

Modernising School Administration Through Digital Management Practices in Public Secondary Schools in Lagos State, Nigeria

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Abstract

Technology is gradually replacing the traditional, manual administrative processes in the education sector. The traditional methods are often plagued by delays and inefficiencies, leading to a high level of wastage in the operational mode of educational institutions. On this premise, this study aimed to provide a localised perspective on the impact of digital integration within the unique context of a highly diverse, resource-constrained environment like Lagos. The research investigated the relationship between digital management practices (e-supervision, e-marking, and e-communication) and administrative effectiveness in public senior secondary schools in Lagos State, Nigeria. A descriptive survey research design was adopted. A multi-stage sampling approach was used to select three Education Districts, 70 schools, and 3,150 teachers using the stratified random sampling, simple random sampling and purposive sampling techniques, respectively. Principals in all the 70 selected schools were chosen purposively. Data were collected using a validated instrument entitled: "Digital Management Practices and Administrative Effectiveness Questionnaire" (DMPAEQ), which achieved a reliability coefficient of .78. The three hypotheses were tested using the Pearson Product-Moment Correlation at a .05 level of significance. The findings revealed a statistically significant positive relationship between all three digital management practices and administrative effectiveness. These results lead to the rejection of the three null hypotheses, suggesting that the adoption of e-supervision, e-marking, and e-communication is vital for enhancing administrative functions, such as staff supervision, assessment processes, and stakeholder interaction, in public secondary schools in Lagos State. The study underscores the need for strategic investment in ICT infrastructure and targeted capacity-building programmes to bridge the gap between the enthusiasm for digital tools and their practical implementation, ensuring that administrative systems can meet the demands of an evolving educational landscape.

Keywords: Digital Management, E-supervision, E-marking, E-communication, Administrative efficiency

Background to the Study

The accelerating pace of technological advancement has reshaped organisational management across sectors, compelling institutions to adopt digital tools that enhance efficiency, transparency, and service delivery. In education, the integration of digital management practices has become indispensable for strengthening administrative systems and improving institutional performance. Digital tools such as e-supervision, e-marking, and e-communication now play a central role in streamlining administrative processes, supporting data-driven decision-making, and facilitating effective coordination among stakeholders. These innovations reflect a global shift toward digital transformation, where organisations increasingly rely on technology to optimise operations, reduce human error, and respond to the complexities of contemporary management environments. As educational systems evolve, school administrators are expected to leverage digital technologies to ensure that administrative functions remain responsive, efficient, and aligned with modern governance standards.

In an era where technology drives efficiency and innovation across industries, the education sector can no longer afford to remain static. From automating record keeping to enabling seamless communication, digital management practices have become the backbone of effective school administration. In Lagos State, where public secondary schools cater to a growing population of learners, the need for efficient, technology-driven administrative systems has never been more urgent. Traditionally, administrative tasks in schools relied heavily on manual processes, which are often plagued by delays, inaccuracies, and inefficiencies. These challenges have hindered the ability of school administrators, especially in public schools, to meet the demands of an evolving educational landscape. In recent times, school organisations and institutions are shifting from the traditional way of doing things to electronic (digitalised) ways, ranging from e-supervision, e-marking and e-communication.

In Nigeria, and particularly in Lagos State, the nation's most populous, urbanised, and culturally diverse region, the need for technologically enhanced school administration has become more urgent. Public secondary schools in Lagos State face mounting pressures arising from rapid population growth, increasing enrolment, infrastructural constraints, and heightened expectations for accountability and performance. Traditional manual administrative methods, characterised by delays, inaccuracies, and inefficiencies, are increasingly inadequate for managing the demands of a dynamic educational landscape. Despite the global momentum toward digital transformation, many public schools in Lagos continue to grapple with inconsistent ICT infrastructure, limited digital literacy among staff, and insufficient policy support for technology integration. These challenges underscore the necessity of modernising school administration through digital management practices that can enhance operational efficiency, strengthen communication, and improve

the overall effectiveness of school leadership. Understanding how digital tools function within the unique socio-economic and infrastructural context of Lagos State is, therefore, essential for developing practical, evidence-based strategies that can support sustainable administrative improvement and educational excellence.

E-supervision involves overseeing teaching and learning processes through digital platforms, ensuring real-time monitoring and feedback. According to Awulor-Hephzibah (2020), e-supervision is the process of using online technology to support the teacher trainees in the field. A well-developed electronic supervision is an efficient and convenient method of building a standard and balanced administrative system. In line with these observations, e-supervision provides complete and open access to the administrators to guide and support the work of their staff by using various digital tools. E-Supervision in education helps to build an educational collaborative environment between school administrators and other stakeholders with several kinds of tasks to perform, such as skill development, experience-sharing, group meetings and discussing teaching and administrative strategies. With e-supervision, information could be transmitted and stored through emails and other resource-sharing facilities such as the Database Management System (DBMS). This makes preservation and retrieval of data easier for assessment purposes.

E-marking, or electronic marking, is another component of digital management practice. It is a process of grading or assessing assignments, examinations, or other forms of student work using digital tools and technology instead of traditional pen-and-paper methods. It typically involves the use of computers or specialised software to record, evaluate, and store the results. The use of e-assessment can save financial and time resources, improve efficiency, and reduce energy spent on administrative processes (Sharma & Baliya, 2023). E-marking streamlines the assessment process, reduces administrative work, eliminates the problem of lost examination papers, makes grading more secure, and reduces cost items related to printing, transportation, invigilation, marking, and result processing are less expensive (Bowden, 2022). E-marking enables school administrators to closely monitor markers during the marking process, helping to curb bribery and corruption often found in some schools. It prevents situations where teachers unfairly allocate marks to undeserving students due to favouritism or bribes. Additionally, parents can receive direct feedback without the risk of students manipulating their results. E-marking also addresses issues where some teachers exploit students before releasing their report sheets. By conducting assessments electronically, these unethical practices can be eliminated.

E-communication is a mode of communication that uses electronic media to transmit information or messages using computers, e-mail, telephone, video calling, FAX machines, etc. Electronic communication has become the preferred method of communication at most schools, through the use of text messages, email, teleconferencing or other means. Administrators cannot afford to ignore this medium of communication, as it is a fast and efficient means of communication between members of the school. E-communication allows administrators, teachers, and district officials to interact seamlessly

without needing to be physically present at the district office or the administrator's office, avoiding the disruption of leaving students unattended. Forms and other essential information can be completed online, streamlining processes, reducing delays, and improving efficiency.

Administration is the task of overseeing an organisation with the optimum use of all the available resources (human and non-human) for achieving its goals and objectives. Administration involves processes such as planning, organising, directing, coordinating, controlling and evaluating performance against the stated objectives of the organisation. Whenever these administrative duties are done without wastage of resources, including time, it is described as effective. Oyedemi (2015) defined effective administration as the ability of the organisation's leader to effectively link the various organisational units and ensure the smooth communication and transmission of information from one part to the other. Effective educational administration requires setting educational standards, developing academic programmes, monitoring students' progress, training and motivating staff, ensuring a positive school environment, record keeping, effective communication with stakeholders, as well as managing systems and processes towards improving school performance.

The principles of technological development, the advancement of science, technology, and innovative methods for organising economic processes, often referred to as breakthrough technologies, form the foundation of digital management (Kryshtanovych et al., 2022). It is a multifaceted concept, driven by the need for organisations, whether in education, business, or the public sector, to navigate the challenges and opportunities presented by rapid, effective technological advancements (Ming et al., 2023). Digital management has been defined by Sow and Aborbie (2018) as the exercise of influence to embrace methods for proven digital transformation processes. In line with that, Mihardjo, Sasmoko, Almasjan, and Djap (2019) explained that digital leadership is a blend of digital competence and digital culture. Its value lies in its ability to adapt to the rapidly changing digital landscape, where traditional leadership approaches may not be as effective

According to Hussein (2024), digital management refers to the strategic integration of digital tools and technologies into organisational processes to enhance administrative effectiveness and employee performance. Digital management is defined as the use of information and communication technologies (ICT) to transform administrative processes and public services into digital formats, aiming to improve service quality, accessibility, and efficiency (Malets et al., 2024). Digital management involves the integration of digital tools and systems to support administrative functions and achieve tangible outcomes, moving beyond the traditional concept of management to a more comprehensive digital framework. Digital management could lead to improved operational efficiency through the automation of administrative tasks, enhanced information management by ensuring accurate and accessible data, and facilitated communication and collaboration among

staff, teachers, students, and parents. The strength of digital technologies does not lie in the technologies individually. Instead, it stems from how managers integrate them to transform their business and how they work (Kane et al. 2015). However, while digital management has gained popularity, questions have been raised about its effectiveness and the challenges it poses in implementation. School leaders should therefore possess a deep understanding of both the educational landscape and technological advancements to effectively guide their organisations toward successful digital transformation (Ming & Mansor, 2023).

Digital management practice involves the integration of web-based and mobile-based systems to enhance operational efficiency, data management, and communication within schools, ultimately improving the overall effectiveness of institutional management (Saryoko et al., 2024). Digital management practice could also refer to the use of collective intelligence (the combined knowledge and expertise of groups or teams) and artificial intelligence (AI-driven tools and systems) to enable effective digital management and innovation. He further emphasises that it involves the integration of human collaboration and advanced technologies to drive digital transformation and organisational success, grounded in Drucker's principles. Digital management practice offers new capabilities that resulted in significant changes in organisations, enhanced new methods of information dissemination within and outside the organisation (Ugwoke, Onu, Agangan & Ugwuanyi, 2015). In fact, it was discovered that both managers and teachers ascribed their efficiency and effectiveness to a wide range of exposure to digital tools. This lessened their workload and made the management process seamless (Ampofo, 2020; Jacob, Jegede, & Musa, 2020)

Junger et al. (2023) emphasised that while technology offers significant benefits, challenges such as infrastructure limitations, training gaps, and potential distractions must be addressed to maximise its effectiveness. Jacob, Jegede, and Musa (2020) and Nkata (2020) also identified the lackadaisical attitude of some administrators as a major hindrance, noting that some educators resist adopting technology for managing school data, which negatively impacts the integration of digital tools. Additionally, ICT incompetence among school administrators poses another challenge, as many lack basic computer skills necessary for effective digital management (Jacob et al., 2020). Similarly, lack of computer self-efficacy further prevents administrators from using digital tools confidently, as their belief in their ability to operate digital systems is low (Nkata, 2020).

Akinyemi and Ajayi (2020) explored the implementation of electronic supervision (e-supervision) systems in Nigerian educational institutions to enhance professional development and administrative efficiency. Using a descriptive survey design, the study highlighted that e-supervision significantly improved communication between supervisors and teachers, allowing for timely feedback and support. Respondents noted key advantages such as reduced travel costs and increased time efficiency, enabling supervisors to manage multiple sessions remotely. Despite these benefits, challenges included limited access to ICT infrastructure and resistance from educators unfamiliar with digital tools.

Awodiji, Ayanwale, and Oyedoyin (2022) explored the availability and utilisation of e-supervision facilities in private secondary schools in Lagos State during the post-COVID-19 era. Using a descriptive survey design, 226 respondents (principals, vice-principals, and teachers) highlighted how e-supervision tools, such as synchronous (Zoom, Skype) and asynchronous (emails, discussion boards) platforms, improved instructional supervision. Key benefits included enhanced communication, reduced travel costs, and real-time feedback for teachers. However, challenges like insufficient ICT training and inadequate infrastructure persisted.

Awulor-Hephzibah (2024) explored e-supervision as a tool for quality assurance in Nigerian schools, emphasising its potential to transform instructional supervision by enabling real-time communication, providing immediate feedback, and reducing logistical challenges like travel. The study highlighted the importance of e-supervision in enhancing the frequency and effectiveness of supervision sessions, which ultimately support teacher development and student learning outcomes. Challenges identified included inadequate ICT infrastructure, a lack of qualified supervisors proficient in technology, and poor funding for the education sector. The paper recommended training programs to improve supervisors' ICT skills, increased government investment in educational technology, and the enactment of policies to institutionalise e-supervision.

Research on e-marking has consistently highlighted its potential to improve assessment efficiency, accuracy, and academic integrity. Ramakrishna et al. (2012) emphasise the technical design and implementation of e-marking systems, demonstrating how digital platforms can automate evaluation processes, reduce human error, and streamline administrative tasks. Their work shows that well-designed e-marking systems enhance reliability and transparency by standardising marking procedures.

Kamal and Khan (2026) extend this discussion by examining e-marking within a large open university context. Their case study at Allama Iqbal Open University (AIU) reveals that e-marking not only improves efficiency but also strengthens academic integrity by minimising opportunities for malpractice and ensuring secure handling of examination scripts. They highlight improved turnaround time, enhanced monitoring of markers, and greater fairness in grading.

Vergés Bausili (2018) provides a broader conceptual perspective by mapping the transition from e-submission to full electronic management of assessment (EMA). The study illustrates how e-marking fits into a wider digital assessment ecosystem, improving workflow, feedback quality, and consistency across grading journeys. The author notes that EMA systems support scalability, reduce administrative burdens, and enhance the student experience through clearer, more timely feedback.

Abualrish and Khasawneh (2024) examined the use of social media as a platform for communication between school administration and local communities to promote inclusive education for children with special needs in Saudi Arabia. The study adopted

a descriptive survey design, engaging 265 parents across different cities and academic stages through a 10-item online questionnaire. Findings showed that school administrations effectively utilised WhatsApp groups for informal communication and Twitter/Instagram accounts as media interfaces, fostering collaboration with parents. Notably, parents' age did not significantly influence their perspectives, indicating familiarity with social media across generations. Male parents, however, rated school communication slightly higher than female parents did.

Kombo and Mwila (2024) examined the role of ICT in enhancing school administration in secondary schools within Tanzania's Ilala Municipality, with a focus on communication and resource management. The study found that 78.7% of school administrators agreed that ICT simplifies administrative tasks such as record-keeping and data analysis, while 73.8% acknowledged its role in improving communication with stakeholders.

Firmansyah et al. (2024) developed a web-based school information system aimed at enhancing administrative and communication efficiency in junior high schools. Using a qualitative approach and case study design, the authors collected data through interviews, observations, and documentation, which were analysed thematically. The study found that the system significantly improved administrative tasks, such as managing student data, grades, and attendance, with a notable reduction in manual errors and processing time. Additionally, e-communication between schools, students, and parents improved, leading to faster and more transparent information sharing.

Riinawati (2024) examined the effects of information and communication technology (ICT) integration on efficacy and efficiency in the management of educational administration at SMA Negeri 6 Banjarmasin. The author gathered information through observations, interviews, and documentation using a qualitative methodology and case study design. The information was then subjected to a thematic analysis. The study discovered that administrative procedures were greatly enhanced by the use of ICT technologies, such as digital communication platforms, student database systems, and attendance management software.

This study extensively reviewed relevant literature on digital management practices and their designs and methodologies, examining e-record keeping, e-supervision, e-communication, and e-marking. However, some gaps were identified in the review. In terms of methodology, many studies focused on specific regions with limited generalisability, as they were conducted in environments with better technological access, making it difficult to apply their findings to schools in under-resourced areas like public secondary schools in Lagos State. Additionally, many of these studies were conducted in mono-ethnic or homogenous societies, raising concerns about their applicability to Lagos State, a highly diverse and multicultural city where administrative challenges may differ.

The existing literature lacks in-depth analysis of how each digital management practice, such as e-supervision, e-marking, and e-communication, uniquely affects key administrative functions like decision-making, staff supervision, and record-keeping efficiency. Therefore, more studies are needed to explore the specific challenges and opportunities within public secondary schools in Lagos State to ensure that recommendations for improving school administration are both relevant and practical. This study aims to bridge these gaps by providing a more localised perspective on how digital management practices relate to administrative effectiveness in Public Secondary Schools in Lagos State.

Statement of the Problem

The increasing demands for efficiency, transparency, and responsiveness in educational administration, especially by the stakeholders, have put the public senior secondary schools in Lagos State in a continuous struggle for efficiency. Despite the global shift toward digital transformation, many schools still rely on traditional methods for supervision, assessment, and communication. These methods are often slow, error-prone, and poorly suited to the dynamic needs of modern education. The consequences of these inefficiencies are far-reaching, leading to delayed decision-making, poor record-keeping, inconsistent teacher evaluation, and weak stakeholder engagement. These challenges undermine the capacity of school administrators to deliver quality education and meet policy expectations. While digital tools such as E-supervision, E-marking, and E-communication have emerged as promising solutions, their adoption and impact on administrative effectiveness remain underexplored in the Lagos State public school system.

Given the scale of the education sector in Lagos, with over 63,000 teachers across 331 senior secondary schools, there is an urgent need to investigate whether digital management practices are being effectively utilised and whether they contribute meaningfully to administrative outcomes. Without empirical evidence, policymakers and school leaders lack the data needed to justify investments in digital infrastructure and training. This study, therefore, examined the relationship between digital management practices and administrative effectiveness in public senior secondary schools in Lagos State.

Research Objectives

The study:

1. investigated the relationship between E-supervision and administrative effectiveness in public senior secondary schools in Lagos State.
2. examined the relationship between e-marking and administrative effectiveness in public senior secondary schools.
3. studied the relationship between e-communication and administrative effectiveness in public senior secondary schools.

Hypotheses

The following hypotheses guided the study:

1. There is no significant relationship between E-supervision and administrative effectiveness in public senior secondary schools in Lagos State.
2. There is no significant relationship between e-marking and administrative effectiveness in public senior secondary schools.
3. E-communication has no significant relationship with administrative effectiveness in public senior secondary schools.

Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM) by Fred Davis in 1989 and the Systems Theory by Von Bertalanffy in 1968. The model and the theory provide a conceptual lens for understanding the relationship between the indicators of digital management practices (E-supervision, E-marking, and E-communication) and administrative effectiveness in public senior secondary schools

The TAM postulates that users' acceptance of technology is primarily influenced by their Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). In the context of this study, TAM explains how school administrators and teachers adopt digital tools such as e-supervision platforms, electronic marking systems, and communication technologies based on their perceived ability to enhance administrative tasks and reduce complexity. This provides a foundation for understanding the behavioural intention behind the adoption of digital management practices and their impact on administrative effectiveness.

The Systems Theory views an organisation as a complex set of interrelated and interdependent components working together to achieve common goals. In institutional administration, schools function as systems where inputs (resources, personnel, technology) are transformed through processes (supervision, communication, assessment) to produce quality outputs efficiently. This Theory supports the idea that the integration of digital tools into school administration leads to improved functionality, responsiveness, and goal attainment.

Together, TAM and Systems Theory provide a robust theoretical foundation for this study. While TAM explains the behavioural and perceptual factors influencing the adoption of digital tools, Systems Theory contextualises their role in enhancing organisational effectiveness. These frameworks guide the formulation of research hypotheses and interpretation of findings, offering insight into how digital management practices contribute to administrative success in Lagos State's public senior secondary schools.

Methodology

This study adopted a descriptive survey research design, which is appropriate for collecting data on existing conditions and examining relationships among variables without manipulating them. The population comprised all 63,896 senior secondary school teachers across the 331 public senior secondary schools in Lagos State (Federal Ministry of Education, 2024). A multistage sampling procedure was used to select the sample for the study. In the first instance, a stratified random sampling technique was used to select three Education Districts out of the six in the state to ensure adequate representation. Furthermore, from the selected districts, 70 senior secondary schools were chosen through a simple random sampling technique. Similarly, the purposive sampling technique was used to choose all the Principals in the 70 selected schools, while a total of 3,150 teachers were selected as respondents through the simple random sampling technique. This figure was determined by selecting 45 teachers per school ($45 \times 70 = 3,150$), ensuring consistency and eliminating sampling contradictions. In all, a total of 3,220 respondents (teachers and principals) were used for the study.

The research instrument was a self-developed and validated questionnaire titled Digital Management Practices and Administrative Effectiveness Questionnaire (DMPAEQ). The instrument contained 25 items measuring e-supervision, e-marking, e-communication, and administrative effectiveness using a modified four-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). To establish reliability, the instrument was pilot-tested on 50 teachers from schools outside the sampled districts. The resulting reliability coefficient of 0.78 indicated acceptable internal consistency.

Data collection was done by visiting the principals of the 70 sampled schools to obtain teacher registers. Names were arranged alphabetically, and 45 teachers per school were selected using the balloting method. Their phone numbers were collected, and a Google Form version of the questionnaire was distributed electronically. Completed responses were retrieved, coded, and analysed. The Pearson Product-Moment Correlation was used to test the three hypotheses at the .05 level of significance. Ethical considerations, including informed consent, confidentiality, voluntary participation, and data security, were strictly observed throughout the study.

Results

Research Hypothesis One: There is no significant relationship between E-supervision and administrative effectiveness in public senior secondary schools in Lagos State.

Table 1

E-Supervision and Administrative Effectiveness

Variable	M	SD	N	df	r-value	p-value	Remark	Decision
E-Supervision	3.82	.64	3220	3218	.612	.000	Sig	Ho rejected
Administrative Effectiveness	4.15	.71						

As indicated in Table 1, the r-value of .612 indicated a moderate to strong positive correlation between E-supervision and administrative effectiveness. Hence, the null hypothesis was rejected. However, since the p-value of .000 is less than .05, the result is statistically significant. Therefore, the hypothesis which states that there is no significant relationship between E-supervision and administrative effectiveness in public senior secondary schools in Lagos State is rejected. This showed that there was a significant positive relationship between e-supervision and administrative effectiveness in public senior secondary schools in Lagos State ($r = .612$; $p < .05$).

Research Hypothesis Two: There is no significant relationship between e-marking and administrative effectiveness in public senior secondary schools.

Table 2

E-Marking and Administrative Effectiveness

Variable	M	SD	N	df	r-value	p-value	Remark	Decision
E-Marking	3.76	.68	3220	3218	.587	.000	Sig	Ho rejected
Administrative Effectiveness	4.12	.73						

The Pearson Product-Moment Correlation was used to examine the relationship between E-marking and administrative effectiveness among public senior secondary school teachers in Lagos State. As shown in Table 2, the correlation coefficient (r) was .587, indicating a positive relationship between the two variables. The p-value of .000 is less than the 0.05 significance level, confirming that the relationship is statistically significant. Based on this result, the null hypothesis stating that there is no significant relationship between E-marking and administrative effectiveness in public senior secondary schools in Lagos State is rejected. This implies that using electronic marking systems has a positive impact on administrative effectiveness ($r = .587$; $p < .05$).

Research Hypothesis Three: E-communication has no significant relationship with administrative effectiveness in public senior secondary schools.

Table 3

E-Communication and Administrative Effectiveness

Variable	M	SD	N	df	r-value	p-value	Remark	Decision
E-Communication	3.89	.66	3220	3218	.641	.000	Sig	Ho rejected
Administrative Effectiveness	4.18	.72						

To test this hypothesis, the Pearson Product-Moment Correlation analysis was conducted to assess the relationship between E-communication and administrative effectiveness. The results showed a statistically significant positive correlation ($r = .641$, $p < .05$), indicating that the effective use of electronic communication tools such as email systems, messaging platforms, and digital reporting channels enhances administrative coordination, decision-making, and responsiveness within the school system.

Summary of Findings

1. There was a significant positive relationship between E-Supervision and administrative effectiveness in selected secondary schools in Lagos State. ($r = .612$; $p < .05$).
2. There was a significant positive relationship between E-marking and administrative effectiveness in selected secondary schools in Lagos State. ($r = .587$; $p < .05$).
3. There was a significant positive relationship between E-Communication and administrative effectiveness in selected Secondary Schools in Lagos State. ($r = .641$; $p < .05$).

Discussion of Findings

This study examined the relationship between digital management practices and administrative effectiveness in public secondary schools in Lagos State, focusing on three key variables, namely, e-supervision, e-marking, and e-communication. The findings are discussed in relation to each hypothesis.

The first finding of this study revealed a positive and significant relationship between e-supervision and administrative effectiveness. This demonstrates that when school administrators perceive digital supervision tools as useful and easy to apply (key constructs of the TAM), they are more likely to adopt them, resulting in improved record-keeping, staff coordination, and policy implementation. The effectiveness of

e-supervision observed in this study aligns with Awulor-Hepzibah (2020), who noted that digital supervision enhances real-time monitoring and timely feedback. Similarly, Akinyemi and Ajayi (2020) found that e-supervision strengthens communication between supervisors and teachers, supporting professional development. From the Systems Theory perspective, e-supervision functions as a subsystem that enhances the flow of information, strengthens feedback loops, and improves overall system responsiveness. Amfofo's (2020) findings further support this, showing that digital supervision fosters collaboration and shared problem-solving. Collectively, these insights illustrate how e-supervision not only improves individual administrative tasks but also enhances the interconnected processes that sustain effective school management.

The second finding established a positive and significant relationship between e-marking and administrative effectiveness. This outcome aligns with the Technology Acceptance Model (TAM), which suggests that administrators are more likely to adopt digital tools when they perceive them as useful and easy to use. The efficiency gains associated with e-marking, such as reduced administrative burden, faster result processing, and improved grading accuracy, indicate strong perceived usefulness, thereby reinforcing TAM's core assumptions. This finding is consistent with Kombo and Mwila (2024), who reported that electronic marking systems streamline assessment processes and enhance transparency. It also corroborates the earlier finding of Ramakrishna et al. (2012), who found that digital platforms can automate evaluation processes, reduce human error, and streamline administrative tasks. From a Systems Theory perspective, e-marking functions as a subsystem that strengthens the broader administrative system by improving information flow, reducing bottlenecks, and enhancing coordination among teachers and administrators. By ensuring accuracy, fairness, and efficiency in student evaluation, e-marking contributes to the smooth functioning of interconnected administrative processes. Thus, the adoption of e-marking not only improves assessment practices but also enhances the overall effectiveness and responsiveness of the school system.

The third finding also showed a positive and significant relationship between e-communication and administrative effectiveness. The finding emphasises the importance of digital literacy and infrastructure in school administration, suggesting that investment in E-communication technologies can lead to measurable improvements in organisational effectiveness. This is in line with Abualrish and Khasawneh (2024), who emphasised that digital communication tools, such as emails and messaging platforms, enhanced coordination, reduced delays, and improved stakeholder engagement in the school system. The study found that schools utilising e-communication platforms experienced faster dissemination of information, better collaboration among staff, and stronger parent-school relationships. This also aligns with Firmansyah et al (2024), who identified WhatsApp, Google Drive, and Zoom as highly effective tools for administrative tasks.

Limitation of the Study

The limitation of this study lies in its reliance on data from a restricted sample of public senior secondary schools in Lagos State, which may limit the generalizability of the findings to other regions or private institutions. The use of self-reported questionnaires may also introduce response bias, as participants could overstate or understate their use of digital management practices. Additionally, the study focused only on three digital practices, namely, e-supervision, e-marking, and e-communication; it excluded other potentially influential digital tools. Finally, the cross-sectional design prevents establishing causality, capturing only a snapshot rather than long-term administrative effects.

Recommendations

The study recommended that:

1. The Lagos State Ministry of Education, through the Education Resource Centre, should organise quarterly hands-on digital literacy workshops for principals, vice-principals, heads of departments, and administrative officers. These workshops should focus on practical skills such as using e-supervision platforms, digital assessment tools, cloud storage, and communication apps. Training should include follow-up mentoring and competency assessments to ensure that staff can apply the skills in real administrative tasks.
2. The Lagos State Government should develop and enforce a clear Digital School Administration Policy (DSAP) that mandates the use of approved digital tools for supervision, communication, record-keeping, and assessment. This policy should include minimum ICT standards for all public schools, timelines for implementation, monitoring mechanisms, and sanctions for non-compliance.
3. Each school should be made to formally institutionalise the use of digital communication systems by adopting standard platforms such as official school email accounts, WhatsApp Business groups, Google Workspace, or Microsoft Teams for internal and external communication. School administrators should create structured communication protocols, such as designated channels for staff notices, parent updates, and district correspondence, to reduce delays, improve documentation, and ensure accountability. Regular audits should be conducted to ensure consistent usage.

Conclusion

The study shows that digital management practices, that is, e-supervision, e-marking, and e-communication, significantly improve administrative effectiveness in Lagos State public senior secondary schools. These tools enhance leadership, streamline operations, and strengthen overall administrative outcomes. The findings highlight the need for continued investment in digital infrastructure, staff training, and supportive policy

frameworks to sustain effective technology integration. As the state's education system grows, adopting digital practices will be essential for long-term efficiency and improved educational quality. The study also points to areas for further research, including barriers to digital adoption and comparative analyses across school types or other public service sectors to identify best practices.

References

- Abualrish, M. A., & Khasawneh, M. A. (2024). Using social media as a platform of communication between school administration and the local communities to promote inclusive education for children with special needs. *Studies in Media and Communication*, 12(2), 79-95.
- Akinyemi, T. F., & Ajayi, A. I. (2020). Time management and administrative effectiveness among secondary school principals in Ekiti State. *International Journal of Academic Research in Business, Arts and Science*, 2(8), 1-11.
- Ampofo, J. A. (2020). Information system (MIS) in Ghana: A case study of University for Development Studies, Wa campus. *International Journal of Management & Entrepreneurship Research*, 2(5), 332–343.
- Awodiji, O. A., Ayanwale, M. A., & Oyedoyin, M. M. (2022). Availability and utilisation of e-supervision of instruction facilities in the post-COVID-19 era. *European Journal of Humanities and Social Sciences*, 3(11), 140–157.
- Awulor-Hephzibah, B.N. (2020). E-supervision as tool for quality assurance in school administration: Implications for Nigerian supervisors. *International Journal for Educational Management (IJEM)*, 18(1): 77-92.
- Bowden, J. (2022). Digital transformation in education: The role of e-marking. *Educational Technology Research and Development*, 70(3), 1125-1143.
- Firmansyah, A., Syahputra, A., Riduan, R., & Suratman, S. (2024). Implementasi sistem informasi manajemen di MTS Negeri 1 Paser Dalam Meningkatkan Kualitas Pendidikan. *J-CEKI: Jurnal Cendekia Ilmiah*, 4(1).
<https://doi.org/https://doi.org/10.56799/jceki.v4i1.6317>
- Hussein, I. A., & Nabil, J. (2024). Digital management and its impact on raising the efficiency of employee performance (A field study on a sample of Iraqi private companies). *International Journal on Economics, Finance and Sustainable Development*, 6(2), 47–59.
- Jacob, O. N., Jegede, D., & Musa, A. (2020). Administration of information communication technology (ICT) in Nigerian secondary schools: challenges and the ways forward. *Electronic Research Journal of Engineering, Computer and Applied Sciences*, 2, 50-63.
- Junger, A. P., Oliveira, V. I., Yamaguchi, C. K., Oliveira, M. A. M. L., Aguiar, H. M., & Lima, B. L. S. (2023). The role of school management in technological practices as a tool for futuristic teaching. *Revista GeSec*, 14(7), 10,749–10,765.
- Kamal, B. M., & Khan, M. S. (2026). Enhancing academic integrity and efficiency through e-marking: A Case study of Allama Iqbal Open University (AIU). *Journal of Management Science Research Review*, 5(2), 706-725.

- Kane, G. C., Phillips, A. N., Copulsky, J., & Andrus, G. (2019). How digital leadership is (n't) different. *MIT Sloan Management Review*, 60 (3), 34-39.
- Kombo, L., & Mwila, P. M. (2024). Role of information and communication technologies in improving school administration in secondary schools: A case of Ilala municipality. *International Journal of Scientific Research and Modern Technology*, 3(12), 1-14.
- Kryshtanovych, M., Gorban, I., Kornat, L., Dykyi, A., & Marushko, N. (2022). Socio-Economic Systems in the Context of Ensuring Security. *IJCSNS. International Journal of Computer Science and Network Security*, 2(6), 733-738.
- Margiene, A., & Ramanauskaite, S. (2022). Efficiency of e-assessment tools in secondary education. *Computers & Education*, 180, 104432.
- Mihardjo, L., Sasmoko, S., Alamsjah, F., & Djap, E. (2019). Digital leadership role in developing business model innovation and customer experience orientation in industry 4.0. *Management Science Letters*. 9. 1749–1762.
- Ming, G.K., & Mansor, Mahaliza. (2023). Exploring the impact of Chat-GPT on teacher professional development: Opportunities, challenges, and implications. *Asian Journal of Research in Education and Social Sciences*, 5(4), 54-67.
- Nkata, A. S. (2020). Education management information system for tracking students' academic progress in secondary schools: A case of Arusha region (Unpublished Master's thesis, Nelson Mandela African Institution of Science and Technology). NM-AIST Institutional Repository
- Oyedemi, O. (2015). ICT and effective school management, administrators' perspective. *Proceedings of the World Congress on Engineering*, 1, 249-253.
- Ramakrishna, A., Navya Sree, B., Sri Harish, P., Swarna, S., & Vasundhara, C. H. (2012). Design and implementation procedure for administration and evaluation in e-marking-system. *International Journal of Innovative Technology and Exploring Engineering (IJITEE)*, 2(1), 15-19.
- Riinawati, R. (2024). Integration of information and communication technology in educational administration management at school. *Al-Tanzim: Journal Manajemen Pendidikan Islam*, 8(1), 285–294.
- Sharma1, P., & Baliya, J. N. (2023). E-assessment tools a potent futuristic approach for economic learning among learners. *International Journal for Multidisciplinary Research (IJFMR)*, 5(5), 1-8.
- Ugwoke, S. C., Onu, O., Agangan, M. A., & Ugwuanyi, J. (2015). Principals challenges in the use of ICT in secondary school administration in Nigeria. *SAUSSUREA*, 5(6), 132-149.
- Vergés Bausili, A. (2018). From piloting e-submission to electronic management of assessment (EMA): Mapping grading journeys. *British Journal of Educational Technology*, 49(3), 463-478.