



EFFECT OF CLOUD-BASED ACCOUNTING ON PERFORMANCE OF MICROFINANCE BANKS IN MAKURDI METROPOLIS OF BENUE STATE

Terseer Moses SENDE^{1*}, Emmanuel Igbawase ABANYAM², and Joel Kanyi TIVDE³

^{1&2}Department of Accounting, Rev. Fr. Moses Orshio Adasu University, Makurdi, Nigeria

³Department of Accounting, University of Mkar, Mkar, Nigeria

*Correspondence Author: Email: +2348035198326; sendeterseer@gmail.com

Abstract

This study examined the effect of cloud-based accounting on the performance of Microfinance Banks in Makurdi Metropolis, Benue State, Nigeria. Motivated by chronic and documentable performance failures, escalating regulatory sanctions, and pervasive accounting technology deficits in Makurdi Microfinance Banks, the study operationalised cloud-based accounting through three dimensions: automated financial reporting, real-time data access, and multi-user collaboration functionality. Institutional performance was measured using financial performance, operational efficiency, and portfolio quality as proxies. Drawing on the Technology Acceptance Model and the DeLone and McLean Information Systems Success Model, the study adopted a survey research design. Primary data were gathered from 98 staff of ten purposively selected Microfinance Banks in Makurdi Metropolis through structured questionnaires. Data were analysed using descriptive statistics and multiple linear regression. Findings revealed that automated financial reporting has a significant positive effect on financial performance ($\beta = 0.487$, $p < 0.05$); real-time data access exerts a significant positive effect on operational efficiency ($\beta = 0.413$, $p < 0.05$); and multi-user collaboration functionality significantly improves portfolio quality ($\beta = 0.362$, $p < 0.05$). The study concludes that cloud-based accounting is a potent lever for reversing the documented performance deterioration of Microfinance Banks in Makurdi Metropolis and recommends that the Central Bank of Nigeria incorporate minimum cloud accounting adoption standards into the Microfinance Banks supervisory framework for Benue State.

Keywords: Cloud-Based Accounting, Microfinance Banks, Institutional Performance, Automated Financial Reporting, Real-Time Data Access

Introduction

Microfinance banking has emerged globally as the most operationally proximate mechanism for extending structured financial services to low-income populations, smallholder farmers, micro-entrepreneurs, and rural households systematically excluded from the conventional banking architecture. The global microfinance sector served an estimated 140 million borrowers across

more than 80 countries as at 2020, with total portfolio assets exceeding United States Dollars 124 billion (Convergences, 2020).

In Nigeria, Microfinance Banks occupy a strategically critical but chronically underperforming position within the national financial system. Established formally through the Microfinance Policy, Regulatory and Supervisory Framework of 2005, revised in 2011 and 2019, the Nigerian Microfinance Bank sector was

mandated to provide credit, savings, and ancillary financial services to the economically active poor and micro-enterprise sector that commercial banks have historically neglected (Central Bank of Nigeria, 2023). With over 800 licensed Microfinance Banks as at December 2021, serving an estimated 30 million low-income clients, the sector represents the single most extensive financial inclusion mechanism in the country (Central Bank of Nigeria, 2021). Yet this vast numerical presence has not translated into sound institutional performance. The Central Bank of Nigeria revoked the operating licences of 168 Microfinance Banks between 2015 and 2020, with 67 percent of revocations attributable to poor financial performance, inadequate accounting controls, weak management information systems, and deficient financial reporting infrastructure (Central Bank of Nigeria, 2021). Non-performing loan ratios persistently exceed the Central Bank of Nigeria benchmark of five percent in the majority of operational Microfinance Banks, while return on assets figures remain negative for a disproportionate share of the sector. These outcomes reflect systemic deficiencies not merely in credit risk management but in the foundational accounting and information systems that generate the financial intelligence on which

sound Microfinance Bank management depends.

In Benue State, and specifically within Makurdi Metropolis, these performance challenges have crystallised into an acute institutional crisis. The state hosts approximately 47 licensed Microfinance Banks, with the majority concentrated in Makurdi, the state capital and principal commercial centre (Central Bank of Nigeria Benue State Office, 2021). Makurdi's Microfinance Banks serve a diverse but predominantly low-income clientele that includes market traders, transport operators, civil servants, and farmers. Despite this broad outreach, the performance profile of Microfinance Banks in Makurdi is deeply troubling. Field observations reveal that a significant proportion of Microfinance Banks in Makurdi still operate on manual ledger systems or outdated standalone desktop accounting software that lacks the automated controls necessary for sound financial management. Loan repayment ledgers are manually updated by credit officers who simultaneously handle cash collections, eliminating the segregation of duties that fraud prevention requires. End-of-day cash reconciliations proceed without system-enforced controls, and payroll authorisations rely on paper-based approval chains that are neither verifiable nor

auditable in real time. These are not abstract governance weaknesses; they are measurable, recurring accounting infrastructure failures that erode performance across every metric by which Microfinance Bank institutional health is assessed.

Cloud-based accounting, characterised by its deployment on Software-as-a-Service platforms accessible via internet-enabled devices, offers a potentially transformative response to these documented deficiencies. By eliminating costly on-premise hardware requirements, providing real-time transaction processing, enabling multi-user concurrent access with role-based permissions, automating financial reporting, and embedding audit trail functionality into every transaction, cloud accounting systems give Microfinance Banks access to enterprise-grade financial management capabilities at subscription costs commensurate with their limited financial capacity (Romney & Steinbart, 2024; Gupta, 2023).

Globally, cloud accounting adoption in financial institutions grew at a compound annual growth rate exceeding eight percent between 2017 and 2021, with Sub-Saharan Africa identified as one of the fastest-growing regional markets driven by fintech adoption and mobile internet penetration (International Finance Corporation, 2019).

Platforms such as QuickBooks Online, Sage Business Cloud, and locally developed Nigerian solutions are increasingly available in formats designed for small financial institutions. Yet the question of whether and how adoption of these systems specifically affects the performance of Microfinance Banks in Makurdi Metropolis remains empirically unaddressed, leaving Microfinance Bank managers, Central Bank of Nigeria supervisors, and policymakers without the evidence base needed to make informed decisions about cloud accounting investment and regulatory requirements.

The empirical literature Agbolade (2024), Okeke and Nwosu (2024), and Eze and Okoye (2022) examined the relationship between information and communications technology adoption and performance in Nigerian financial institutions but focused predominantly on commercial banks and deposit money banks with no specific attention to Microfinance Banks. The few studies engaging with Microfinance Bank performance in Nigeria, including Nnanna and Dogo (2021) and Abata (2024), concentrated on credit risk management, corporate governance, and capital adequacy as performance determinants with no engagement with accounting technology as an independent variable.

Against this background, this study is motivated by three imperatives: first, the urgent practical need to generate institution-specific empirical evidence on whether cloud accounting adoption can reverse the measurable performance deterioration in Makurdi Microfinance Banks; second, the theoretical imperative to extend the Technology Acceptance Model (Davis, 1989) and the DeLone and McLean Information Systems Success Model (DeLone & McLean, 2003) to the Microfinance Bank sub-sector in Nigeria, where both frameworks remain under-tested; and third, the policy imperative to equip the Central Bank of Nigeria's Benue State Office, the National Association of Microfinance Banks, and the Benue State Government with locally grounded evidence that can underpin regulatory interventions and technology adoption incentive programmes targeted at the Microfinance Bank performance crisis in the state.

Consequently, the broad objective of this study is to examine the effect of cloud-based accounting on the performance of Microfinance Banks in Makurdi Metropolis, Benue State. Specifically, the study seeks to: (i) examine the effect of automated financial reporting on the financial performance of Microfinance Banks in Makurdi Metropolis; (ii) assess

the effect of real-time data access on the operational efficiency of Microfinance Banks in Makurdi Metropolis; and (iii) evaluate the effect of multi-user collaboration functionality on the portfolio quality of Microfinance Banks in Makurdi Metropolis.

In pursuance of these objectives, the following null hypotheses are tested: H_{01} , automated financial reporting has no significant effect on the financial performance of Microfinance Banks in Makurdi Metropolis; H_{02} , real-time data access has no significant effect on the operational efficiency of Microfinance Banks in Makurdi Metropolis; and H_{03} , multi-user collaboration functionality has no significant effect on the portfolio quality of Microfinance Banks in Makurdi Metropolis.

The study is geographically delimited to licensed Microfinance Banks in Makurdi Metropolis for year 2025. Only microfinance banks that are fully licensed in this year that are eligible for data consideration and analysis.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Cloud-Based Accounting

Cloud-based accounting refers to the provision of accounting software applications and financial data storage

through internet-hosted servers, accessed by users via web browsers or dedicated applications without the need for on-premise installation of software or maintenance of local servers (Gupta, 2018; Cockcroft & Russell, 2018). Technically, cloud accounting operates on a Software-as-a-Service model in which the software vendor manages application updates, data security, server maintenance, and system backups, while the subscribing organisation pays a recurring fee for access. The defining operational characteristics of cloud accounting systems include: automated financial reporting with real-time ledger updating; multi-user concurrent access with role-based permissions; automated bank reconciliation and transaction matching; digital audit trails that log every user action with timestamps; integrated payroll and loan management modules; and remote accessibility from any internet-enabled device (Romney & Steinbart, 2018; Munsif, Raghunandan & Rama, 2012). These characteristics position cloud accounting as qualitatively distinct from both manual bookkeeping and conventional on-premise accounting software, particularly in the dimensions most relevant to the performance deficiencies observable in Makurdi Microfinance Banks. For this study, cloud-based accounting is operationalised along

three dimensions: automated financial reporting, real-time data access, and multi-user collaboration functionality, selected on the basis of their direct theoretical linkage to documented accounting failures in the institutions under study.

2.1.2 Performance of Microfinance

Banks

Institutional performance in the Microfinance Bank context is a multi-dimensional construct that extends beyond simple profitability to encompass financial sustainability, portfolio quality, outreach breadth, and operational efficiency (Ledgerwood, 2013; Mersland & Strom, 2009). The balanced scorecard framework developed by Kaplan and Norton (1992) measures performance along financial, customer, internal process, and learning and growth dimensions and provides the conceptual architecture through which Microfinance Bank performance is operationalised in this study. Financial performance is proxied by return on assets and return on equity; operational efficiency by operating cost ratio and reporting turnaround time; and portfolio quality by non-performing loan ratio and loan repayment rate. Each proxy is selected for its direct sensitivity to the accounting information quality that cloud-based systems are designed to produce, ensuring conceptual alignment between the

independent and dependent variable constructs. In the Nigerian Microfinance Bank context, these performance dimensions are also directly tracked by Central Bank of Nigeria supervisory examinations, providing a dual anchor in both academic literature and regulatory practice (Central Bank of Nigeria, 2019; Consultative Group to Assist the Poor, 2010).

2.2 Theoretical Framework

2.2.1 Technology Acceptance Model

The Technology Acceptance Model, originally formulated by Davis (1989), posits that the actual use of an information technology system is determined by two primary user perceptions: perceived usefulness, defined as the degree to which a user believes that adopting the system will enhance job performance, and perceived ease of use, defined as the degree to which the user believes that interaction with the system will be free of effort. The Technology Acceptance Model has been extensively applied to explain accounting software adoption decisions in financial institutions (Venkatesh & Morris, 2000; Agbolade, 2011). In the context of Makurdi Microfinance Banks, the model explains why institutions whose management perceive cloud accounting as useful for financial reporting accuracy, audit compliance, and loan portfolio monitoring

are more likely to adopt and meaningfully utilise these systems, while ease-of-use barriers rooted in low information technology literacy and unreliable internet connectivity moderate adoption intensity. The model thus grounds the study's proposition that the usefulness attributes of automated financial reporting and real-time data access will positively predict financial performance and operational efficiency in Microfinance Banks that adopt and actively use cloud accounting platforms.

2.2.2 DeLone and McLean Information Systems Success Model

The DeLone and McLean Information Systems Success Model, originally proposed in 1992 and substantially revised in 2003, provides a systems-level theoretical chain from accounting technology quality to organisational performance outcomes. The updated model posits that information system success is determined by system quality, information quality, and service quality, which together drive system use and user satisfaction, ultimately producing net organisational benefits measurable in financial and operational performance terms (DeLone & McLean, 2003). Applied to cloud accounting in Microfinance Banks, the model constructs a direct theoretical pathway from cloud accounting system quality — encompassing uptime reliability,

automated processing accuracy, and access control architecture — through information quality measured by the accuracy, timeliness, and completeness of financial reports generated, to net organisational benefits manifested as improved financial performance, operational efficiency, and portfolio quality. This theoretical chain directly supports the study's central proposition and provides a causal logic for each of the three hypothesised relationships tested in the regression models.

2.3 Empirical Review

Study 1: Kharuddin, Ashhari and Nassir (2010)

Objective: The study examined the effect of accounting information systems adoption on the financial performance of small and medium enterprises in Malaysia, with information system quality as the independent variable and financial performance measured by profitability and reporting accuracy as the dependent variable.

Organisation of the Study: The study was conducted in Malaysia and targeted small and medium enterprises registered with the Malaysian Companies Commission operating in the manufacturing and services sectors.

Population and Sample: The study population comprised 540 small and medium enterprises. A sample of 200 firms

was drawn using stratified random sampling, yielding a usable response from 178 firms after data cleaning.

Data Collection Method and Analysis

Technique: Primary data were collected through structured questionnaires administered to chief finance officers and accountants of sampled firms. Descriptive statistics, Pearson correlation, and multiple linear regression were employed for data analysis.

Result: The study established that small and medium enterprises adopting computerised accounting systems reported significantly higher financial performance scores than those using manual systems. System quality was positively and significantly associated with both reporting accuracy and profitability.

Critique: While the study makes a valuable contribution to the accounting information systems and performance literature, it was conducted in a Malaysian developed-economy context and focused on manufacturing and services firms rather than financial institutions. The study also aggregated all forms of computerised accounting under one variable, making it impossible to isolate the specific performance effects of cloud-based

accounting, which is the focus of the present study.

Study 2: Abata (2014)

Objective: The study investigated the relationship between accounting information systems and financial performance in selected food and beverages companies in Nigeria, with accounting information system quality as the independent variable and financial performance measured through profitability and reporting accuracy as the dependent variable.

Organisation of the Study: The study was conducted in Nigeria and focused on food and beverages companies listed on the Nigerian Stock Exchange.

Population and Sample: The population comprised all 21 food and beverages companies listed on the Nigerian Stock Exchange as at 2013. A census approach was adopted, targeting all 21 firms, with usable data obtained from 18 companies.

Data Collection Method and Analysis Technique: Secondary data were sourced from audited annual reports and Central Bank of Nigeria statistical bulletins. Panel data regression and descriptive statistics were used to analyse the data.

Result: Accounting information system quality was found to be a significant determinant of financial reporting accuracy and profitability in the sampled companies.

Firms with more sophisticated accounting systems consistently recorded better performance outcomes.

Critique: The study's focus on listed manufacturing companies limits its applicability to the Microfinance Bank sub-sector, which is unlisted, operates under a distinct regulatory framework, and serves a fundamentally different client base. Furthermore, the study relied exclusively on secondary data and did not differentiate between accounting system types, precluding any analysis of cloud-specific performance mechanisms that this study addresses.

Study 3: Nnanna and Dogo (2018)

Objective: The study examined the effect of corporate governance on the financial performance of Microfinance Banks in Nigeria, with governance quality — measured through board composition, audit committee effectiveness, and management quality — as the independent variable and financial performance as the dependent variable.

Organisation of the Study: The study was conducted in Nigeria, specifically targeting licensed Microfinance Banks across six geo-political zones.

Population and Sample: The study population comprised 632 licensed Microfinance Banks. A stratified

random sample of 95 institutions was drawn, with usable data obtained from 82 Microfinance Banks.

Data Collection Method and Analysis

Technique: Primary data were collected via structured questionnaires. Secondary data were obtained from audited financial statements and Central Bank of Nigeria examination reports. Multiple regression and descriptive statistics were employed for analysis.

Result: Corporate governance quality was found to have a significant positive effect on the financial performance of Microfinance Banks. Board composition and audit committee effectiveness were the strongest governance predictors of performance.

Critique: The study makes a significant contribution to the Microfinance Bank performance literature in Nigeria. However, it is limited to governance variables and completely ignores accounting technology infrastructure as a performance determinant, leaving unexplored the extent to which technology-driven accounting systems independently improve Microfinance Bank performance. The study was also conducted at the national level without the sub-national geographic specificity needed to inform localised policy

interventions in states like Benue, a gap the present study directly addresses.

Study 4: Okeke and Nwosu (2018)

Objective: The study assessed the effect of risk management practices on the sustainability of Microfinance Banks in south-eastern Nigeria, with risk management measured through credit appraisal quality, risk identification procedures, and loan monitoring as independent variables and institutional sustainability as the dependent variable.

Organisation of the Study: The study was carried out in south-eastern Nigeria, covering Microfinance Banks operating in Anambra, Enugu, and Imo states.

Population and Sample: The population comprised 214 Microfinance Banks operating in the three states. A purposive sample of 60 Microfinance Banks was selected on the basis of regulatory compliance status.

Data Collection Method and Analysis

Technique: Structured questionnaires and review of audited financial statements formed the data collection instruments. Ordinary least squares regression and analysis of variance were used to test the hypotheses.

Result: Risk management practices were found to significantly influence the sustainability of Microfinance Banks. Credit appraisal quality and loan

monitoring emerged as the strongest predictors of institutional sustainability.

Critique: While the study valuably extends the Microfinance Bank performance literature to the risk management domain, it confines its analytical scope to risk variables and does not examine the role of accounting technology in generating the timely portfolio data that effective risk management requires. Additionally, the geographic focus on south-eastern Nigeria means the findings cannot be generalised to north-central states such as Benue State, where the infrastructure, client base, and regulatory dynamics of Microfinance Banks differ materially from the south-east.

Study 5: Eze and Okoye (2020)

Objective: The study investigated the effect of accounting information systems on the financial performance of quoted companies in Nigeria, with accounting information system sophistication as the independent variable and financial performance measured by return on assets and earnings per share as the dependent variable.

Organisation of the Study: The study was carried out in Nigeria, targeting manufacturing companies listed on the Nigerian Exchange Group.

Population and Sample: The population comprised 77 listed manufacturing companies. A sample of 30 firms was

selected using systematic random sampling, covering a ten-year study period from 2010 to 2019.

Data Collection Method and Analysis Technique: Secondary data were extracted from audited annual reports and the Nigerian Exchange Group database. Panel data regression analysis, including fixed and random effects models, was employed alongside the Hausman specification test to determine the preferred model.

Result: Accounting information system sophistication had a significant positive effect on both return on assets and earnings per share. Firms with more automated and integrated accounting systems consistently outperformed those with less sophisticated systems.

Critique: This study provides strong evidence for the accounting technology-performance link in the Nigerian corporate context. However, its exclusive focus on listed manufacturing firms and reliance on secondary data means it does not capture the specific operational realities of Microfinance Banks, which are unlisted, cash-intensive, and operate under a Microfinance Bank-specific regulatory regime. Furthermore, the study uses a composite accounting information system variable that does not disaggregate cloud-based characteristics such as real-time access and automated reporting, which are

the specific mechanisms through which performance improvements in Makurdi Microfinance Banks are hypothesised to occur in the present study.

Study 6: Oladejo and Yinus (2021)

Objective: The study examined the effect of information and communications technology adoption on the operational performance of selected commercial banks in Nigeria, with information technology adoption measured through electronic banking penetration and accounting automation as independent variables and operational performance as the dependent variable.

Organisation of the Study: The study was conducted in Nigeria and targeted commercial banks listed on the Nigerian Exchange Group, covering operations across five geo-political zones.

Population and Sample: The population comprised all 23 commercial banks licensed by the Central Bank of Nigeria as at 2020. A purposive sample of 15 banks was selected based on consistent financial reporting over the study period of 2014 to 2019.

Data Collection Method and Analysis Technique: Secondary data were sourced from audited financial statements, annual reports, and Nigerian Exchange Group filings. Multiple regression analysis and

descriptive statistics were employed for hypothesis testing.

Result: Information technology adoption, including electronic banking and accounting automation, significantly reduced operational costs and improved service delivery metrics in sampled commercial banks. Accounting automation was the strongest predictor of operational efficiency.

Critique: The study's findings on accounting automation and operational efficiency are directly relevant to the present inquiry. However, its focus on large commercial banks limits its generalisability to Microfinance Banks, which operate on substantially smaller scales, with limited technology budgets, and in infrastructure-constrained environments where the operational constraints to technology adoption differ fundamentally. The study also does not distinguish between cloud-based and on-premise accounting automation, which is the critical distinction the present study seeks to investigate.

Study 7: Oluwafemi and Adesina (2021)

Objective: The study assessed the effect of cloud computing adoption on business performance in small and medium enterprises in Nigeria, with cloud computing adoption as the independent variable and business performance measured through financial performance

and operational efficiency as the dependent variable.

Organisation of the Study: The study was conducted in Lagos State, Nigeria, targeting small and medium enterprises registered with the Lagos Chamber of Commerce and Industry.

Population and Sample: The population comprised 320 small and medium enterprises registered with the Lagos Chamber of Commerce and Industry. A sample of 175 firms was drawn using simple random sampling, with 148 usable responses obtained.

Data Collection Method and Analysis Technique: Primary data were collected through structured questionnaires administered to business owners and financial managers. Data were analysed using descriptive statistics, Pearson correlation, and multiple linear regression.

Result: Cloud computing adoption significantly improved business performance in sampled small and medium enterprises through cost reduction, enhanced information access, and improved decision-making speed. Financial performance and operational efficiency both showed significant positive relationships with cloud adoption intensity.

Critique: This study is the most proximate existing study to the present inquiry in terms of both the independent variable

(cloud computing adoption) and the performance dimensions examined. However, it targets small and medium enterprises in Lagos rather than Microfinance Banks in Benue State, meaning its findings cannot account for the Microfinance Bank-specific operational constraints, loan portfolio management dynamics, and Central Bank of Nigeria regulatory requirements that are central to this study's institutional context. Furthermore, the study uses a general cloud computing adoption measure rather than disaggregating cloud accounting-specific functionalities, obscuring the specific performance mechanisms this study seeks to isolate.

2.4 Summary of Literature Reviewed

The empirical studies reviewed span the accounting information systems and performance literature across international and Nigerian contexts from 2010 to 2021. Collectively, the reviewed studies establish a consistent positive relationship between accounting technology quality and organisational performance, with findings across Malaysian small and medium enterprises (Kharuddin et al., 2010), Nigerian manufacturing firms (Abata, 2014; Eze & Okoye, 2020), commercial banks (Oladejo & Yinus, 2021), and small and medium enterprises (Oluwafemi & Adesina, 2021) uniformly supporting the

proposition that superior accounting technology generates improved financial performance and operational efficiency outcomes. The microfinance-specific studies (Nnanna & Dogo, 2018; Okeke & Nwosu, 2018) confirm that Microfinance Bank performance is sensitive to institutional quality variables, though neither engages with accounting technology as a driver of that quality. Four critical gaps are consistently observable across the reviewed literature: no study examines cloud-based accounting specifically as distinct from general information and communications technology or accounting information systems broadly; no study targets the Microfinance Bank sub-sector specifically; no study provides sub-nationally localised evidence for Benue State or Makurdi Metropolis; and no study employs a multi-dimensional performance framework that simultaneously captures financial performance, operational efficiency, and portfolio quality outcomes. The present study addresses all four identified gaps through its specific focus on cloud accounting dimensions, its exclusive targeting of Microfinance Banks in Makurdi Metropolis, and its multi-proxy dependent variable structure.

3. Methodology

The study adopted a survey research design, appropriate for investigating the attitudinal and behavioural dimensions of cloud accounting adoption alongside measurable institutional performance outcomes within a defined population of Microfinance Banks. The target population comprised all licensed Microfinance Banks operating within Makurdi Metropolis as at 2021, which amounted to 18 institutions according to the Central Bank of Nigeria Benue State Office (2021) directory. However, following a preliminary institutional screening conducted to ensure that sampled Microfinance Banks could meaningfully contribute to an assessment of cloud accounting adoption and performance, eight institutions were excluded from the study population on the following criteria: three Microfinance Banks were under active Central Bank of Nigeria regulatory sanction or receivership at the time of the study and were therefore operationally restricted; two Microfinance Banks were operating below the minimum capital threshold prescribed by the Central Bank of Nigeria and faced potential licence revocation; two had been in operation for fewer than three years as at 2021 and therefore lacked sufficient accounting system history for meaningful performance assessment over the study period; and one institution declined to participate after

formal written invitation. The resulting accessible population and final study population therefore comprised ten licensed Microfinance Banks, which constituted the basis for all subsequent sampling.

From the population of ten Microfinance Banks, a total population census approach was adopted given the small population size, targeting all operational staff engaged in accounting, credit administration, management, and operations functions. This yielded an aggregate staff count of 162 across the ten institutions. A sample of 115 was determined using Taro Yamane's (1967) formula at a 95 percent confidence level. A stratified random sampling technique was applied, with each institution constituting a stratum and respondents within each stratum drawn proportionately by job function. Ninety-eight usable questionnaires were returned and found fit for analysis, representing an 85.2 percent response rate, which exceeds the 70 percent threshold considered adequate for regression-based analysis (Hair, Black, Babin & Anderson, 2010).

The primary data collection instrument was a five-point Likert-scaled questionnaire developed in three sections. Section A captured respondent demographics and institutional profile. Section B measured cloud-based accounting adoption across three dimensions: automated financial

reporting (5 items), real-time data access (5 items), and multi-user collaboration functionality (5 items), each anchored on strongly disagree to strongly agree response options. Section C measured institutional performance across financial performance (4 items), operational efficiency (4 items), and portfolio quality (4 items). Instrument content validity was established through expert review by three accounting academics and two practising Microfinance Bank managers. Construct validity was confirmed through principal component factor analysis, with all items loading above 0.60 on their designated factors. Reliability was confirmed through Cronbach's alpha coefficients of 0.847, 0.813, and 0.829 for the three independent variable dimensions and 0.836, 0.809, and 0.821 for the dependent variable dimensions respectively, all exceeding the 0.70 reliability threshold recommended by Nunnally (1978). Secondary data on objective financial performance indicators were sourced from Central Bank of Nigeria examination reports and the audited financial statements of sampled institutions for the period 2017 to 2021.

Data were analysed using International Business Machines Statistical Package for the Social Sciences version 26. Descriptive statistics summarised respondent characteristics and variable distributions.

Pearson correlation analysis examined bivariate relationships between the independent and dependent variables, and multiple linear regression was employed to test the three null hypotheses, with financial performance, operational efficiency, and portfolio quality as dependent variables in three separate regression models. Model diagnostic tests for normality through Kolmogorov-Smirnov, multicollinearity through Variance Inflation Factor scores, and homoscedasticity through the Breusch-Pagan test were conducted prior to regression estimation, with all assumptions satisfactorily met. All Variance Inflation Factor values were below 3.0, confirming the absence of multicollinearity. Results are interpreted at the 0.05 level of significance.

4. Results and Discussion

4.1 Demographic and Descriptive Analysis

Of the 98 respondents, 58 (59.2 percent) were male and 40 (40.8 percent) were female, reflecting the gender composition profile of Microfinance Bank staff in Makurdi Metropolis. By job function, 26 (26.5 percent) were in management, 30 (30.6 percent) in accounting and finance, 24 (24.5 percent) in credit administration, and

18 (18.4 percent) in general operations. By educational qualification, 65 (66.3 percent) held at least a bachelor's degree, 21 (21.4 percent) held a Higher National Diploma, and 12 (12.2 percent) held other qualifications. This profile indicates an adequately educated sample capable of providing informed assessments of accounting technology utilisation and institutional performance outcomes. In terms of accounting system currently in use across sampled institutions, 4 (40.0 percent) of the ten Microfinance Banks reported operating primarily on manual or hybrid accounting systems, 3 (30.0 percent) used standalone desktop accounting software, and only 3 (30.0 percent) reported active use of cloud-based accounting platforms, independently confirming the low cloud adoption baseline that motivates the study.

Descriptive statistics for the independent variables showed mean scores of: automated financial reporting, 3.41 (± 0.72); real-time data access, 3.18 (± 0.81); and multi-user collaboration functionality, 3.07 (± 0.76), all on a five-point scale. These moderate mean values indicate that while some cloud accounting usage exists within sampled Microfinance Banks, adoption intensity is below the midpoint of the adoption scale for multi-user collaboration and marginally above average for

automated reporting, signalling substantial room for improvement. For the dependent variables, mean scores were: financial performance, 2.89 (± 0.84); operational efficiency, 2.74 (± 0.91); and portfolio quality, 2.81 (± 0.88), all below the theoretical neutral midpoint of 3.0. These below-average performance self-assessments are consistent with the objective regulatory data on Microfinance Bank distress in Benue State documented by the Central Bank of Nigeria Benue State Office (2021), providing concurrent validity for the questionnaire-based performance measures.

4.2 Correlation Analysis

Pearson correlation analysis revealed significant positive associations between all cloud accounting dimensions and all performance proxies at the 0.01 level. Automated financial reporting was most strongly correlated with financial performance ($r = 0.612$, $p < 0.01$), reflecting the direct link between timely, accurate financial reports and the profitability-related management decisions they support. Real-time data access showed the strongest correlation with operational efficiency ($r = 0.574$, $p < 0.01$), consistent with the expectation that immediate financial data visibility reduces processing times and operational costs in ways that directly address the reporting delays

documented in Makurdi Microfinance Banks. Multi-user collaboration functionality was most highly correlated with portfolio quality ($r = 0.531$, $p < 0.01$), reflecting the role that role-segregated concurrent access plays in preventing the loan administration manipulations that drive non-performing loan accumulation. These correlation patterns are theoretically consistent with both the Technology Acceptance Model's perceived usefulness pathway and the DeLone-McLean model's information quality to net benefits chain, providing preliminary empirical support for the hypothesised relationships.

4.3 Regression Results and Hypothesis

Testing

Model 1 tested H_{01} with financial performance as the dependent variable. The model was statistically significant ($F = 18.43$, $p < 0.001$, $R^2 = 0.431$, Adjusted $R^2 = 0.413$), indicating that 43.1 percent of the variance in financial performance was explained by the predictors in the model. Automated financial reporting exerted a significant positive effect on financial performance ($\beta = 0.487$, $t = 5.21$, $p < 0.001$). On this basis, H_{01} is rejected: automated financial reporting has a significant positive effect on the financial performance of Microfinance Banks in Makurdi Metropolis. This finding aligns with Eze and Okoye (2020) and Abata

(2014), who established that higher-quality accounting systems reduce financial reporting errors and strengthen the information quality on which profitable management decisions depend. The result is also theoretically consistent with the DeLone-McLean model: cloud-based automated reporting elevates information quality, increasing user satisfaction among management and enabling the net organisational benefits manifested as improved financial performance. Practically, this finding implies that Makurdi Microfinance Banks whose management accounts are generated automatically and in real time are significantly better positioned to identify revenue leakage, optimise earning asset deployment, and maintain the financial credibility that attracts refinancing from development finance institutions.

Model 2 tested H_{02} with operational efficiency as the dependent variable. The model was significant ($F = 15.67$, $p < 0.001$, $R^2 = 0.389$, Adjusted $R^2 = 0.369$). Real-time data access exerted a significant positive effect on operational efficiency ($\beta = 0.413$, $t = 4.87$, $p < 0.001$), leading to the rejection of H_{02} . The 47-day management account production lag documented by the Central Bank of Nigeria Benue State Office (2021) in one Makurdi Microfinance Bank represents precisely the

operational inefficiency that real-time data access eliminates. The regression result empirically confirms that institutions with higher real-time data access capability report significantly better operational efficiency outcomes. This finding extends the evidence of Oluwafemi and Adesina (2021) — who demonstrated that cloud adoption improves operational efficiency in Nigerian small and medium enterprises — into the Microfinance Bank context in Benue State. Within the Technology Acceptance Model framework, the result confirms that the perceived usefulness of real-time access, particularly its capacity to reduce reporting turnaround time and eliminate manual reconciliation backlogs, translates into measurable operational efficiency gains when adoption intensity is sufficient.

Model 3 tested H_{03} with portfolio quality as the dependent variable. The model was significant ($F = 14.22$, $p < 0.001$, $R^2 = 0.362$, Adjusted $R^2 = 0.341$). Multi-user collaboration functionality exerted a significant positive effect on portfolio quality ($\beta = 0.362$, $t = 4.43$, $p < 0.001$), leading to the rejection of H_{03} . This result is directly grounded in the structural realities of Makurdi Microfinance Banks: the manual loan ledger manipulation and unsegregated cash collection processes identified by regulatory examinations

persist specifically because current accounting systems allow a single user to both post and approve transactions. Cloud-based multi-user systems enforce role-based access controls programmatically, removing the structural conditions for loan suppression fraud and generating the loan portfolio data quality that reduces non-performing loan accumulation. The finding extends the evidence of Nnanna and Dogo (2018) on governance and portfolio quality in Nigerian Microfinance Banks into the specific domain of cloud accounting system architecture, demonstrating that technology-embedded controls produce portfolio quality improvements independently of, and complementary to, governance-level interventions.

4.4 Summary of Findings

The results of this study establish three principal findings. First, automated financial reporting has a significant positive effect on the financial performance of Microfinance Banks in Makurdi Metropolis ($\beta = 0.487$, $p < 0.05$), indicating that each unit improvement in automated reporting adoption corresponds to a 48.7 percent standard deviation improvement in financial performance. Second, real-time data access has a significant positive effect on operational efficiency ($\beta = 0.413$, $p < 0.05$), confirming that the immediate availability of financial data is a significant

driver of operational cost efficiency and reporting timeliness in the sampled institutions. Third, multi-user collaboration functionality has a significant positive effect on portfolio quality ($\beta = 0.362$, $p < 0.05$), establishing that system-enforced role segregation and concurrent audit trail generation materially improve loan portfolio health in Microfinance Banks operating in Makurdi Metropolis. All three null hypotheses are rejected. Collectively, these findings provide robust empirical support for the Technology Acceptance Model's perceived usefulness pathway and the DeLone-McLean model's information quality to organisational benefits chain within the Microfinance Bank sub-sector in Benue State, while simultaneously generating the first sub-nationally localised evidence base on cloud accounting and Microfinance Bank performance in Nigeria.

5. Conclusion and Recommendations

This study examined the effect of cloud-based accounting on the performance of Microfinance Banks in Makurdi Metropolis, Benue State, motivated by the acute and documentable performance crisis in the sector and the critical absence of localised empirical evidence on cloud accounting adoption and its performance consequences. The study established that

automated financial reporting, real-time data access, and multi-user collaboration functionality, the three operationalised dimensions of cloud-based accounting, each exert a significant positive effect on financial performance, operational efficiency, and portfolio quality of Microfinance Banks in Makurdi Metropolis respectively. These findings are theoretically consistent with the Technology Acceptance Model and the DeLone-McLean Information Systems Success Model, empirically aligned with global and Nigerian evidence on accounting technology and institutional performance, and practically resonant with the specific accounting infrastructure failures observable in Makurdi Microfinance Banks through Central Bank of Nigeria examination records and field observations. The study's principal contribution to knowledge is the provision of the first sub-nationally localised, Microfinance Bank-specific empirical evidence on cloud-based accounting and institutional performance in Nigeria, generated with a multi-proxy performance framework that captures the breadth of cloud accounting's organisational consequences across financial, operational, and portfolio quality dimensions. Based on the findings, the following recommendations are advanced. The

Central Bank of Nigeria should incorporate minimum cloud accounting adoption standards into the Microfinance Bank licensing and annual renewal framework, particularly in Benue State where the concentration of documented performance failures makes technology-based supervisory intervention urgent. The Central Bank of Nigeria Benue State Office should design a structured technology adoption compliance roadmap with time-bound migration pathways and subsidised platform subscription arrangements for unit-level Microfinance Banks operating on thin margins. Boards and management of Microfinance Banks in Makurdi Metropolis should treat cloud accounting migration as a strategic institutional priority rather than a discretionary technology expenditure, given the statistically significant and economically meaningful performance returns documented by this study. The National Association of Microfinance Banks should negotiate institutional licensing agreements with cloud accounting vendors to lower per-institution subscription costs across member institutions. The Benue State Government, through the Ministry of Finance and Planning, should include cloud accounting capacity-building programmes for Microfinance Bank staff in the state's annual financial inclusion budget,

addressing the digital literacy deficits that moderate cloud adoption intensity in the sector.

The study is not without limitations. The survey design, while appropriate for the research questions, cannot establish causality with the rigour of a longitudinal experimental design. The study is also geographically confined to Makurdi Metropolis, limiting direct generalisability to other geo-political zones without replication. Future research should extend this inquiry through longitudinal panel designs covering multiple states to establish causal pathways with greater rigour, and through mixed-methods designs that combine quantitative performance analysis with in-depth case studies of Microfinance Banks at different stages of cloud accounting adoption, generating the nuanced implementation insights needed to complement the quantitative evidence produced by this study.

References

- Abata, M. A. (2014). Accounting information system and corporate performance in selected food and beverages companies in Nigeria. *Research Journal of Finance and Accounting*, 5(1), 131–139.
- Agbolade, O. K. (2011). Information and communication technology and banks' profitability in Nigeria. *Australian Journal of Business and Management Research*, 1(4), 102–107.
- Ahlin, C., Lin, J., & Maio, M. (2011). Where does microfinance flourish? Microfinance institution performance in macroeconomic context. *Journal of Development Economics*, 95(2), 105–120.
- Armendariz, B., & Morduch, J. (2010). The economics of microfinance (2nd ed.). MIT Press.
- Central Bank of Nigeria. (2019). Revised microfinance policy, regulatory and supervisory framework for Nigeria. Central Bank of Nigeria.
- Central Bank of Nigeria. (2021). Annual report on microfinance banking supervision in Nigeria. Central Bank of Nigeria.
- Central Bank of Nigeria Benue State Office. (2021). Microfinance sector examination report: Benue State. Central Bank of Nigeria.
- Cockcroft, S., & Russell, M. (2018). Big data opportunities for accounting and finance practice and research. *Australian Accounting Review*, 28(3), 323–333.
- Consultative Group to Assist the Poor. (2010). Andean microfinance institutions: Financial performance

- and social outreach benchmarks. Consultative Group to Assist the Poor.
- Convergences. (2020). Microfinance barometer 2020. Convergences.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9–30.
- Eze, S. C., & Okoye, J. C. (2020). Accounting information system and financial performance of quoted companies in Nigeria. *International Journal of Accounting Research*, 8(1), 1–11.
- Gupta, P. (2018). Cloud computing: Web-based applications that change the way you work and collaborate online. Que Publishing.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate data analysis (7th ed.). Pearson.
- International Finance Corporation. (2019). Digital financial services in Sub-Saharan Africa: Scoping report. International Finance Corporation.
- Kaplan, R. S., & Norton, D. P. (1992). The balanced scorecard: Measures that drive performance. *Harvard Business Review*, 70(1), 71–79.
- Kharuddin, S., Ashhari, Z. M., & Nassir, A. M. (2010). Information system and firms' performance: The case of Malaysian small and medium enterprises. *International Business Research*, 3(4), 28–35.
- Ledgerwood, J. (2013). The new microfinance handbook: A financial market system perspective. World Bank Publications.
- Mersland, R., & Strom, R. O. (2009). Performance and governance in microfinance institutions. *Journal of Banking and Finance*, 33(4), 662–669.
- Munsif, V., Raghunandan, K., & Rama, D. V. (2012). Internal control reporting and audit report lags: Further evidence. *Auditing: A Journal of Practice and Theory*, 31(3), 203–218.
- Nnanna, J., & Dogo, M. (2018). Corporate governance, risk management and financial performance of microfinance banks in Nigeria. *Journal of Finance and Accounting*, 6(4), 99–110.

- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). McGraw-Hill.
- Okeke, T. C., & Nwosu, C. E. (2018). Risk management practices and sustainability of microfinance banks in south-eastern Nigeria. *Journal of Economics and Sustainable Development*, 9(14), 88–101.
- Oladejo, M. O., & Yinus, S. O. (2021). Effect of information and communication technology on bank performance: A study of selected commercial banks in Nigeria. *Accounting and Finance Research*, 10(1), 57–68.
- Oluwafemi, A. J., & Adesina, O. T. (2021). Cloud computing adoption and business performance in small and medium enterprises in Nigeria. *International Journal of Business and Management*, 16(3), 1–12.
- Romney, M. B., & Steinbart, P. J. (2018). *Accounting information systems* (14th ed.). Pearson Education.
- Tersoo, P., & Aondover, E. M. (2020). Microfinance banks and rural enterprise development in Benue State, Nigeria. *International Journal of Small Business and Entrepreneurship Research*, 8(2), 1–14.
- Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behaviour. *MIS Quarterly*, 24(1), 115–139.
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.