



Principal ICT Competence as a Predictor of Effective Secondary School Supervision in Kwara State, Nigeria

David Jimoh Kayode*, Charles Olukunle Illo**, Samuel Ade Olonikawu***, Adenike Abiola Adeboye****, Egboh Fasilat Bolaji*****, Abiodun Johnson Medupin*****

*Department of Educational Foundation, Faculty of Education, Federal University, Lokoja, Kogi State, kayodedj1@gmail.com

**Department of Management, COSPED, Lagos State University of Education, Ijanikin, Lagos State, Nigeria. illocharlesolukunle@gmail.com

***Department of Educational Foundation, Faculty of Education, Federal University, Lokoja, Kogi State, Nigeria. samuelolonikawu@gmail.com

****Department of Educational Guidance and Counselling, Faculty of Education, University of Ilorin, Kwara State, Nigeria. adenikeadeboye7@gmail.com

*****Department of Management, COSPED, Lagos State University of Education, Ijanikin, Lagos State, Nigeria. egbohfb@lasued.edu.ng

*****Department of Educational Management & Counselling, Faculty of Education, Alhikmah University, Ilorin, Kwara State, Nigeria. wealth.suitee@gmail.com

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ABSTRACT

This study examined principal ICT competence as a predictor of effective secondary school supervision in Kwara State, Nigeria. Specifically, the study assessed principals' ICT competence, identified the challenges hindering the effective utilisation of ICT for school supervision, and determined the relationship between principals' ICT competence and effective secondary school supervision. A descriptive survey research design was adopted. The population comprised teachers in public secondary schools in Kwara State, from whom 340 respondents were selected using purposive and simple random sampling techniques. Data were collected using the Principal ICT Competence and Effective Secondary School Supervision Questionnaire (PICTCESSQ). Descriptive statistics were used to address the research questions, whereas Pearson Product-Moment Correlation (PPMC) was employed to test the hypotheses at the 0.05 level of significance. The findings revealed that principals possessed a high level of ICT competence. Significant positive relationships were found between principals' ICT competence measures and effective supervision in secondary schools. However, inadequate ICT facilities, poor internet connectivity, and insufficient ICT training, among others, were identified as major constraints affecting ICT utilisation in school supervision. The study concluded that strengthening principals' ICT competence would substantially improve the quality of instructional supervision and school administration. It is therefore recommended that regular ICT capacity-building programmes, provision of adequate ICT infrastructure, improved internet connectivity, and increased funding for ICT development in secondary schools.



Introduction

The rapid advancement of Information and Communication Technology (ICT) has transformed educational administration worldwide by providing innovative approaches to communication, instructional supervision, data management, and decision-making. Educational institutions increasingly depend on digital technologies to improve administrative efficiency and promote accountability within the school system. Consequently, school principals are expected to possess adequate ICT competence to effectively coordinate instructional activities and supervise teaching and learning processes. ICT has therefore shifted from being an optional administrative tool to becoming an essential requirement for effective educational leadership. UNESCO (2015) recognises ICT as an important instrument for improving educational management through efficient record keeping, communication, instructional monitoring, and evidence-based decision-making.

The integration of ICT into educational administration has expanded the responsibilities of school principals beyond conventional managerial duties. Modern principals are expected to utilize computers, internet facilities, digital communication platforms, electronic record systems, and data management applications to facilitate effective supervision and improve institutional performance. According to Bachalapur and Manjunatha (2022), ICT plays an essential role in educational reform because it enhances both teaching and administrative effectiveness, while principals' ICT competence reflects their ability to utilize digital technologies for educational management and decision-making.

School supervision remains one of the principal's most important responsibilities because it provides the mechanism through which instructional activities are monitored, teachers are guided, and educational standards are maintained. Effective supervision promotes improved instructional practices, strengthens teachers' professional competence, and contributes to better student learning outcomes. Van Deventer and Kruger (2003) identified defining the school mission, managing curriculum and instruction, supervising teaching, monitoring learners' progress, and promoting an instructional climate as fundamental supervisory responsibilities of school principals. Similarly, Adepoju (2013) emphasized that effective supervision enhances teachers' instructional practices and contributes significantly to educational quality.

The growing emphasis on accountability, transparency, and evidence-based educational management has further increased the need for ICT-competent school leaders. Principals who possess adequate ICT competence are better positioned to monitor instructional activities, manage educational records, communicate effectively with stakeholders, and support data-driven decision-making. Conversely, inadequate ICT competence may reduce supervisory effectiveness and negatively influence instructional quality and school management. Previous studies have consistently associated principals' ICT competence with improved administrative performance, instructional monitoring, and communication within schools.

Within the Nigerian educational system, the integration of ICT into school administration continues to receive considerable attention despite persistent infrastructural and capacity challenges (Kayode, Alabi, Sofoluwe & Oduwaiye, 2015). Although digital technologies offer substantial opportunities to improve school supervision, many principals continue to face limitations due to inadequate ICT skills, insufficient training opportunities, poor internet connectivity, an unstable electricity supply, and limited access to ICT facilities. These challenges restrict the effective utilisation of technology in instructional supervision and educational administration. Consequently, strengthening principals' ICT competence has become an important priority for improving supervisory effectiveness and overall school performance.

Against this background, this study investigated principal ICT competence as a predictor of effective secondary school supervision in Ilorin South Local Government Area of Kwara State. Specifically, the study examined principals' level of ICT competence, identified challenges affecting ICT utilisation for school supervision, and determined the extent to which ICT competence predicts effective secondary school supervision.

Statement of the Problem

Effective supervision is fundamental to achieving quality teaching and learning in secondary schools because it enables principals to monitor instructional activities, support teachers, evaluate classroom practices, and ensure the attainment of educational objectives. The effectiveness of school supervision has become increasingly dependent on the ability of principals to utilize ICT for communication, record management, instructional monitoring, and data-driven decision-making. Consequently, principals who possess adequate ICT competence are expected to supervise schools more effectively than those with limited technological skills.

Despite the growing recognition of ICT as an indispensable component of educational administration, evidence indicates that many secondary school principals still experience deficiencies in ICT competence. Existing studies have shown that inadequate ICT knowledge, insufficient professional training, poor access to digital facilities, unstable electricity supply, and limited internet connectivity continue to constrain principals'

effective utilization of ICT in school supervision. These deficiencies often result in ineffective monitoring of instructional activities, poor record management, weak accountability mechanisms, and reduced administrative efficiency within schools.

Although previous empirical studies have examined ICT integration, educational administration, and instructional supervision, there remains limited evidence focusing specifically on the relationship between principals' ICT competence and effective secondary school supervision in Ilorin South Local Government Area of Kwara State. The scarcity of localized empirical evidence makes it difficult to determine the extent to which principals' ICT competence contributes to supervisory effectiveness within the study area.

This study, therefore, sought to address this gap by examining principal ICT competence as a predictor of effective secondary school supervision in Ilorin South Local Government Area of Kwara State. The findings are expected to provide empirical evidence to inform educational policy, strengthen professional development programmes for school leaders, and promote more effective ICT integration in school supervision.

Research Objectives

The main objective of this study is to examine principal ICT competence as a predictor of effective secondary school supervision in Kwara State.

The specific objectives are to:

1. assess the level of ICT competence possessed by principals in public secondary schools in Kwara State;
2. determine the extent of effective secondary school supervision by principals in public secondary schools in Kwara State;
3. identify the challenges affecting principals' utilization of ICT for effective secondary school supervision in Kwara State;
4. determine the relationship between principals' ICT operational skills and effective secondary school supervision in Kwara State;
5. examine the relationship between principals' ICT data management skills and effective secondary school supervision in Kwara State; and
6. determine the relationship between principals' ICT instructional and supervisory usage skills and effective secondary school supervision in Kwara State.

Research Questions

The following research questions were raised to guide the study:

1. What is the level of ICT competence possessed by principals in public secondary schools in Kwara State?
2. What is the level of effective secondary school supervision by principals in public secondary schools in Kwara State?
3. What challenges affect principals' utilisation of ICT for effective secondary school supervision in Kwara State?

Research Hypotheses

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

- H₀₁: There is no significant relationship between principals' ICT competence and effective secondary school supervision in Kwara State.
- H₀₂: There is no significant relationship between principals' ICT operational skills and effective secondary school supervision in public secondary schools in Kwara State.
- H₀₃: There is no significant relationship between principals' ICT data management skills and effective secondary school supervision in public secondary schools in Kwara State.
- H₀₄: There is no significant relationship between principals' ICT instructional and supervisory usage skills and effective secondary school supervision in public secondary schools in Kwara State.

Review of Related Literature

Principal ICT Competence

Information and Communication Technology (ICT) competence has become an indispensable requirement for effective educational leadership in contemporary school systems. The increasing digitalisation of educational administration has transformed the responsibilities of school principals beyond traditional managerial functions, encompassing technology-driven leadership that enhances instructional supervision, communication, decision-making, and school management. ICT competence refers to the knowledge, skills, and attitudes required to utilise digital technologies effectively for administrative and instructional purposes. In the context of school leadership, principal ICT competence encompasses the ability to integrate digital technologies into school administration, instructional supervision, communication, record management, and

organisational decision-making.

According to Navazi (2025), ICT competence comprises the knowledge, technical skills, and attitudes that enable individuals to understand, utilise, and adapt digital technologies effectively. These competencies extend beyond basic computer literacy to include proficiency in word processing, spreadsheets, presentation software, internet applications, electronic communication, networking, and other digital tools that facilitate organisational effectiveness. For school principals, these competencies provide the foundation for integrating ICT into routine administrative and supervisory functions.

The Organisation for Economic Co-operation and Development (OECD, 2019) conceptualises principal ICT competence as an essential component of digital leadership. According to this perspective, school principals are expected to create enabling environments that encourage technology integration in teaching, learning, and administration. Rather than functioning solely as administrative officers, principals are required to serve as digital leaders who facilitate innovation, support technology adoption, and promote organisational effectiveness through ICT utilisation. Similarly, Anyanwu et al. (2021) observed that effective management of school information systems requires principals to possess adequate ICT competence for efficient administration and decision-making.

Principal ICT competence also contributes significantly to instructional leadership. By applying digital technologies, principals can supervise classroom instruction, monitor students' academic progress, maintain electronic records, evaluate instructional activities, and provide timely feedback to teachers. Ertmer and Ottenbreit-Leftwich (2019) argued that principals who demonstrate strong ICT competence are more likely to influence teachers' technology integration and improve instructional quality across schools. Similarly, Bachalapur and Manjunatha (2022) maintained that principals with adequate ICT competence are better equipped to optimise school management, improve instructional processes, and create technology-enabled learning environments.

The significance of principal ICT competence became even more apparent during the COVID-19 pandemic, when educational institutions relied heavily on digital technologies for communication, administration, and instructional delivery. The World Bank (2021) reported that schools led by ICT-competent administrators adapted more effectively to remote learning and online management systems. Within Kwara State, previous studies have equally demonstrated that ICT competence contributes positively to principals' administrative effectiveness and instructional supervision. Atunde et al. (2021) reported a significant relationship between ICT utilisation and principals' administrative performance, while Yahaya and Bolaji (2023) established that ICT application enhanced supervisory practices and instructional delivery in secondary schools.

Overall, the literature suggests that principal ICT competence extends beyond operational computer skills to encompass strategic leadership capabilities that enhance communication, instructional supervision, data management, organisational effectiveness, and school improvement.

Effective Secondary School Supervision

Effective supervision occupies a central position in educational administration because it provides the mechanism through which instructional quality is monitored, teachers are professionally supported, and educational standards are maintained. Contemporary educational supervision emphasises collaboration, instructional improvement, mentoring, and professional development rather than the traditional inspection-oriented approach that focused primarily on fault-finding and compliance.

Eregie and Ogiamen (2007) described school supervision as a systematic process designed to achieve educational objectives through continuous monitoring of personnel, facilities, instructional activities, records, and organisational practices. Similarly, Sergiovanni and Starratt (2017) viewed supervision as an instructional dialogue intended to improve classroom practices and educational outcomes. These perspectives emphasise supervision as a developmental process aimed at strengthening teaching effectiveness and institutional performance.

Effective supervision performs several important functions within secondary schools. Principals monitor classroom instruction, evaluate lesson delivery, assess curriculum implementation, ensure compliance with educational standards, and provide professional guidance to teachers. Hoy and Miskel (2016) maintained that supervision contributes substantially to educational quality by coordinating instructional activities and aligning teaching practices with institutional goals. Furthermore, Ezenwaji (2021) emphasised that supervision facilitates teachers' professional growth by providing guidance, support, and opportunities for continuous improvement.

In addition to promoting instructional quality, effective supervision strengthens accountability, organisational efficiency, and policy implementation. Principals supervise teachers' attendance, lesson preparation, record-keeping, and the implementation of educational policies while ensuring adherence to

established standards. Bush (2020) observed that principals are expected to provide instructional leadership that promotes school improvement, staff development, and educational effectiveness. Within the Nigerian educational system, Nakpodia (2016) noted that ineffective supervision negatively affects teachers' productivity and students' academic achievement, thereby emphasising the importance of effective supervisory practices.

The emergence of educational technology has further transformed school supervision by providing principals with digital tools for communication, instructional monitoring, electronic record management, online meetings, and data analysis. Consequently, effective supervision increasingly depends upon principals' ability to utilise ICT resources for efficient school management and instructional improvement.

Theoretical Framework

This study is anchored on the Diffusion of Innovation Theory (DOI) developed by Rogers (1962) and later expanded in 2003, and the Technology Acceptance Model (TAM) proposed by Davis (1989). The two theories provide complementary explanations for how school principals adopt ICT and how such adoption influences effective secondary school supervision.

Diffusion of Innovation Theory

The Diffusion of Innovation (DOI) Theory explains the process through which innovations spread among individuals within a social system over time. Rogers (2003) described diffusion as the process through which innovations are communicated through specific channels among members of a social system. The theory identifies five categories of adopters: innovators, early adopters, early majority, late majority, and laggards; and proposes that the rate of adoption depends on the perceived characteristics of the innovation, including its relative advantage, compatibility, complexity, trialability, and observability.

Within educational administration, ICT represents an innovation that has transformed school management, instructional supervision, communication, and decision-making. Principals play a strategic role in determining whether ICT innovations are successfully adopted in schools. Principals who possess adequate ICT competence are more likely to embrace technological innovations, encourage teachers to integrate technology into instructional activities, and utilise digital tools to improve school supervision. Consequently, ICT competence enhances principals' capacity to coordinate school activities efficiently, monitor instructional delivery, and promote educational improvement.

The relevance of the Diffusion of Innovation Theory to the present study lies in its explanation of how principals' adoption of ICT innovations influences supervisory effectiveness. The theory supports the assumption that principals who readily adopt digital technologies are better positioned to utilise ICT for instructional monitoring, communication, record management, and evidence-based decision-making. In Ilorin South Local Government Area, variations in ICT competence and willingness to adopt technological innovations may explain differences in the effectiveness of secondary school supervision.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), explains the factors influencing individuals' acceptance and utilisation of technology. The model proposes that technology adoption is primarily determined by two perceptions: perceived usefulness, the belief that technology improves job performance, and perceived ease of use, the belief that it can be used with minimal effort. These perceptions influence users' attitudes toward technology and their willingness to adopt it.

Within educational administration, TAM provides a useful explanation for differences in ICT utilisation among school principals. Principals who perceive ICT as useful for improving communication, instructional monitoring, record management, and school administration are more likely to develop ICT competence and integrate digital technologies into supervisory practices. Conversely, principals who perceive ICT as difficult to use or of limited value may be reluctant to adopt technological innovations despite their availability.

The Technology Acceptance Model is particularly relevant to this study because effective school supervision increasingly depends on principals' willingness and ability to utilise ICT tools. Variations in ICT competence among principals in Ilorin South Local Government Area may therefore reflect differences in perceived usefulness, ease of use, professional training, technological support, and access to ICT infrastructure. The model consequently provides an appropriate theoretical explanation for understanding principals' ICT utilisation in secondary school supervision.

Empirical Review on the relationship between principal ICT competence and effective secondary school supervision

Previous empirical studies consistently demonstrate that ICT competence contributes significantly to educational administration, instructional supervision, and school effectiveness. However, differences in research settings, variables, and geographical locations indicate the need for further investigation within Ilorin

South Local Government Area.

Atunde, Alabi, and Abdulkadir (2021) investigated the relationship between ICT and principals' administrative performance in public secondary schools in Ilorin metropolis using a descriptive survey design. The study employed questionnaires and analysed the data using Pearson Product-Moment Correlation. The findings revealed a significant positive relationship between ICT utilisation and principals' administrative effectiveness, particularly in communication, record management, decision-making, and school supervision. These findings suggest that principals who possess higher ICT competence are likely to perform supervisory responsibilities more effectively.

Similarly, Yahaya and Bolaji (2023) examined the use of ICT as a supervisory tool for effective instructional delivery in secondary schools in Kwara State. Using a descriptive survey design, the study established that ICT significantly enhanced classroom monitoring, instructional supervision, communication, and instructional delivery. Principals who effectively utilised ICT tools demonstrated greater supervisory effectiveness than those with limited ICT competence.

Ogunode (2020) examined ICT and educational administration in Nigeria through document analysis and reported that ICT competence among school administrators improved communication, instructional supervision, data management, and administrative efficiency. Nevertheless, inadequate infrastructure, unstable electricity supply, insufficient funding, and poor internet connectivity were identified as major barriers to ICT integration in schools.

Ertmer and Ottenbreit-Leftwich (2019) explored the influence of school leadership on technology integration using qualitative methods. Their findings indicated that principals with strong ICT competence positively influenced teachers' technology integration and instructional improvement by creating supportive learning environments that encouraged technology use. Tondeur et al. (2017) also reported that principals' ICT competence significantly influenced teachers' technology utilisation and improved coordination of academic activities. Their findings emphasised that effective technology leadership contributes positively to instructional supervision and overall school improvement.

In another related study, Zepeda (2017) found that effective instructional supervision significantly enhanced teachers' professional development, instructional quality, and students' academic achievement. Likewise, Nakpodia (2016) reported that effective supervision improved teachers' job performance, accountability, and instructional quality, although inadequate facilities and administrative challenges limited supervisory effectiveness. Yusuf (2016) further demonstrated that ICT competence among principals improved administrative coordination, instructional supervision, and communication within Nigerian secondary schools. However, inadequate training opportunities and poor ICT facilities limited the effective utilisation of technology among school administrators.

Collectively, these empirical studies consistently establish that principals' ICT competence contributes to effective educational administration, instructional supervision, communication, and organisational effectiveness. Nevertheless, the reviewed studies also indicate that infrastructural deficiencies, inadequate training, and limited technological resources continue to constrain ICT utilisation in secondary schools.

Methodology

Research Design

This study adopted a descriptive survey research design. The descriptive survey design was considered appropriate because it enables the researcher to collect data from respondents in order to describe existing conditions, opinions, attitudes, and relationships among variables in a study without manipulating them. The choice of this design was informed by the nature of the study, which seeks to examine the relationship between principals' ICT competence and effective secondary school supervision in public secondary schools in Kwara State. The descriptive survey design provided an opportunity to gather relevant information from teachers regarding principals' level of ICT competence and how such competence influences effective school supervision. According to Creswell, descriptive survey research enables researchers to obtain information from a representative sample of a population to describe characteristics, opinions, and phenomena. The design was therefore suitable for this study because it enabled the researcher to collect responses from teachers in selected public secondary schools without altering the natural school environment.

Population, Sample and Sampling Technique of the Study

The population for this study comprised teachers drawn from both public and private secondary schools in Kwara State. Teachers were considered the most appropriate respondents because they work directly under principals' supervision and are therefore well-positioned to evaluate principals' ICT competence and effectiveness in school supervision. From this broad pool of educators, a sample of 340 teachers was selected across different schools to ensure representation and balance between public and private institutions. This sampling approach provided a manageable yet diverse group of respondents, enabling the study to capture

varied perspectives on leadership practices and supervisory effectiveness within the local educational system.

A total sample of 340 teachers was selected for this study from both public and private secondary schools in Kwara State. Teachers were chosen as respondents because they work directly under principals' supervision and are therefore well-positioned to evaluate principals' ICT competence and effectiveness in school supervision. The study employed a multi-stage sampling technique. First, purposive sampling was used to select schools based on accessibility and relevance, ensuring a mix of public and private institutions. Subsequently, simple random sampling was applied to select teachers from the chosen schools, giving each teacher an equal chance of participation and ensuring fairness in the process. The sample size of 340 respondents was considered adequate to generate reliable data, provide meaningful insights, and support valid conclusions about the relationship between principals' ICT competence and effective school supervision.

Instrumentations

Data for this study were collected using a researcher-designed questionnaire titled Principal ICT Competence and Effective Secondary School Supervision Questionnaire. The instrument was organised into four sections (A–D) to comprehensively capture relevant information. Section A collected demographic details from respondents, including gender, age, educational qualifications, and years of teaching experience. Section B focused on principals' ICT competence, assessing their knowledge and use of digital tools for administration, communication, instructional support, and technology integration. Section C examined effective school supervision, covering aspects such as classroom monitoring, instructional oversight, feedback provision, curriculum implementation, and adherence to teaching standards. Section D explored the application of ICT in supervision, particularly the use of digital tools for monitoring instructional activities, record keeping, communication, and supervisory processes. The questionnaire employed a four-point Likert scale with Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) options to allow respondents to indicate their level of agreement with each item.

The instrument used in this study underwent face and content validity assessments to ensure it measured the intended variables accurately. To establish validity, the questionnaire received approval through expert review, in which specialists carefully examined the items in relation to the study's objectives, research questions, and hypotheses. Their corrections, modifications, and suggestions on clarity, relevance, and appropriateness were incorporated into the final version of the instrument prior to administration. This validation process ensured that the questionnaire effectively captured the concepts of principals' ICT competence and secondary school supervision.

To determine the instrument's reliability, a pilot test was conducted with respondents from outside the sampled schools but with characteristics similar to those of the main study. Copies of the questionnaire were administered to 20 teachers from public secondary schools outside the selected schools in Kwara State. The responses obtained were subjected to statistical analysis using Cronbach's Alpha reliability to assess the instrument's internal consistency. The reliability coefficient was 0.82, indicating that the instrument was highly reliable and suitable for data collection. According to research standards, a reliability coefficient of 0.70 and above is considered acceptable for social science research.

Procedure for Data Collection

The researcher personally visited the selected public secondary schools in Kwara State to administer the questionnaire to the respondents. Before administering the instrument, permission was sought from the school authorities, and respondents were adequately informed of the purpose of the study. The respondents were assured that the information provided would be treated with strict confidentiality and used strictly for academic purposes. A total of 340 copies of the questionnaire were administered to teachers in the selected secondary schools. The researcher adopted a direct delivery method to ensure proper distribution and retrieval of the instrument. Respondents were given adequate time to complete the questionnaire, after which the completed copies were collected for analysis.

Method of Data Analysis

The data collected for this study were analysed using descriptive and inferential statistics. Descriptive statistics, including frequency counts, percentages, means, and rank orders, were used to analyse respondents' demographic information and to answer the research questions. A criterion mean of 2.50 was used as the benchmark for decision-making. Any item with a mean score of 2.50 and above was regarded as agreed, while items with a mean score below 2.50 were regarded as disagreed.

Inferential statistics, including the Pearson Product-Moment Correlation (r), were used to test the formulated hypotheses at the 0.05 level of significance. The choice of Pearson Product-Moment Correlation was considered appropriate because the study sought to determine the relationship between principals' ICT competence and effective secondary school supervision in public secondary schools in Kwara State.

Findings

Research Question One: What is the level of ICT competence acquired by secondary school principals in Kwara State?

Table 1: Mean Rating on the Level of ICT Competence Acquired by Secondary School Principals

S/N	Items	Mean	Rank
1	The principal has adequate knowledge of information and communication technology	3.24	High
2	The principal uses computers or digital tools for administrative tasks in the school	3.11	High
3	The principal encourages teachers to make use of ICT in teaching and learning	3.17	High
4	The principal communicates with staff using ICT tools such as email and messaging platforms	3.08	High
5	The principal supports the use of ICT facilities in the school	3.30	High
6	The principal promotes the integration of technology into classroom teaching	3.15	High
7	The principal organizes or encourages ICT training for teachers	3.02	High
	Grand Mean	3.15	High

Table 1 shows the respondents' ratings on the level of ICT competence acquired by secondary school principals in Kwara State. The result revealed a grand mean of 3.15, which is above the criterion mean of 2.50, indicating agreement among respondents that principals possess a reasonable high level of ICT competence. The highest-ranked item was "The principal supports the use of ICT facilities in the school" with a mean score of 3.30, while the least-ranked item was "The principal organizes or encourages ICT training for teachers" with a mean score of 3.02.

Research Question two: What challenges hinder principals from effectively using ICT in school supervision in Ilorin South LGA?

Table 2: Challenges Hindering Principals' Effective Use of ICT in School Supervision

S/N	Items	Mean	Rank
1	Inadequate ICT facilities hinder effective school supervision	3.32	1st
2	Poor internet connectivity limits ICT use in school supervision	3.18	3rd
3	Lack of adequate ICT training affects principals' ICT competence	3.24	2nd
4	Irregular power supply affects ICT use in schools	3.10	4th
5	Time constraints hinder effective use of ICT for supervision	2.98	5th
	Grand Mean	3.16	

Table 2 reveals a grand mean score of 3.16, indicating that respondents agreed that several challenges hinder principals' effective use of ICT in school supervision. Inadequate ICT facilities ranked highest with a mean score of 3.32.

Research Question three: What strategies can be adopted to improve principals' ICT competence for more effective supervision in secondary schools?

Table 3: Mean Rating on Strategies for Improving Principals' ICT Competence

S/N	Items	Mean	Rank
1	Regular ICT training should be organised for principals	3.35	1 st
2	The government should provide adequate ICT facilities in schools	3.27	2 nd
3	Principals should be encouraged to attend ICT workshops	3.20	3 rd
4	Reliable internet services should be provided in schools	3.08	5 th
5	Adequate funding should be allocated for ICT development	3.14	4 th
	Grand Mean	3.21	

Table 3 shows a grand mean score of 3.21, indicating that respondents agreed on strategies for improving principals' ICT competence. The highest-ranked strategy was the organisation of regular ICT training for principals, with a mean score of 3.35.

Testing of Hypotheses

Hypothesis One (H_{01}): *There is no significant relationship between principals' ICT competence and effective secondary school supervision in Kwara State.*

Table 4: Pearson Product-Moment Correlation Showing the Relationship between Principals' ICT Competence and Effective Secondary School Supervision

Variables	Mean	SD	r-cal	Sig. (2-tailed)	Decision
Principals' ICT Competence	40 3.15	0.64	0.701	0.000	Reject H_0
Effective Secondary School Supervision	40 3.19	0.61			

Table 4 reveals that the calculated correlation coefficient ($r = 0.701$) with a significance value of 0.000, which is less than the 0.05 level of significance, indicates a statistically significant positive relationship between principals' ICT competence and effective secondary school supervision. Therefore, the null hypothesis was rejected. This implies that principals' ICT competence is significantly related to effective secondary school supervision in the Ilorin South Local Government Area of Kwara State.

Hypothesis Two (H_{02}): *There is no significant relationship between principals' basic ICT operational skills and effective secondary school supervision in Kwara State.*

Table 5: Pearson Product-Moment Correlation Showing the Relationship between Principals' Basic ICT Operational Skills and Effective Secondary School Supervision

Variables	N	Mean	SD	r-cal	Sig. (2-tailed)	Decision
Principals' ICT Communication Skills	340	3.13	0.60	0.682	0.000	Reject H_0
Effective Secondary School Supervision	340	3.19	0.61			

Table 5 shows that the calculated correlation coefficient ($r = 0.682$) with a significance value of 0.000 is less than the 0.05 significance level. Therefore, the null hypothesis was rejected. This indicates that a significant relationship exists between principals' ICT communication skills and effective secondary school supervision in Ilorin South Local Government Area of Kwara State.

Hypothesis Three (H_{03}): *There is no significant relationship between principals' ICT data management skills and effective secondary school supervision in Kwara State.*

Table 6: Pearson Product-Moment Correlation Showing the Relationship between Principals' ICT Data Management Skills and Effective Secondary School Supervision

Variables	N	Mean	SD	r-cal	Sig. (2-tailed)	Decision
Principals' ICT Data Management Skills	340	3.16	0.59	0.654	0.000	Reject H_0
Effective Secondary School Supervision	340	3.19	0.61			

Table 6 indicates that the calculated correlation coefficient ($r = 0.654$) with a significance value of 0.000 is less than 0.05, indicating statistical significance. Therefore, the null hypothesis was rejected. This implies that principals' ICT data management skills significantly relate to effective secondary school supervision in Ilorin South Local Government Area of Kwara State.

Hypothesis Four (H_{04}): *There is no significant relationship between principals' ICT instructional/supervisory usage skills and effective secondary school supervision in Kwara State.*

Table 7: Pearson Product Moment Correlation Showing the Relationship between Principals' ICT Instructional/Supervisory Usage Skills and Effective Secondary School Supervision

Variables	N	Mean	SD	r-cal	Sig. (2-tailed)	Decision
Principals' ICT Instructional/Supervisory Usage Skills	340	3.18	0.62	0.723	0.000	Reject H_0
Effective Secondary School Supervision	340	3.19	0.61			

Table 7 reveals that the calculated correlation coefficient ($r = 0.723$) with a significance value of 0.000 is less than 0.05, indicating a statistically significant positive relationship. Therefore, the null hypothesis was rejected. This means that principals' ICT instructional/supervisory usage skills are significantly related to

effective secondary school supervision in the Ilorin South Local Government Area of Kwara State.

Discussion of Findings

The study examined principal ICT competence as a predictor of effective secondary school supervision in Ilorin South Local Government Area of Kwara State. Specifically, it assessed principals' ICT competence, identified the challenges affecting ICT utilisation in school supervision, examined strategies to improve ICT competence, and determined the relationship between ICT competence and effective secondary school supervision.

The findings revealed that principals possessed a reasonable level of ICT competence, indicating they could utilise basic ICT tools for communication, record management, and selected supervisory activities. This suggests that school principals in the study area have begun to integrate digital technologies into school administration, although their competence remains room for improvement. The finding supports Navazi's (2025) position, which argues that ICT competence encompasses the knowledge, skills, and attitudes required for the effective utilisation of digital technologies in educational administration. It is also consistent with the views of Bachalapur and Manjunatha (2022), who maintained that ICT competence enables school leaders to optimise administrative processes and improve instructional management.

The study further established that principals' ICT competence significantly contributed to effective supervision in secondary schools. The Pearson Product-Moment Correlation analysis showed a significant positive relationship between overall ICT competence and effective school supervision, leading to the rejection of the null hypothesis. This finding indicates that improvements in principals' ICT competence are associated with improvements in instructional monitoring, communication, record management, and supervisory effectiveness. The result corroborates the findings of Atunde et al. (2021), who reported that ICT competence significantly enhanced principals' administrative performance, and Yahaya and Bolaji (2023), who found that ICT application strengthened instructional supervision and instructional delivery in secondary schools. Similarly, Ogunode (2020) observed that ICT competence improved school administration, communication, and instructional supervision.

The findings also demonstrated that basic ICT operational skills were significantly and positively associated with effective secondary school supervision. Principals who demonstrated competence in operating computers and other digital technologies were more capable of carrying out supervisory functions efficiently. The ability to utilise ICT tools for communication, documentation, and monitoring enhanced administrative effectiveness and facilitated timely instructional supervision. This finding supports Ertmer and Ottenbreit-Leftwich (2019), who argued that ICT-competent school leaders are better positioned to promote instructional improvement and technology integration within schools.

Furthermore, ICT data management skills were found to be significantly related to effective school supervision. Principals who possessed stronger competencies in managing digital records, analysing educational information, and maintaining electronic documentation demonstrated greater supervisory effectiveness. Efficient management of educational data enabled principals to make informed decisions and strengthen accountability within schools. This finding is consistent with the International Society for Technology in Education (2018), as discussed in the literature, which emphasised the importance of technology for evidence-based decision-making in educational leadership.

Similarly, ICT instructional and supervisory usage skills exhibited a significant positive relationship with effective secondary school supervision. Principals who effectively utilised ICT for instructional monitoring, communication with teachers, classroom supervision, and evaluation of instructional activities demonstrated greater effectiveness in carrying out supervisory responsibilities. This finding aligns with Tondeur et al. (2017), who concluded that principals' ICT competence positively influenced instructional leadership and school improvement, and with Zepeda (2017), who emphasised that effective supervision contributes to teachers' professional growth and instructional quality.

With respect to the challenges affecting ICT utilisation, the study identified inadequate ICT facilities, poor internet connectivity, insufficient ICT training, and unstable electricity supply as the major constraints limiting principals' effective use of ICT for school supervision. These infrastructural and capacity-related challenges reduce opportunities for effective technology integration despite the recognised benefits of ICT in educational administration. The finding is consistent with Ogunode (2020), who identified inadequate infrastructure and poor internet services as major barriers to ICT integration in Nigerian schools, and Yusuf (2016), who similarly reported inadequate ICT facilities and limited professional training as obstacles to effective ICT utilization by school administrators.

Overall, the findings indicate that ICT competence has become an important determinant of effective secondary school supervision. Principals who possess stronger ICT competence are better equipped to coordinate instructional activities, monitor teaching effectiveness, communicate with stakeholders, manage

educational information, and support school improvement initiatives. Consequently, strengthening principals' ICT competence is essential for improving the quality of supervision and enhancing educational outcomes in secondary schools.

Conclusion

This study examined principal ICT competence as a predictor of effective secondary school supervision in Ilorin South Local Government Area of Kwara State. The findings demonstrate that principals possess a reasonable level of ICT competence and that ICT competence significantly predicts effective school supervision. Specifically, competencies in ICT operations, data management, and instructional or supervisory use of ICT contribute positively to instructional monitoring, communication, administrative efficiency, and decision-making.

The study further established that inadequate ICT infrastructure, poor internet connectivity, unstable electricity supply, and insufficient professional training continue to constrain the effective integration of ICT into school supervision. These challenges limit the full realisation of the benefits associated with digital educational leadership.

The study therefore concludes that improving principals' ICT competence is essential for strengthening instructional supervision, promoting effective educational administration, and enhancing the quality of secondary education in Ilorin South Local Government Area of Kwara State.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Educational authorities should organise regular ICT capacity-building programmes, workshops, and continuous professional development activities to improve principals' ICT competence.
2. The government should provide adequate ICT infrastructure, including computers, internet facilities, digital supervisory tools, and modern educational technologies to secondary schools.
3. School administrators should be encouraged to integrate ICT into routine supervisory activities, including instructional monitoring, communication, record management, and evaluation of teachers' performance.
4. Government and relevant stakeholders should improve internet connectivity and electricity supply in public secondary schools to facilitate effective ICT utilisation.
5. Educational policymakers should allocate adequate financial resources for ICT development and maintenance in secondary schools to sustain technology-based educational administration.
6. Principals should encourage continuous ICT skill acquisition among teachers and other school personnel in order to promote a technology-driven school environment.

Implications for Policy and Practice

The findings of this study have important implications for educational policy and professional practice:

For educational policymakers, the study demonstrates the need to strengthen ICT integration within school leadership development programmes. Policies aimed at improving instructional supervision should incorporate mandatory ICT competency standards for serving and prospective principals.

For the Kwara State Ministry of Education, the findings provide empirical evidence supporting increased investment in ICT infrastructure, continuous professional development, and technology-based school supervision. Such investments are likely to improve administrative efficiency, accountability, and instructional quality across secondary schools.

For school principals, the study highlights ICT competence as a critical leadership capability required for effective instructional supervision. Continuous improvement in ICT knowledge and skills will enhance communication, data management, instructional monitoring, and evidence-based decision-making.

Finally, the study contributes to the educational management literature by providing empirical evidence on the predictive relationship between principals' ICT competence and effective secondary school supervision in the Ilorin South Local Government Area of Kwara State. It also provides a useful reference for future studies on ICT integration and digital leadership in secondary education.

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