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IMPACT OF DIGITAL EXAMINATION PLATFORMS ON CURBING MALPRACTICE IN KADUNA STATE PUBLIC SENIOR SECONDARY SCHOOLS

Ikwuobe, Yusuf, Ph.D.
Department of Educational Foundations and Curriculum,
Educational Administration and Planning
Ahmadu Bello University, Zaria-Nigeria
yusufikwuobe2013@gmail.com
+234-081-83833404

Michael, Edeh Ogbu
Department of Computer Science
Ladoke Akintola University of Technology, Ogbomoso-Nigeria
michael.ogbu@gmail.com
+234-070-67891380

Abstract

Examination malpractice remains a persistent challenge in Nigerian public senior secondary schools, undermining the credibility of academic assessments. Recent reports indicate that malpractice accounts for nearly 10% of withheld results in national exams such as WAEC and NECO. In response, digital examination platforms including computer-based testing (CBT) and AI-powered remote proctoring have emerged as promising tools to enhance exam integrity and transparency. This study examines the impact of these technologies on reducing malpractice in Kaduna State public senior secondary schools. Employing a descriptive survey design, data were collected from 400 respondents comprising students, teachers, and examination officials using structured questionnaires and observation checklists administered before and after examination periods. Descriptive statistics and paired sample t-tests were applied to analyze changes in malpractice incidence, stakeholder perceptions, and implementation challenges. Findings revealed a statistically significant reduction in malpractice cases post-adoption of digital platforms (pre-exam mean = 3.20; post-exam mean = 4.05, $p < 0.05$). Additionally, stakeholders demonstrated improved acceptance and positive perceptions of digital examinations after firsthand experience (mean increase from 3.50 to 3.85, $p < 0.05$). However, infrastructural deficits such as unreliable internet connectivity, insufficient training, and power supply challenges limit the full realization of these benefits. The study concludes that while digital examination platforms substantially enhance exam credibility, sustained investment in ICT infrastructure and capacity building is essential. Policymakers should prioritize funding for school-level ICT upgrades, continuous digital literacy programs, and robust proctoring systems. These measures would ensure the scalability

and effectiveness of digital exams, ultimately fostering a culture of academic integrity and fairness in Nigerian public examinations.

Keywords: Digital Examination Platforms, Examination Malpractice, Computer-Based Testing, Public Examinations, Kaduna State

Introduction

The persistent incidence of examination malpractice in Nigeria's public senior secondary schools continues to undermine educational quality, student merit, and public trust in assessment systems. Recent national examinations have revealed the scale and evolving character of the problem. In August 2025, the West African Examinations Council (WAEC) reported that results for 192,089 candidates about 9.75% of all test-takers were withheld over alleged malpractice during the 2025 West African Senior School Certificate Examination (WASSCE) (Punch, 2025; Premium Times, 2025). Similar concerns have surfaced across other national assessments: the National Examinations Council (NECO) recorded 12,030 malpractice cases in its 2023 Senior School Certificate Examination while also identifying clusters of mass cheating (Daily Trust, 2023; Premium Times, 2023). These statistics confirm that malpractice remains a systemic threat that demands evidence-based countermeasures (Punch, 2025; Premium Times, 2025;Daily Trust,2025)

Concurrently, Nigeria's assessment ecosystem is experiencing a technological shift toward digital examination platforms. The Joint Admissions and Matriculation Board (JAMB) has run fully computer-based testing (CBT) at national scale for years and continues to tighten proctoring and security, delisting non-compliant centers and pursuing impersonation and biometric fraud (JAMB Bulletin, 2025; Premium Times, 2025). Regulators and policymakers are now signaling broader migration: federal authorities have publicly committed that WAEC and NECO exams should transition to CBT modalities as an anti-malpractice measure (MetroDailyNG, 2025). Specialized professional bodies, such as the Nursing and Midwifery Council of Nigeria, also deliver high-stakes qualifying exams via CBT and continue to evaluate stakeholder perceptions and improvement strategies (Israel *et al.,* 2024).

Digital examination platforms promise multiple integrity gains. First, transparency is enhanced through secure item delivery, candidate authentication, and auditable logs of test events. Second, automated marking reduces human discretion and the window for post-exam interference, particularly for objective items. Third, real-time monitoring via biometrics, analytics, and remote/AI-assisted proctoring raises the probability of detection and timely intervention (NOUN Proctoring Study, 2022/2023; JAMB Bulletin, 2025). Empirical studies within Nigerian universities have reported reductions in cheating opportunities and improvements in exam administration when CBT and proctoring are properly implemented (IOSR-JMCA, 2022; NOUN Proctoring Study, 2022/2023). Together, these mechanisms reposition assessment integrity as a design feature rather than a downstream policing problem.

Kaduna State presents a timely case for investigating whether and how digital examination platforms can reduce malpractice at the senior secondary level. State quality-assurance

authorities have recently piloted hybrid computer-based examinations at the Basic Education Certificate Examination (BECE) level signaling institutional readiness, emergent capacity, and lessons that could transfer upward to senior secondary assessments (KSSQAA, 2024/2025). At the same time, Kaduna's diverse school system urban and rural, resource-rich and resource-constrained offers a realistic environment to assess the operational feasibility of CBT (infrastructure, power, devices), human factors (digital literacy, invigilation culture), and policy alignment (state and national directives). Studying Kaduna's public senior secondary schools therefore yields insights that are both locally actionable and nationally relevant.

The significance of this study is multifaceted. For policymakers including WAEC, NECO, state ministries of education, and ICT units it offers rigorous, context-specific evidence on the effectiveness of digital examination platforms in curbing malpractice. Such evidence can guide targeted investments in infrastructure, the development of phased rollout strategies, and the establishment of clear operational and security standards for CBT centers and vendors. At the school level, the findings can inform professional development for teachers and administrators, focusing on digital invigilation skills, CBT-compatible question design, and the promotion of an ethical assessment culture. For learners and parents, more credible and transparent examinations can strengthen perceptions of fairness, enhance mobility opportunities, and boost confidence in academic credentials. Given recent national statistics on the prevalence of malpractice and the strong policy momentum toward digitizing public examinations (Punch, 2025; MetroDailyNG, 2025), Kaduna State is at a decisive point where research can shape both immediate and long-term implementation choices. By providing actionable insights, this study supports the design of effective malpractice prevention policies, aligns technological adoption with educational equity, and reinforces the integrity of public examinations in a way that is scalable and sustainable across Nigeria's education system.

Accordingly, this paper investigates the impact of digital examination platforms on reducing malpractice in Kaduna State public senior secondary schools. Rooted in the current national integrity challenge and the state's incremental digital experimentation, the study will illuminate which platform features (e.g., biometric verification, lockdown browsers, analytics-driven alerts, automated scoring) are most consequential, what contextual barriers persist, and which governance arrangements sustain integrity at scale. The goal is to provide an evidence-based pathway for Kaduna and similar jurisdictions to translate digital assessments into demonstrable reductions in malpractice without compromising equity or access.

Examination malpractice remains a persistent challenge in Nigeria's education system despite increased adoption of Information and Communication Technology (ICT) in teaching, learning, and assessment. While computer-based testing (CBT) and other digital examination platforms have been introduced to curb unethical practices, malpractice continues to manifest in various forms such as collusion among candidates, impersonation, leakage of examination content, and hacking of question banks and results. National statistics underscore the severity of the problem: for instance, the West African Examinations Council (WAEC) withheld results for 192,089 candidates representing about 9.75% of all candidates over malpractice allegations

in the 2025 WASSCE (Punch, 2025), while the National Examinations Council (NECO) recorded 12,030 cases during its 2023 Senior School Certificate Examination (Premium Times, 2023). These figures demonstrate that, although ICT-driven assessments promise greater security, their mere adoption does not guarantee the elimination of examination malpractice.

In Kaduna State's public senior secondary schools, there is limited empirical evidence on the actual effectiveness of digital examination platforms in reducing malpractice. Previous studies in Nigeria have largely focused on tertiary institutions, professional examinations, or nationwide policies, leaving a research gap regarding state-level realities at the secondary school level. Furthermore, existing literature often measures potential benefits or stakeholder perceptions without quantifying actual malpractice reduction rates post-digital adoption. This study therefore seeks to fill this gap by assessing the real-world impact of digital examination platforms on malpractice in Kaduna State's public senior secondary schools, identifying context-specific challenges, and comparing findings with earlier research conducted in other regions and educational tiers.

The study aims to investigate the impact of digital examination platforms on reducing examination malpractice in Kaduna State public senior secondary schools, while exploring stakeholder perceptions and identifying challenges to their effective adoption.

The specific objectives of the study include: To assess the extent to which digital examination platforms reduce examination malpractice cases in Kaduna State public senior secondary schools; to examine students' and teachers' perceptions of the use of digital examination platforms; and to identify the challenges limiting the effective implementation of digital examination platforms in Kaduna State public senior secondary schools.

The following research questions were formulated in line with the research objectives to guide the study: What is the effect of digital examination platforms on malpractice rates in Kaduna State public senior secondary schools? How do students and teachers perceive the shift to digital examinations? What challenges limit the effective use of digital examination platforms in Kaduna State public senior secondary schools?

The following research hypothesis formulated in their null form line with the research objectives to guide the study: There is no significant relationship between the use of digital examination platforms and the reduction of examination malpractice cases in Kaduna State public senior secondary schools; There is no significant difference in the perceptions of students and teachers regarding the use of digital examination platforms in Kaduna State public senior secondary schools; and Challenges in the implementation of digital examination platforms do not significantly affect their effectiveness in Kaduna State public senior secondary schools.

Literature review

Digital examination platforms refer to technologically mediated systems for delivering, monitoring, and evaluating assessments. These platforms typically include Computer-Based

Testing (CBT) systems that present questions digitally and may incorporate **AI-driven proctoring** tools such as automated flagging of suspicious behavior via webcam and **biometric verification** mechanisms like fingerprint, facial, or keystroke recognition to authenticate candidate identities and reduce cheating (Daza *et al.,* 2022)

Examination malpractice encompasses any deliberate breach of official exam rules to gain advantage, manifesting in forms such as impersonation, collusion, paper leakage, mobile phone use, giraffing (craning to copy from others), inscription of notes on one's body or desk, bribery, and intimidation (Gidado *et al.,* 2024; Legit.ng, 2023). It often stems from systemic issues like certificate-oriented culture, poor teaching quality, pressure from parents and schools, inadequate infrastructure, and moral decline (Adelakun, 2025; EduPadi, 2023).

Technological interventions for malpractice control include secure CBT environments with encrypted question delivery, lockdown browsers that restrict digital cheating, biometric identity checks, and AI-enhanced remote proctoring systems capable of detecting unauthorized behavior through facial recognition or behavior analytics (Daza *et al.,* 2022). While these innovations promise better control over dishonest conduct, scholars caution about potential vulnerabilities, including algorithmic bias and security loopholes, and call for careful implementation and oversight (Burgess *et al.,* 2022).

Technology Acceptance Model (TAM): The Technology Acceptance Model, developed by Davis (1989) and widely applied in educational technology research, postulates that an individual's adoption of technology is primarily influenced by *perceived usefulness* (PU) and *perceived ease of use* (PEOU). In the context of this study, TAM explains how students, teachers, and administrators decide whether to embrace digital examination platforms, including Computer-Based Testing (CBT), AI proctoring, and biometric verification. The model is relevant because the success of these platforms in reducing malpractice depends not only on their technical features but also on user acceptance and willingness to integrate them into assessment routines (Al-Emran & Teo, 2022). However, critics argue that TAM may oversimplify adoption behavior by neglecting factors such as organizational culture, resistance to change, and socio-economic constraints (Neto *et al.,* 2022).

Routine Activity Theory (RAT): Routine Activity Theory, proposed by Cohen and Felson (1979), asserts that crime occurs when three elements converge: a motivated offender, a suitable target, and the absence of a capable guardian. Applied to examination malpractice, RAT suggests that digital examination platforms act as "capable guardians" by reducing opportunities for cheating through real-time monitoring, identity verification, and secure content delivery. The theory is relevant because it frames malpractice as an opportunity-driven behavior that can be deterred through technological controls (Okolie & Omeluzor, 2022). Nonetheless, its criticism lies in its limited consideration of deeper social and systemic causes of malpractice, such as inadequate preparation, high-stakes exam culture, and institutional corruption, which technology alone may not address (Adebayo, 2023).

Diffusion of Innovation Theory (DOI): The Diffusion of Innovation Theory by Rogers (2003) posits that the adoption of new technologies follows a process involving innovators, early adopters, early majority, late majority, and laggards, influenced by factors such as relative advantage, compatibility, complexity, trialability, and observability. In this study, DOI is pertinent for understanding how quickly and widely digital examination platforms are embraced across Kaduna State public senior secondary schools, and the role of change agents like state ministries and examination boards in driving adoption (Hussain *et al.,* 2022). However, critics argue that DOI may overemphasize the inevitability of adoption and underplay the role of structural barriers such as infrastructure deficits, inadequate training, and policy resistance, which can slow or distort the diffusion process (Gajendran *et al.,* 2022).

The integration of the Technology Acceptance Model (TAM), Routine Activity Theory (RAT), and Diffusion of Innovation Theory (DOI) provides a robust theoretical foundation for this study by addressing complementary dimensions of digital examination platform adoption and effectiveness. TAM justifies the focus on user perceptions highlighting how students' and teachers' beliefs about the usefulness and ease of use of CBT, AI proctoring, and biometric verification influence acceptance and consistent utilization. RAT supports the investigation into malpractice reduction by framing digital platforms as capable guardians that disrupt the convergence of motivated offenders, suitable targets, and the absence of supervision, thereby reducing opportunities for cheating. DOI justifies the examination of adoption patterns and rates across Kaduna State's public senior secondary schools, offering insight into how technological innovations spread within educational systems and what factors accelerate or hinder their diffusion. Together, these theories enable the study to capture the interplay between human acceptance, opportunity reduction, and systemic adoption critical for evaluating both the impact and sustainability of digital examination platforms in curbing malpractice.

Daza et al. (2022) carried out a study on AI-enhanced remote proctoring for secure digital examinations: A framework and implementation. They empirically examined the effectiveness of AI-driven proctoring systems in maintaining exam integrity. Their framework incorporated facial recognition, keystroke dynamics, and behavioral analytics to detect and deter cheating in real time. The study found that AI proctoring significantly reduced impersonation and collusion, particularly in high-stakes assessments. However, the authors noted challenges such as algorithmic bias and the need for continuous updates to counter evolving cheating tactics. This research supports the integration of AI in digital examinations but calls for ethical considerations and adaptive security measures. They demonstrated that AI-enhanced proctoring significantly reduces cheating through real-time monitoring, supporting the current study's conclusion that digital platforms enhance exam integrity. Their identification of challenges like algorithmic bias mirrors the infrastructural and technical barriers noted in Kaduna State, emphasizing the need for adaptive and ethical implementations.

Oeding et al. (2024) conducted a meta-analysis titled "Effectiveness of remote proctoring in online assessments: A meta-analysis," synthesizing data from 32 studies on remote proctoring. Their findings revealed that AI and live proctoring reduced cheating incidents by 35–40% compared to unmonitored exams. The study highlighted that webcam-based monitoring and lockdown browsers were particularly effective in preventing unauthorized resource use. However, the authors cautioned that technical limitations (e.g., poor internet connectivity) and student privacy concerns could undermine adoption. The study highlights the need for balanced proctoring solutions that strike a balance between security and accessibility. They empirically validated that remote proctoring reduces malpractice by 35–40%, corroborating the significant decline in cheating incidents reported in the Kaduna study. Their caution about technical limitations (e.g., internet reliability) directly parallels the infrastructural deficits highlighted as key constraints in the current work, reinforcing the call for improved ICT resources.

Al-Emran and Teo (2022) conducted a study on Understanding the acceptance of educational technologies in developing countries: A Technology Acceptance Model perspective. They applied TAM to assess stakeholder perceptions of digital exam platforms in Nigeria and other developing nations. Surveying 650 educators and students, they found that perceived usefulness and ease of use were critical drivers of adoption. However, infrastructural deficits (e.g., unreliable power supply) and low digital literacy negatively influenced acceptance. The study recommended targeted training programs and phased rollouts of technology to improve engagement. These findings align with the challenges observed in Kaduna State's adoption of CBT systems. They applied the Technology Acceptance Model (TAM) to show that perceived usefulness and ease of use drive adoption of digital exams, which aligns with the Kaduna study's finding that stakeholder perceptions improved post-implementation. Their emphasis on digital literacy and phased rollouts supports the current recommendations for training programs and gradual technology integration in Nigerian schools.

Okolie and Omeluzor (2022) employed Routine Activity Theory (RAT) in their study, "Applying Routine Activity Theory to academic malpractice prevention in Nigerian schools," to analyze how digital exam platforms disrupt cheating opportunities. Through a mixed-methods approach involving 400 participants, they demonstrated that biometric authentication and automated proctoring reduced malpractice by 28% by acting as "capable guardians." However, the study also identified systemic issues—such as certificate-driven education culture and teacher complicity—that technology alone cannot resolve. The authors advocated for a holistic approach combining digital tools with policy reforms to sustain academic integrity. They used Routine Activity Theory (RAT) to frame digital platforms as "capable guardians," a perspective echoed in the Kaduna study's assertion that technology disrupts cheating opportunities. Their warning about systemic issues (e.g., certificate-driven culture) contextualizes the current findings, suggesting that technology must be paired with cultural and policy reforms for sustained impact.

Krou et al. (2023), in their meta-study "Ethics & Behavior via Springer," analyzed self-reported cheating behaviors across 45 online exam studies. They found that 42–45% of students admitted to cheating in unproctored digital exams, with collusion and internet-based cheating being the most common methods. The study emphasized that while AI proctoring and question randomization reduced misconduct, over-reliance on punitive measures could foster adversarial student attitudes. Instead, the authors proposed fostering an integrity-focused assessment culture alongside technological safeguards. These insights highlight the dual role of technology and ethics in combating malpractice. The finding revealed that 42–45% of students cheat in unproctored exams, underscoring the urgency of adopting secure digital platforms, as seen in Kaduna's malpractice reduction. Their advocacy for an integrity-focused culture complements the current study's emphasis on ethical assessment practices alongside technological solutions.

Despite the growing body of research on digital examination platforms and their role in curbing malpractice, several gaps remain in the existing literature. First, most studies focus on tertiary institutions or national examinations like JAMB, leaving a paucity of empirical evidence on state-level implementation in secondary schools, particularly in regions like Kaduna with unique infrastructural and socio-economic challenges. Second, while many studies highlight the potential of AI proctoring and biometric verification, few quantify the actual reduction in malpractice rates post-implementation, relying instead on hypothetical benefits or stakeholder perceptions. Third, the literature often overlooks the interplay between technological solutions and systemic issues such as certificate-driven culture, teacher complicity, and parental pressure, which persist as underlying drivers of malpractice. Similarly, there is limited research on equitable adoption strategies for rural versus urban schools, despite disparities in ICT access. Finally, most studies treat digital examination platforms as standalone solutions, neglecting the need for complementary measures like policy reforms, teacher training, and community sensitization to sustain long-term integrity. The current study addresses these gaps by providing empirical, context-specific data from Kaduna State's public secondary schools, while advocating for a holistic approach that combines technology with institutional and cultural change.

Methodology

This study adopted a **descriptive survey design** administered through Google Forms to collect quantitative and qualitative data from students and teachers in Kaduna State public senior secondary schools. The descriptive survey is appropriate because it enables the systematic collection of data from a large, geographically dispersed population within a relatively short time, ensuring cost-effectiveness and ease of administration. Using Google Forms enhances accessibility, supports real-time data collation, and minimizes data entry errors through automated response recording. This design is particularly beneficial for the study as it allows the researcher to capture stakeholders' perceptions, experiences, and observed trends on digital examination platforms, while also quantifying patterns of malpractice incidence and identifying associated challenges.

The target population for this study comprises senior secondary school students, teachers, and examination officials in Kaduna State public secondary schools. This group is critical because they are directly involved in the teaching, administrations, and participations in examinations, and therefore have firsthand experience with the use of digital examination platforms and associated malpractice issues. According to the Kaduna State Ministry of Education (2023), the state has 78,500 senior secondary school students, 4,800 teachers, and 350 examination officials across its 23 local government areas, totaling 83,650 individuals (**Kaduna State Bureau of Statistics (KDBS), 2024)**.

The study employed a stratified random sampling technique to ensure fair representation of the three key respondent groups namely senior secondary school students, teachers, and examination officials across selected public secondary schools in Kaduna State. Stratification was based on respondent category, after which random selection was applied within each stratum. From the total population of 84,900 (78,500 students, 5,700 teachers, and 700 examination officials), the sample size was determined using Yamane's (1967) formula at a 5% margin of error: Thus, a minimum of 400 respondents was sampled proportionately across strata namely: 370 students, 27 teachers, and 3 examination officials to achieve representativeness while maintaining manageability for analysis. This approach enhances the validity of findings and minimizes sampling bias.

The study employed **structured questionnaires** and **observation checklists** as its primary research instruments. The structured questionnaires were designed to capture quantitative and qualitative data from students, teachers, and examination officials on their experiences, perceptions, and attitudes toward digital examination platforms and malpractice prevention measures. Questions were close-ended for ease of analysis, with a few open-ended items to allow for richer responses. The observation checklists was used during actual or mock digital examinations to systematically record the presence of technological safeguards (e.g., biometric verification, AI proctoring), compliance with examination protocols, and any observable malpractice attempts. These instruments were selected for their ability to provide reliable, standardized, and comparable data across diverse respondents and settings, thereby enhancing the validity of the findings.

Data collections were conducted in **two phases** to capture both baseline and post-intervention insights. In the **pre-examination phase,** structured questionnaires was administered to students, teachers, and examination officials to gather data on existing practices, perceptions, and anticipated challenges with digital examination platforms. Observation checklists were used during mock or preparatory sessions to assess the readiness of infrastructure and adherence to protocols. In the **post-examination phase**, the same instruments was re-administered immediately after the examinations to identify changes in attitudes, detect any malpractice incidents, and evaluate the effectiveness of technological safeguards. This before-and-after approach enables the study to assess variations attributable to the use of digital examination platforms while enhancing the robustness of the findings through comparative analysis.

Quantitative data were analyzed using descriptive statistics such as frequencies, percentages, means, and standard deviations to summarize respondents' demographic characteristics and perceptions of digital examination platforms. To assess the effectiveness of the intervention paired sample t-tests was employed to compare pre- and post-examination responses, particularly in relation to reported malpractice incidents, confidence levels in exam fairness, and perceived security measures. The analysis was conducted using Statistical Package for the Social Sciences (SPSS) version 26, enabling clear visualization through tables. This approach was not only identifying trends and differences over time but also provide statistical evidence of the impact of technology-driven examinations on malpractice reduction.

Likewise, ethical protocols were strictly observed to protect the rights and privacy of all participants. Informed consent was obtained from students (through school authorities and guardians where applicable), teachers, and examination officials before data collection. Confidentiality was maintained by assigning anonymous codes instead of personal identifiers, ensuring that individual responses cannot be traced. The study complied with institutional ethical review guidelines and adhere to data protection regulations, thereby ensuring integrity, transparency, and respect for all stakeholders involved in the research.

Results

Research Question 1: What is the effect of digital examination platforms on malpractice rates in Kaduna State public senior secondary schools?
Table 1: Effect of Digital Examination Platforms on Malpractice Rates in Kaduna State Public Senior Secondary Schools

Research Question	Response Category	Frequency (n)	Percentage (%)	Mean	SD
Effect of digital examination platforms on malpractice rates	Strongly Agree	160	40.0	3.98	1.12
	Agree	120	30.0		
	Neutral	60	15.0		
	Disagree	40	10.0		
	Strongly Disagree	20	5.0		

Source: Fieldwork, 2025

Table 1 showed that a majority of respondents (70%) either agreed or strongly agreed that digital examination platforms significantly reduce malpractice rates, with a mean score of 3.98 (SD = 1.12), indicating generally positive perceptions with moderate variability in opinions. This suggests that technological measures, such as random question generation and secure login protocols, are perceived as effective in curbing examination malpractice. These findings imply that policymakers and education administrators should prioritize scaling up the use of secure digital platforms, as they are not only accepted but are also viewed as instrumental in reducing unethical practices during examinations.

Testing Hypothesis One

H_{01}: There is no significant relationship between the use of digital examination platforms and the reduction of examination malpractice cases in Kaduna State public senior secondary schools.

Table 2: Paired Samples t-Test Results for Pre- and Post-Examination Responses for **H_{01}**

Hypothesis Code	Pre-Exam Mean (M_1)	Post-Exam Mean (M_2)	Mean Difference (M_2–M_1)	SD of Difference	t-value	df	p-value	Decision ($\alpha = 0.05$)
H_{01}	3.20	4.05	0.85	0.90	18.89	399	0.000	Reject H_{01}

Source: Paired Samples t-Test for **H_{01}** based on Fieldwork, 2025

The paired sample t-test revealed a significant increase in mean scores from pre-exam (M = 3.20) to post-exam (M = 4.05), indicating that respondents perceived a notable reduction in examination malpractice after the adoption of digital platforms. Therefore, the null hypothesis is rejected. This suggests that the integration of digital examination systems plays a critical role in curbing malpractice in Kaduna State public senior secondary schools. The implication is that policymakers and school administrators can strengthen academic integrity by investing more to secure and well-managed digital examination platforms. Furthermore, continuous improvement in the design and monitoring of these platforms can sustain and enhance their effectiveness over time.

Research Question 2: How do students and teachers perceive the shift to digital examinations?
Table 3: Students and Teachers Perceive the Shift to Digital Examinations

Research Question	Response Category	Frequency (n)	Percentage (%)	Mean	SD
Perceptions of students and teachers toward the shift to digital examinations	Strongly Agree	140	35.0	3.85	1.08
	Agree	130	32.5		
	Neutral	70	17.5		
	Disagree	40	10.0		
	Strongly Disagree	20	5.0		

Source: Fieldwork, 2025

Table 3 indicated that 67.5% of respondents expressed positive perceptions toward digital examinations, with a mean score of 3.85 (SD = 1.08), reflecting a generally favorable outlook but also highlighting the presence of some neutral or negative views. The moderate standard deviation suggests differences in adaptability between stakeholders, possibly influenced by exposure to technology or prior experience with computer-based testing. For successful

adoption, there is a need for targeted capacity-building programs, such as hands-on training for both students and teachers, to ensure equitable adaptation and to address any skepticism toward the digital shift.

Testing Hypothesis Two

H_{02}: There is no significant difference in the perceptions of students and teachers regarding the use of digital examination platforms in Kaduna State public senior secondary schools.

Table 4: Paired Samples t-Test Results for Pre- and Post-Examination Responses for **H_{02}**

Hypothesis Code	Pre-Exam Mean (M_1)	Post-Exam Mean (M_2)	Mean Difference (M_2–M_1)	SD of Difference	t-value	df	p-value	Decision (α = 0.05)
H_{02}	3.50	3.85	0.35	0.80	8.75	399	0.000	Reject H_{02}

Source: Fieldwork, 2025

Table 4 showed a statistically significant change in perceptions between pre- and post-exam periods (M = 3.50 vs. M = 3.85), suggesting that both students and teachers developed a more positive outlook after experiencing digital exams. This indicates that direct exposure and familiarity with digital platforms improve acceptance and confidence in the system. The implication is that sensitization and hands-on training prior to implementation could accelerate acceptance among stakeholders. Such positive shifts in perception are likely to enhance cooperation, compliance, and smoother adoption of digital examination technologies.

Research Question 3: What challenges limit the effective use of digital examination platforms in Kaduna State public senior secondary schools?

Table 5: Challenges Limit the Effective Use of Digital Examination Platforms in Kaduna State Public Senior Secondary Schools

Research Question	Response Category	Frequency (n)	Percentage (%)	Mean	SD
Challenges limiting effective use of digital examination platforms	Strongly Agree	170	42.5	4.05	1.15
	Agree	110	27.5		
	Neutral	60	15.0		
	Disagree	40	10.0		
	Strongly Disagree	20	5.0		

Source: Fieldwork, 2025

Table 5 revealed that 70% of respondents acknowledged significant challenges, including poor internet connectivity, inadequate ICT infrastructure, and power supply issues, with a mean score of 4.05 (SD = 1.15). The relatively high mean indicates a strong consensus that these

issues hinder effective implementation. Addressing these challenges requires strategic investment in infrastructure, stable electricity, and reliable internet services. Without tackling these barriers, the positive effects of digital examination platforms on malpractice reduction and assessment efficiency may not be fully realized.

Testing Hypothesis Three

H_{03}: Challenges in the implementation of digital examination platforms do not significantly affect their effectiveness in Kaduna State public senior secondary schools.

Table 8: Paired Samples t-Test Results for Pre- and Post-Examination Responses for **H_{02}**

Hypothesis Code	Pre-Exam Mean (M_1)	Post-Exam Mean (M_2)	Mean Difference (M_2–M_1)	SD of Difference	t-value	df	p-value	Decision ($\alpha = 0.05$)
H_{03}	3.90	4.05	0.15	0.70	4.29	399	0.000	Reject H_{03}

Source: Fieldwork, 2025

The analysis found a small but significant increase in challenge-related scores from pre-exam (M = 3.90) to post-exam (M = 4.05), indicating that certain obstacles became more pronounced during the actual examination period. This implies that while digital platforms can reduce malpractice, operational and technical challenges remain a barrier to optimal performance. The implication is that interventions should focus on improving infrastructure, technical support, and contingency planning during examination periods. Addressing these challenges proactively will ensure that the effectiveness of digital examination systems is not undermined by avoidable disruptions.

Discussion of Findings

Findings from the paired sample t-test analysis revealed a statistically significant reduction in examination malpractice cases following the introduction of digital examination platforms in Kaduna State public senior secondary schools. Pre-examination data indicated a higher frequency of malpractice incidents, while post-examination responses showed improved integrity scores (M = 4.05) compared to the pre-implementation period (M = 3.20). The study's finding that digital examination platforms significantly reduce malpractice aligns with global literature demonstrating technology's role in enhancing exam integrity through automated monitoring and secure authentication (Daza *et al.,* 2022; Oeding et al., 2024). This supports Routine Activity Theory's premise that digital systems act as capable guardians, disrupting opportunities for cheating (Okolie & Omeluzor, 2022). However, in Kaduna State context, infrastructural challenges somewhat limit the full potential of these platforms, echoing Adebayo's (2023) observations that socio-technical barriers remain key obstacles in Nigerian

educational settings. Therefore, while technology adoption is promising, sustained investment and contextual adaptation are necessary to optimize malpractice prevention locally.

The study found a significant positive shift in the perceptions of students and teachers toward digital examination platforms following their implementation. Pre-exam responses reflected some skepticism and unfamiliarity with the technology, but post-exam data showed increased confidence and acceptance, with mean scores rising from 3.50 to 3.85. This corroborates findings from Al-Emran and Teo (2022), who emphasized the importance of perceived usefulness and ease of use core to the Technology Acceptance Model in driving acceptance of educational technologies. This study further showed that increased familiarity can reduce resistance, facilitating smoother adoption and more ethical assessment cultures. Nonetheless, variability in acceptance reflects Neto *et al.*'s (2022) critique of TAM, highlighting how organizational and socio-economic factors in Kaduna State, such as digital literacy disparities, influence stakeholder attitudes. Addressing these gaps through training and support is critical for wider acceptance.

The analysis of institutional preparedness indicated that while many schools have adopted digital platforms and possess some basic ICT infrastructure, several critical gaps remain, including inadequate internet connectivity, insufficient functional computer units, and limited teacher training in managing digital examinations. The study confirms that infrastructural deficits, poor internet, unstable power supply, and limited technical skills pose significant hurdles, consistent with Gajendran *et al.*'s (2022) findings on structural barriers slowing technology diffusion. Such challenges temper the optimism of Diffusion of Innovation Theory by illustrating how external constraints can delay or distort adoption despite recognized relative advantages (Hussain *et al.,* 2022). In Kaduna State, these limitations align with broader Nigerian education sector reports (FME, 2025) and underscore the need for coordinated policy action addressing infrastructure and capacity gaps. Without resolving these foundational issues, the effectiveness and sustainability of digital examination platforms remain at risk.

Conclusion

This study found that the adoption of digital examination platforms in Kaduna State public senior secondary schools has significantly contributed to the reduction of examination malpractice. Quantitative evidence demonstrated a marked decrease in reported cheating incidents post-implementation, while stakeholder perceptions improved with increased exposure to the technology. Despite these positive outcomes, challenges such as inadequate infrastructure, limited internet connectivity, and insufficient training persist, limiting the full potential of these digital systems. Addressing these gaps is crucial to ensure equitable and effective use across all schools in the state.

Digital examination platforms play a pivotal role in enhancing the credibility and fairness of public examinations by providing secure, transparent, and efficient assessment environments. Technologies like biometric verification, AI proctoring, and randomized question banks strengthen examination integrity and build trust among students, teachers, and policymakers.

As Kaduna State continues to advance digital testing, sustained investments in infrastructure and capacity building will be essential to maximize these benefits and promote a culture of academic honesty. This study underscores the importance of leveraging technology to safeguard the quality and reputation of public education systems.

Recommendations

Based on the study findings, the following recommendations were suggested for the study.

For Schools: Public senior secondary schools in Kaduna State should prioritize continuous ICT training programs for both teachers and students to build digital literacy and technical competence. Regular workshops and hands-on sessions will enhance users' confidence and efficiency in operating digital examination platforms, reducing resistance and errors during exam administration. Such training will also cultivate an ethical assessment culture, empowering stakeholders to fully leverage technological tools to deter malpractice and support smooth exam delivery.

For Government: The Kaduna State government must invest strategically in upgrading ICT infrastructure across public senior secondary schools, including reliable internet connectivity, adequate computer hardware, and stable power supply. Strengthening these foundational elements is critical to ensuring that digital examination platforms function optimally and reach all schools equitably. Additionally, policies aimed at sustained funding and maintenance of technological assets will help close infrastructural gaps that currently hinder the successful implementation of computer-based testing systems.

For Examination Bodies: Examination bodies such as WAEC and NECO should enhance their proctoring systems by integrating advanced AI monitoring tools, biometric verification, and secure data management protocols to prevent unauthorized access and cheating. Continuous review and upgrading of cybersecurity measures are essential to protect exam integrity and safeguard sensitive information. Furthermore, transparent communication with schools about these protocols will foster trust and compliance, ultimately supporting the broader goal of credible and malpractice-free public examinations.

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