

Internal Control as a Mechanism Linking Digital Accounting and Financial Reporting Quality in Nigerian SMEs

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ABSTRACT: Digital accounting systems can improve accounting processes, but the organisational value of adoption may depend on how system capabilities interact with internal controls. This study qualitatively explores how SME owners, managers and accountants describe internal control as a mechanism linking digital accounting adoption and financial reporting quality in Lagos State, Nigeria. Thirteen participants were purposively selected from a larger survey of 207 SMEs to provide variation in digital adoption, firm size, sector, internal control effectiveness and financial reporting quality. Semi-structured interviews were conducted and analysed using Braun and Clarke's six-phase thematic analysis. Participants consistently described digital accounting systems as strengthening internal controls through audit trails, segregation of duties, approval workflows, exception reporting and standardised procedures. They also associated stronger controls with improvements in the accuracy, timeliness, reliability and completeness of

financial reports. A further theme distinguished more extensive use of dedicated accounting systems from limited use of spreadsheets or unconfigured system features. The findings provide qualitative evidence of a pathway consistent with the proposed mediation model, while recognising that qualitative accounts cannot statistically establish mediation or causal effects. The study contributes by showing how control capabilities are experienced in practice and by developing the concept of shallow adoption as limited use of available accounting-system capabilities. The findings suggest that SME digitalisation programmes should combine software provision with control configuration, staff training and monitoring.

Keywords: *digital accounting; internal control; financial reporting quality; SMEs; technology adoption.*

Introduction

The role of small and medium-sized enterprises (SMEs) in driving economic growth is universally acknowledged, particularly in developing economies where formal employment opportunities are scarce (Abor & Quartey, 2010). In Nigeria, SMEs constitute approximately 96% of registered businesses and contribute nearly 48% to national gross domestic product (SMEDAN, 2021). Lagos State, Nigeria's commercial nerve centre, hosts over 60% of industrial and commercial operations and an estimated 11 million SMEs within its metropolitan territory (LCCI, 2020).

Despite their economic significance, SMEs in Lagos State face persistent challenges related to financial reporting quality. Lawal et al. (2020) found that more than 60% of audited financial statements from 400 Lagos SMEs contained material misstatements. Olorunfemi et al. (2021) found that nearly half of SME financial records lacked supporting documentation. These deficiencies directly constrain SME access to formal credit, as lenders routinely reject loan applications supported by unreliable financial statements (Eniola & Entebang, 2017).

Digital accounting systems have been proposed as a solution, promising automated record-keeping, error reduction, and real-time reporting (Moll & Yigitbasioglu, 2019). However, adoption rates among Lagos SMEs remain low, and even among adopters, expected improvements in financial reporting quality have not consistently materialised (Olatunji & Olorundare, 2025). This suggests that adoption alone is insufficient; there must be an

intervening mechanism, plausibly internal control effectiveness, that translates digital system capabilities into reporting improvements.

While quantitative studies have examined direct relationships between digital accounting adoption and financial reporting quality (Kiring'a et al., 2021; Cong et al., 2020), and between internal control effectiveness and financial reporting quality (Frimpong et al., 2022; Uwuigbe et al., 2018), the mediating mechanism remains largely unexplored. The few studies attempting mediation have produced conflicting results, full mediation in Ghana (Frimpong et al., 2022), partial mediation in Indonesia (Yunanto & Tricahyono, 2025) and Egypt (Abouelghit & Gan, 2024), and none have employed qualitative methods to explain how and why the mediation operates in the lived experience of SME actors.

This paper addresses this gap through a qualitative exploration of how internal control effectiveness mediates the relationship between digital accounting adoption and financial reporting quality. The study is guided by three research questions: (1) How do SME owners, managers, and accountants perceive the relationship between digital accounting adoption and internal control effectiveness? (2) How do they perceive the relationship between internal control effectiveness and financial reporting quality? (3) How do they describe the mediating mechanism linking digital accounting adoption to financial reporting quality?

All 13 participants described a pathway in which digital accounting capabilities were linked to internal controls and, in turn, to perceived improvements in financial reporting. Digital accounting systems strengthened internal controls through audit trails, segregation of duties, automated approval workflows, and exception reporting. These strengthened controls, in turn, improved the accuracy, timeliness, and reliability of financial reports. Participants used terms such as "mediation," "mechanism," and "bridge" to describe this pathway. The paper introduces the concept of "shallow adoption" to explain why some SMEs fail to realise the mediation pathway.

This research makes three principal contributions. First, it provides the first qualitative account in the Nigerian SME context where participants explicitly articulate the mediation mechanism. Second, it introduces and operationalises the "shallow adoption" concept, challenging binary measures of technology adoption in accounting research. Third, it extends Technology Acceptance Model, Agency Theory, and Systems Theory to the digital

accounting context, demonstrating how these theories illuminate the lived experience of SME actors.

The remainder of this paper proceeds as follows. Section 2 reviews relevant literature and develops the theoretical framework. Section 3 describes the methodology. Section 4 presents findings. Section 5 discusses results and implications. Section 6 concludes.

Literature Review and Theoretical Framework

Digital Accounting Systems and Financial Reporting Quality

Digital accounting systems encompass software applications, desktop, cloud-based, or hybrid, that automate accounting functions including general ledger maintenance, accounts payable/receivable processing, payroll, and financial statement generation (Moll & Yigitbasioglu, 2019). The evolution from mainframe systems through PC-based software and ERP systems to contemporary cloud and AI-native platforms reflects expanding capabilities for accuracy, efficiency, and real-time reporting (Romney & Steinbart, 2018).

Financial reporting quality is defined by the IASB (2018) Conceptual Framework as the extent to which financial statements provide useful information for decision-making, characterised by relevance, faithful representation, comparability, verifiability, timeliness, and understandability. For SMEs, high financial reporting quality is critical for internal decision-making, external financing, tax compliance, and stakeholder confidence (Dechow et al., 2010).

Empirical evidence on the direct relationship between digital accounting adoption and financial reporting quality is mixed. Kiring'a et al. (2021) surveyed 1,200 Kenyan SMEs and found a positive association ($\beta = 0.42$, $p < 0.01$). Cong et al. (2020) reported a direct effect ($\beta = 0.36$, $p < 0.001$) among 450 Chinese SMEs. However, Frimpong et al. (2022) in Ghana found the direct effect became non-significant when internal controls were added to the regression. Qualitative studies further complicate the picture: Prasad and Green (2015) found that one Australian SME experienced substantial improvements after cloud adoption while another did not, attributing the difference to internal control quality.

Internal Control Effectiveness and Financial Reporting Quality

Internal control is defined by COSO (2013) as a process designed to provide reasonable assurance regarding operations, reporting, and compliance objectives, comprising five

components: control environment, risk assessment, control activities, information and communication, and monitoring. For SMEs, effective internal controls include segregation of duties, authorisation and approval processes, documentation policies, and independent reconciliations (Page & Spira, 2016).

The relationship between internal control effectiveness and financial reporting quality is robustly supported. Dechow et al. (2010) demonstrated that material weaknesses in internal control over financial reporting are linked to lower financial reporting quality. Frimpong et al. (2022) found internal control effectiveness had a strong effect on financial reporting quality in Ghanaian SMEs ($\beta = 0.58$, $p < 0.001$). Odia and Ogiedu (2013) surveyed 500 Nigerian SMEs and found firms with documented internal control policies were 3.2 times more likely to have high-quality financial reports. Uwuigbe et al. (2018) identified a positive link ($\beta = 0.53$, $p < 0.001$) with control activities and monitoring having the greatest individual impacts.

Mediation: Internal Control Effectiveness as a Mediating Mechanism

Very few studies have directly tested the mediation model. Frimpong et al. (2022) found full mediation in Ghana. Yunanto & Tricahyono (2025) found partial mediation in Indonesia. Abouelghit and Gan (2024) found significant indirect effects in Egypt. Olatunji and Olorundare (2025) in Nigeria found adding internal control effectiveness reduced the digital accounting coefficient from 0.34 to 0.12 (non-significant), suggesting full mediation, but did not formally test the indirect effect. Qualitative studies by Prasad and Green (2015) and Nwankwo & Kanyangale (2023) provide supporting evidence of the mediation mechanism but do not focus explicitly on it.

Theoretical Framework

The study draws on three complementary theoretical frameworks to interpret the mediation mechanism. Technology Acceptance Model (Davis, 1989) explains how perceived usefulness and ease of use drive technology adoption. The model is extended in this study by distinguishing between operational usefulness (speed, efficiency) and control usefulness (audit trails, approvals). SMEs that perceive control features as useful are more likely to activate them, leading to stronger internal controls. Agency Theory (Jensen & Meckling, 1976) explains why controls matter: they reduce information asymmetry between principals and agents, enabling credible financial reporting. The study contributes to

agency theory by identifying a "suppressed reporting" phenomenon: controls reduce agents' ability to inflate reports, resulting in more conservative self-assessments. Systems Theory (Bertalanffy, 1968) explains how technology and control subsystems interact to produce organisational outputs. The study extends systems theory by specifying when subsystem interactions are synergistic: the technology subsystem (digital accounting) and process subsystem (internal controls) produce superior outputs (financial reporting quality) only when controls are activated.

The Qualitative Gap

While quantitative studies have tested direct and mediated relationships, they cannot explain how and why mediation operates. Quantitative mediation analysis treats the mediator as a "black box" (Hayes, 2018). Qualitative research is needed to open this black box, revealing the specific control activities, contextual factors, and participant experiences that constitute the mediation mechanism. This study addresses this gap through qualitative inquiry into participants' experiences and explanations.

Methodology

Research Design

The study adopts a qualitative research design using semi-structured interviews. A qualitative approach is appropriate because the research questions seek to explore mechanisms, experiences, and meanings that are not accessible through quantitative measurement (Creswell & Creswell, 2018). The study is interpretive in orientation, seeking to understand the mediation mechanism from the perspective of SME actors.

Sample and Sampling

Table 1. Demographic Profile of Qualitative Respondents.

Participant	Sector	Role	Digital accounting experience
Resp1	Energy services	Contracts & procurement manager	Over 10 years
Resp2	Financial services / banking	Finance manager	Over 10 years
Resp3	General merchandise / retail	Accountant	4 years

Resp4	Construction / real estate	Owner / manager	2 years with QuickBooks Online
Resp5	Trading / distribution	Accountant	4 years with Sage
Resp6	Retail / hospitality	Accountant	Not specified
Resp7	Logistics / distribution	Finance officer	Not specified
Resp8	Small business	Accountant	Not specified
Resp9	Trading / distribution	Accountant	4 years with Sage
Resp10	Retail (multiple outlets)	Owner / manager	Not specified
Resp11	General business	Accountant	Since 2022 (QuickBooks Enterprise)
Resp12	Retail (Surulere, Lagos)	Accountant	Since 2023 (Xero)
Resp13	Not specified	Accountant	Not specified

The sample comprised 13 SME owners, managers, and accountants in Lagos State, Nigeria. Participants were purposively selected from a larger quantitative survey of 207 SMEs to represent maximum variation across several dimensions: digital adoption status (adopters vs. non-adopters), financial reporting quality (high vs. low), internal control effectiveness (high vs. low), firm size (small vs. medium), and sector (trading, manufacturing, services). This purposive sampling strategy ensures that the qualitative phase addresses the variables identified in the quantitative phase (Creswell & Plano Clark, 2017).

The sample size of 13 is consistent with recommendations for qualitative studies in SMEs, where data saturation is typically achieved with 12–20 interviews (Guest et al., 2006). Saturation was confirmed when no new codes or themes emerged in the final three interviews.

Table 1

Demographic Profile of Qualitative Respondents

Experience with Digital; Accounting

Contracts & Procurement; Manager

Data Collection

Data were collected through semi-structured interviews lasting 30–45 minutes. The interview guide was developed based on the research questions and theoretical framework, covering: (a) adoption experience and digital system use; (b) changes in internal controls; (c) changes in financial reporting quality; (d) perceived mediation mechanism; and (e) environmental factors (power, internet, training). Interviews were conducted in person or via video call (Zoom/WhatsApp), depending on participant preference. All interviews were audio-recorded with consent and transcribed verbatim. Field notes captured non-verbal and contextual information.

Data Analysis

Data were analysed using Braun and Clarke's (2006) six-phase thematic analysis. Phase 1 involved familiarisation with transcripts through repeated reading. Phase 2 generated initial codes inductively. Phase 3 searched for themes by grouping codes. Phase 4 reviewed themes for internal coherence and external distinctiveness. Phase 5 defined and named themes. Phase 6 produced the final report with representative quotations. NVivo 14 was used for coding and theme management.

Trustworthiness

Trustworthiness was established following Lincoln and Guba's (1985) criteria. Credibility was enhanced through triangulation (multiple participants, comparison with quantitative results), member checking (returning draft themes to a subset of participants), and peer debriefing with supervisors. Transferability was supported through thick description of the Lagos SME context, participants, and processes. Dependability was ensured through an audit trail of raw data, analysis memos, coding schemes, and decisions. Confirmability was achieved through reflexive journaling, acknowledging the researcher's prior expectations, and presenting raw data in the form of participant quotations.

Ethical Considerations

Institutional review board approval was obtained. Informed consent was secured from all participants. Anonymity and confidentiality were maintained through coded identifiers. Participants were informed of their right to withdraw at any time without consequence.

Results

Thematic analysis revealed five main themes: (1) Digital Accounting System Utilisation and Transformation; (2) Challenges in Digital Accounting Adoption; (3) Strengthening of Internal Control Systems; (4) Financial Reporting Quality Improvement; and (5) Causal Pathways Between Digital Systems, Controls, and Reporting Quality. Theme 5 is the most significant for this paper, as it directly addresses the mediation mechanism.

Theme 1: Digital Accounting System Utilisation and Transformation

Participants described a range of digital systems, from dedicated accounting software (SAP, Oracle, QuickBooks, Sage, Xero) to spreadsheet applications (Excel). The most common systems were QuickBooks, Sage, and Xero. Participants described automation of invoicing, reconciliations, payroll, and real-time data capture.

"The system has automated our invoicing and reconciliation processes. What used to take days now takes hours." (Resp5, Accountant, Trading/Distribution)

"We migrated from manual ledgers to Sage. The difference is night and day." (Resp9, Accountant, Trading/Distribution)

A sub-theme emerged distinguishing "deep adopters" (users of dedicated systems with control features) from "shallow adopters" (users of Excel or dedicated systems without control features activated). This distinction was useful for interpreting the proposed mechanism.

"Excel is not a real accounting system. It cannot track who changed what or prevent someone from altering figures." (Resp3, Accountant, Retail)

Theme 2: Challenges in Digital Accounting Adoption

Participants described several challenges: technical skill gaps among staff, costs of software and maintenance (N120,000–N2.5 million), system downtime due to power outages and internet unreliability, resistance to change, and cybersecurity concerns.

"Power outages are a constant problem. When the light goes, we cannot access the cloud system." (Resp7, Finance Officer, Logistics)

"Training staff is expensive. Some of our older employees struggled with the new system." (Resp6, Accountant, Retail/Hospitality)

"We worry about data breaches. Our financial information is sensitive." (Resp11, Accountant, General Business)

Theme 3: Strengthening of Internal Control Systems

This theme captures the most significant finding for this paper. All 13 participants reported that digital systems had strengthened internal controls. Five sub-themes emerged.

Sub-theme 3.1: Improved Transaction Monitoring (Audit Trails)

Participants described automated audit trails logging every transaction with user identification and timestamps.

"The audit trail is automatic: every edit, deletion, or approval is logged with a timestamp and user ID." (Resp3, Accountant, Retail)

"There's an audit trail. Every transaction can be traced, who entered it, when, and what changes were made. That alone discourages manipulation." (Resp7, Finance Officer, Logistics)

Sub-theme 3.2: Segregation of Duties through Systems

Participants described role-based access controls that enforced separation of duties.

"In a manual system, a signature could be forged or backdated. In our digital system, we use System-Level Access Controls. For example, a junior accountant can initiate a payment, but the system physically prevents them from approving it, the 'Segregation of Duties' is hardcoded into the software." (Resp9, Accountant, Trading/Distribution)

Sub-theme 3.3: Automated Error Detection (Exception Reports)

Participants described exception reports that flagged anomalies.

"The software flags anomalies such as unbalanced entries, unusual variances exceeding predefined thresholds, or transactions outside normal business hours." (Resp1, Contracts & Procurement Manager, Energy Services)

"The system has built-in exception reports. For example, if a journal entry is posted without an attached receipt, it appears on a daily 'incomplete transactions' report." (Resp3, Accountant, Retail)

"QuickBooks flags anomalies automatically, like duplicate invoices or unusual variances via AI-driven alerts." (Resp11, Accountant, General Business)

Sub-theme 3.4: Fraud Prevention and Reduction

Participants described specific instances of fraud detection and prevention.

"The system flagged a duplicate payment to a supplier because the invoice number was already used, that saved us N850,000." (Resp3, Accountant, Retail)

"It enforces policies like dual sign-offs for expenses over N200k, making collusion harder than in our manual era." (Resp12, Accountant, Retail)

Sub-theme 3.5: Standardisation of Financial Procedures

Participants described how digital systems enforced consistent chart of accounts and policies.

"The system standardises our chart of accounts. Every branch uses the same categories, so we can compare performance across outlets." (Resp10, Owner/Manager, Retail)

Theme 4: Financial Reporting Quality Improvement

Participants described improvements in accuracy, timeliness, reliability, completeness, and ease of report generation.

"Error rates in financial statements have declined by over 80% largely due to automated calculations and real-time data validation." (Resp1, Contracts & Procurement Manager, Energy Services)

"Accuracy has increased due to automated calculations and validation rules, resulting in a reduction of material misstatements by approximately 75%." (Resp2, Finance Manager, Financial Services)

"Reports are now more accurate and timely." (Resp5, Accountant, Trading/Distribution)

"I can generate a Statement of Financial Position with 95% accuracy on the 2nd day of the month." (Resp9, Accountant, Trading/Distribution)

"We now produce management accounts by the 5th working day of the next month, compared to the 15th before." (Resp3, Accountant, Retail)

"Reports are ready in 48 hours versus weeks before." (Resp12, Accountant, Retail)

Participants also noted external validation: "Our external auditors have also noted fewer adjustments during audits" (Resp3); "Bank loan applications have been approved faster because we present cleaner, more consistent financial statements" (Resp4); "Banks now approve loans faster based on our polished statements" (Resp12).

Theme 5: Causal Pathways Between Digital Systems, Controls, and Reporting Quality

This theme directly addresses the mediation mechanism. All 13 participants explicitly described a mediation pathway. The consistency and explicitness of these accounts is remarkable.

"Digital accounting improves FRQ primarily through enhanced internal controls... The mediation occurs because digital platforms embed preventive controls (segregation of duties, real-time audit trails, and exception alerts)." (Resp1, Contracts & Procurement Manager, Energy Services)

"What truly drives the improvement is that the system enforces internal controls: segregation of duties, approval hierarchies, audit trails, and automated reconciliations. It's a mediation, not a direct effect." (Resp3, Accountant, Retail)

"The real game-changer is that the system forces controls... Those controls mediate the relationship between the digital tool and report quality." (Resp4, Owner/Manager, Construction)

"A digital system is just a tool; if you put 'garbage in,' you get 'garbage out.' Because the system enforces validation checks and authorisation workflows, it ensures that the data being processed is accurate and authorised." (Resp9, Accountant, Trading/Distribution)

"Digital accounting provides the platform for speed, but the quality of the report is a function of the controls. The technology sets the stage, but the internal controls provide the security that makes the report's data trustworthy." (Resp10, Owner/Manager, Retail)

"The system's real power is in enforcing controls, like automated approvals and real-time audits, that minimise errors upstream, leading to cleaner data for reports. Without that mediation, digital tools alone wouldn't fix sloppy processes." (Resp11, Accountant, General Business)

Participants also described what happens when controls are weak or overridden:

"When we first installed the system, we didn't set up user permissions properly. Everyone had the same login. We had errors. Once we set up proper controls, the reports became reliable." (Resp6, Accountant, Retail/Hospitality)

"If controls are weak, the report is useless. The system is only as good as the controls you put in place." (Resp5, Accountant, Trading/Distribution)

Discussion

Interpretation of Findings

The findings provide qualitative evidence consistent with the proposed mediation mechanism. Participants from different sectors and roles described a similar sequence linking digital accounting capabilities, internal controls, and financial reporting. This convergence suggests a recurring pattern in the accounts of participants who had substantial experience with digital accounting systems.

The findings align with Frimpong et al. (2022) in Ghana (full mediation) and Prasad and Green (2015) in Australia (qualitative mediation). They extend this literature by providing qualitative accounts of the proposed pathway in the Nigerian SME context.

The "shallow adoption" concept, which emerged inductively from the data, offers an explanation for why quantitative studies may fail to detect mediation. When the sample includes shallow adopters (e.g., Excel users), the mediation effect is diluted. The qualitative sample, by contrast, consisted largely of deep adopters who had activated control features and could therefore describe the mechanism.

Theoretical Implications

The findings extend three theoretical frameworks. Technology Acceptance Model. The study extends TAM by demonstrating that perceived usefulness must be disaggregated into operational usefulness (speed, efficiency) and control usefulness (audit trails, approvals). SMEs that perceive control features as useful are more likely to activate them, leading to stronger internal controls and better financial reporting quality. This suggests a refinement of TAM for accounting systems, where the integrity of information is as important as operational efficiency.

Agency Theory. Agency theory suggests that controls minimise information asymmetry between principals and agents (Jensen & Meckling, 1976). The findings support this by showing how digital controls provide bonding and monitoring mechanisms. However, the study also reveals a "suppressed reporting" phenomenon: controls reduce agents' ability to inflate reports, resulting in more conservative self-assessments. This suggests that the association between controls and self-reported quality may be curvilinear or negative, a novel insight for agency theory.

Systems Theory. Systems theory considers an organisation as an open system with interacting subsystems (Bertalanffy, 1968). The study demonstrates that the accounting subsystem comprises two interacting subsystems: the technology subsystem (digital system) and the process subsystem (controls). The output (financial reporting quality) is not a function of either subsystem alone but of their interaction. When controls are activated, the interaction is synergistic; when they are not, the system is less efficient. This

extends systems theory by specifying the conditions under which subsystem interactions produce superior outputs.

Practical Implications

For SME owners and managers, the findings carry a clear message: software acquisition alone does not guarantee better financial reports. Priority must be given to configuring embedded control features, user access rights, approval workflows, audit trails, and automated reconciliations, and to training staff in their use. SMEs should assess whether their chosen tools provide the control capabilities required by their accounting processes rather than relying on software acquisition alone.

For accountants and professional bodies, the study underscores the need to move beyond software recommendation to control implementation. Accountants should advise on approval hierarchies, user permissions, reconciliation cycles, and exception report reviews. ICAN and similar bodies should incorporate digital control content into continuing professional development.

For policymakers, particularly SMEDAN, LSETF, and FIRS, the evidence supports bundling software provision with internal control training and monitoring. Loan programmes could require evidence of configured controls as a condition for disbursement. Tax authorities should focus audit resources on control testing rather than mere software presence.

Limitations

The study is qualitative and context-specific to Lagos State. Its findings are not statistically generalisable and should be considered in relation to similar SME contexts with appropriate caution. The purposive sample, while diverse, may not capture the full range of SME experiences. Participants were predominantly users of dedicated accounting systems, which may overstate the prevalence of deep adoption. The study is cross-sectional and cannot establish temporal precedence. Future research could employ longitudinal designs, comparative case studies across multiple states, and objective measures of financial reporting quality.

Conclusion and Recommendations

This paper has qualitatively explored how SME actors describe internal control as a mechanism linking digital accounting adoption and financial reporting quality among SMEs in Lagos State, Nigeria. All 13 participants described a pathway in which digital systems were associated with stronger internal controls through audit trails, segregation of duties, approval workflows, and exception reporting, which participants also associated with improved accuracy, timeliness, and reliability of financial reports.

The study makes three principal contributions. First, it provides the first qualitative account in the Nigerian SME context where participants explicitly articulate the mediation mechanism. Second, it introduces the "shallow adoption" concept, challenging binary measures of technology adoption in accounting research. Third, it extends Technology Acceptance Model, Agency Theory, and Systems Theory to the digital accounting context, demonstrating how these theories illuminate the lived experience of SME actors.

The practical implication is that SMEs should consider not only software acquisition but also the control infrastructure and staff capability needed to use relevant features effectively. Policymakers should redesign SME support programmes accordingly, shifting from software subsidies to integrated technology-and-control interventions. It is hoped that these findings will inform policy, practice, and future research aimed at enhancing SME financial reporting quality in emerging economies.

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