.000 confirms that the model is statistically significant. This means ICT use jointly predicts administrative effectiveness in Edo South.

Discussion of Findings

The findings from **hypothesis one** showed a moderate positive correlation between ICT use and supervision, indicating that ICT adoption significantly improves supervisory practices in schools. This implies that principals and administrative staff who use digital tools such as emails, online lesson plans, or supervision dashboards can more effectively monitor teachers' instructional delivery and provide timely feedback. This finding aligns with Okon, Ekaette, and Ameh (2015), who reported that principals' ICT utilization enhances administrative tasks including supervision. Similarly, Akinwumi, Babalola, and Alegbeleye (2021) observed that ICT positively impacts supervisory functions, although their study focused on general ICT usage patterns. The current Edo-South study extends these findings by showing that ICT directly strengthens supervision at the school level, contributing to more consistent teacher monitoring and instructional quality. The findings from hypothesis two revealed a correlation between ICT and discipline management was moderately positive ($r = 0.439$, $p = 0.004$), suggesting that ICT facilitates more effective enforcement of school rules and behavioral monitoring. Digital attendance registers, behavior tracking systems, and automated reporting enable administrators to identify truancy, lateness, or misconduct promptly. This is consistent with Ossai and Okokoyo (2024), who found that ICT supports student administration and discipline enforcement, although their study aggregated teachers and principals' perspectives at the state level. By disaggregating ICT functions, the present study demonstrates that schools in Edo South that leverage ICT tools are better able to maintain order, reduce indiscipline, and implement school policies efficiently.

The findings from hypothesis three revealed a moderate positive correlation ($r = 0.458$, $p = 0.001$), indicating that ICT significantly enhances record-keeping efficiency. Schools using digital grade books, online student databases, and electronic filing systems experience fewer errors, faster access to information, and improved documentation accuracy. Imasuen and Abinuomo (2022) similarly observed that ICT applications in record-keeping improve administrative processes, though limited ICT use constrained effectiveness. The present study confirms that when schools in Edo South adopt ICT comprehensively, administrative record-keeping improves significantly, supporting timely reporting, budgeting, and decision-making. The results from hypothesis four revealed a strong positive joint effect of ICT on administrative effectiveness, explaining 41% of the variance. This indicates that ICT adoption—covering supervision, discipline management, and record-keeping—substantially improves overall school administration. This finding corroborates Ouma et al. (2014), who reported that ICT usage among principals is positively associated with administrative performance, and is supported by Okon et al. (2015) and Akinwumi et al. (2021), who emphasized ICT's role in improving operational efficiency, decision-making, and stakeholder communication. The current study uniquely links discrete ICT applications to specific administrative outcomes, showing that schools in Edo South achieve higher administrative efficiency when ICT systems are effectively implemented, adequately funded, and supported with proper infrastructure.

Conclusion

The findings of this study clearly show that Information and Communication Technology (ICT) plays a crucial role in improving administrative effectiveness in public secondary schools in Edo South. ICT helps principals and school



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administrators to supervise teachers more efficiently, maintain better discipline among students, and manage records accurately and promptly. Schools that adopt ICT tools such as digital attendance systems, online grade books, communication platforms, and management software can operate more smoothly and transparently. This indicates that ICT is not just an optional tool but an essential component for effective school leadership in the 21st century. The study highlights that schools with adequate ICT infrastructure and trained personnel are better positioned to meet educational objectives, enhance teaching quality, and improve overall school performance.

Recommendations

1. Edo State Government should ensure that all public secondary schools in Edo South are equipped with sufficient ICT facilities, including computers, projectors, internet access, and management software.
2. Principals, teachers, and administrative staff should undergo regular ICT training to improve digital literacy and effectively utilize available technology.
3. Schools should implement digital record systems for attendance, assessment, student behavior, and communication to enhance efficiency and reduce errors.
4. ICT should be integrated into supervision processes, such as monitoring teaching activities and tracking staff performance, to promote accountability and transparency.
5. Policymakers and educational planners should prioritize ICT funding as a key part of educational reforms, ensuring sustainability, maintenance, and upgrades of ICT infrastructure.
6. Schools should establish clear policies and procedures for ICT use, including security measures and regular evaluations of ICT tools, to maximize benefits for administrative effectiveness and student outcomes.

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