Pak. j. life soc. Sci. (2025), 23(2): 1276-1288 E-ISSN: 2221-7630;P-ISSN: 1727-4915

Pakistan Journal of Life and Social Sciences

www.pjlss.edu.pk

https://doi.org/10.57239/PJLSS-2025-23.2.00255

RESEARCH ARTICLE

Detecting Earnings Management: Evidence from Nigerian Listed Firms Under IFRS and Economic Crises Using Financial Ratio Distributions

Oloruntoba Oyedele*

Department of Accounting Science, Faculty of Economic and Financial Sciences, Walter Sisulu University, Mthatha, Private Bag X1, UNITRA, 5117, South Africa

ARTICLE INFO

Received: Oct 20, 2025

Accepted: Dec 9, 2025

Keywords

Earnings Management
Distributional Analysis
Financial Ratios
IFRS Adoption
Economic Crises

***Corresponding Author:**

oyedeleoloruntobar@gmail.com

ABSTRACT

This study investigates the detection of earnings management among Nigerian listed non-financial services firms using a distribution of ratios approach. Departing from the dominant reliance on accrual-based models, which are often subject to measurement error and model misspecification, the study employs nonparametric distributional techniques to examine whether firms systematically manipulate reported financial ratios around salient benchmarks. Drawing on the earnings distribution framework of Burgstahler and Dichev and its extensions, the analysis focuses on a comprehensive set of performance, capital structure, liquidity, and profitability ratios derived from firms' financial statements obtained from the Nigerian Exchange Group. Distributional smoothness is assessed using the one-sample Kolmogorov–Smirnov test to identify discontinuities indicative of earnings management behavior. The findings provide robust evidence that earnings management is selective rather than pervasive, with significant manipulation concentrated in profitability, capital adequacy, and liquidity-related ratios. Ratios such as profit margin, return on assets, capital adequacy, and net interest margin exhibit statistically significant distributional discontinuities, while structurally rigid measures show limited evidence of manipulation. Further analysis reveals that earnings management behavior varies across accounting regimes, with IFRS adoption constraining some accrual-based strategies while reallocating discretion toward balance-sheet and ratio-based measures. Crisis-period analysis shows that earnings management intensifies during periods of economic stress, with stronger and more pervasive evidence observed during the COVID-19 pandemic relative to the global financial crisis of 2007–2008. Overall, the study contributes to the earnings management literature by demonstrating the usefulness of ratio-based distributional methods as a complementary detection tool, particularly in emerging market settings and during periods of heightened economic uncertainty.

1. INTRODUCTION

Earnings management has remained a central concern in accounting and financial reporting research because of its implications for earnings quality, investor confidence, and market efficiency. Prior literature defines earnings management as the deliberate intervention by managers in the external financial reporting process to achieve certain private or contractual objectives, often within the boundaries of accounting standards (Schipper, 1989; Healy & Wahlen, 1999). Empirical evidence shows that managers engage in both accrual-based and real activities manipulation to influence reported earnings, particularly around key thresholds such as avoiding losses, earnings declines, or meeting benchmarks (Burgstahler & Dichev, 1997; Degeorge et al., 1999; Roychowdhury, 2006; Zang, 2012).

The dominant strand of earnings management detection research has relied heavily on accrual-based models, including the Jones (1991) model and its extensions, such as the modified Jones model and performance-matched discretionary accrual measures (Dechow et al., 1995; Kothari et al., 2005; Peasnell et al., 2000). While these models have advanced the literature substantially, they are also subject to significant measurement error and model misspecification, particularly when applied across heterogeneous firms, industries, or periods of economic stress (Hribar & Collins, 2002; Dechow et al., 2010). These limitations have motivated alternative approaches to earnings management detection that rely less on accrual estimation and more on distributional properties of reported accounting numbers.

One such alternative is the distribution of ratios approach, which builds on the earnings distribution discontinuity framework introduced by Burgstahler and Dichev (1997) and extended by Degeorge et al. (1999). This approach examines whether firms manage earnings to cluster just above salient benchmarks, resulting in non-smooth distributions of earnings-related ratios. Subsequent studies have refined and debated the interpretation of distributional discontinuities, highlighting both their usefulness and potential pitfalls (Durtschi & Easton, 2009; Donelson et al., 2013; Byzalov & Basu, 2019). More recent work demonstrates that ratio-based and distributional methods can provide complementary evidence to accrual-based models, particularly in regulated and financial sectors where balance-sheet and performance ratios play a central role in monitoring and contracting (Shen & Chih, 2005; Beretka, 2019).

Studies in Nigeria similarly document the presence of earnings management highlight the roles of corporate governance, audit quality, IFRS adoption, and regulatory reforms (Akintayo & Salman, 2018; Ozili & Outa, 2019; Kajola et al., 2020). However, much of this evidence is still based on accrual-based models, with relatively limited application of distributional and ratio-based techniques in the Nigerian context.

Importantly, earnings management incentives and behaviors are not static and tend to intensify during periods of economic and financial distress. The global financial crisis of 2007–2008 provided strong incentives for firms, especially financial institutions, to manage earnings in order to mask deteriorating performance, avoid regulatory intervention, and maintain market confidence (Habib et al., 2013; Cimini, 2015; Persakis & Iatridis, 2016). Evidence from international settings suggests that earnings quality declined and earnings management practices became more pronounced during this period. Similarly, the COVID-19 pandemic represents an unprecedented global shock that disrupted economic activity, increased uncertainty, and placed renewed pressure on firms' financial performance and reporting incentives. Although recent crises differ in origin and transmission mechanisms, both periods are characterized by heightened risk, regulatory forbearance, and stronger managerial incentives to smooth or manage reported earnings.

Against this backdrop, this study adopts a distribution of ratios approach to detect earnings management among Nigerian listed firms using financial statement data obtained from the Nigerian Exchange Group, as well as consolidated and separate interim financial statements. Building on Beretka (2019) and Shen and Chih (2005), the study focuses on ratio approach that capture key aspects of performance, risk, and capital adequacy, and evaluates their distributional properties using established earnings management metrics derived from Burgstahler and Dichev (1997) and Degeorge et al. (1999). By employing nonparametric techniques, including the one-sample Kolmogorov–Smirnov test, the analysis assesses whether observed ratio distributions deviate systematically from their theoretical counterparts, thereby providing evidence of earnings management behavior (Dimitrova et al., 2020; Vrbik, 2018).

The objective of the study is twofold. First, it aims to provide robust evidence on the presence and nature of earnings management in Nigerian firms using a ratio-based distributional framework that complements traditional accrual-based approaches. Second, it explicitly examines whether the patterns of earnings management detected differ across periods associated with major economic shocks, namely the global financial crisis of 2007–2008 and the COVID-19 crisis. By doing so, the study contributes to the literature on earnings management under crisis conditions and extends existing evidence on the usefulness of distributional methods in emerging markets and regulated financial environments.

2. LITERATURE REVIEW

Earnings management has long been recognized as a fundamental issue in accounting research due to its implications for financial reporting credibility and capital market efficiency. Early conceptual discussions describe earnings management as managerial discretion exercised in financial reporting to influence stakeholders' perceptions of firm performance (Schipper, 1989; Healy & Wahlen, 1999). Foundational empirical studies document that managers manipulate accruals to achieve specific reporting objectives, such as income smoothing or meeting contractual benchmarks (McNichols & Wilson, 1988; DeFond & Jiambalvo, 1994). The seminal Jones (1991) model and its subsequent refinements marked a turning point in empirical earnings management research by providing systematic methods to isolate discretionary accruals. Dechow et al. (1995) further advanced detection techniques by highlighting the conditions under which accrual-based models perform well or poorly. These studies collectively established accrual manipulation as a central mechanism through which managers alter reported earnings.

Subsequent literature has critically evaluated accrual-based detection models, emphasizing their limitations. Hribar and Collins (2002) demonstrate that errors in estimating accruals can bias inferences about earnings management, while Peasnell et al. (2000) and Kothari et al. (2005) propose cross-sectional and performance-matched models to mitigate misspecification. Despite these refinements, concerns remain about model sensitivity to firm performance, economic conditions, and industry characteristics (Dechow et al., 2010). Research also shows that discretionary accruals are priced by capital markets, implying that investors partially recognize earnings manipulation but may not fully adjust for its implications (Xie, 2001; Francis et al., 2005; Richardson et al., 2005). These findings underscore the need for complementary approaches to detect earnings management beyond traditional accrual-based measures.

Parallel to accrual-based research, scholars have examined real activities manipulation as an alternative earnings management mechanism. Roychowdhury (2006) documents that managers alter operational decisions—such as production, discretionary expenditures, and sales timing—to influence reported earnings. Evidence suggests that real earnings management increased relative to accrual-based manipulation following regulatory changes, as managers substituted toward less detectable methods (Cohen et al., 2008; Zang, 2012). Gunny (2010) further shows that real activities manipulation has adverse implications for future firm performance, reinforcing concerns about its long-term economic costs. Badertscher (2011) highlights that firms choose between accrual-based and real earnings management depending on valuation pressures and constraints, suggesting that no single detection approach is sufficient to capture the full spectrum of earnings management behavior.

Another influential strand of the literature focuses on distributional properties of earnings and related accounting ratios. Burgstahler and Dichev (1997) provide compelling evidence that firms manage earnings to avoid losses and earnings declines, resulting in discontinuities around zero and other thresholds. Degeorge et al. (1999) extend this framework by identifying multiple earnings benchmarks that shape managerial reporting incentives. While distributional discontinuity tests have been widely applied, their interpretation remains debated. Durtschi and Easton (2009) caution that observed discontinuities may arise from scaling effects or statistical artifacts rather than intentional manipulation, whereas Donelson et al. (2013) link discontinuities to restatements and litigation, supporting an earnings management interpretation. More recent work refines the modeling of threshold behavior and emphasizes contextual factors influencing distributional outcomes (Byzalov & Basu, 2019).

Within this context, ratio-based and distribution-of-ratios approaches have gained attention as tools for detecting earnings management, particularly in regulated industries. Beretka (2019) demonstrates that analyzing the distributions of financial ratios can reveal earnings management behavior that may not be captured by accrual models alone. This approach aligns with earlier evidence that balance sheet constraints limit accrual manipulation and shift managerial behavior toward ratio-based adjustments (Barton & Simko, 2002). Shen and Chih (2005) further show that investor protection and regulatory environments influence earnings management practices, supporting the relevance of ratio-based benchmarks. These studies suggest that distributional

analysis of ratios provides a useful complementary lens for understanding earnings management in financial institutions.

Corporate governance and institutional factors also play a significant role in shaping earnings management incentives and outcomes. Prior studies document that stronger governance mechanisms, higher audit quality, and effective boards constrain earnings management (Akintayo & Salman, 2018; Nagar & Raithatha, 2016; Kajola et al., 2020). Conversely, weak governance structures are associated with greater manipulation of reported earnings, particularly in emerging markets (Alzoubi, 2016; Leuz et al., 2003). Evidence from Nigeria indicates that ownership structure, board characteristics, and disclosure quality significantly influence earnings management (Osemene et al., 2018; Uwuigbe et al., 2017; Shiyanbola et al., 2019). These findings highlight the importance of institutional context when interpreting earnings management evidence.

Early studies show that manage earnings to meet regulatory thresholds and smooth income over time (Beatty et al., 1995; Beatty et al., 2002). McNichols and Wilson (1988) provide early evidence that loan loss provisions are used opportunistically to manage earnings, while later studies confirm that regulatory and tax considerations intensify such behavior. In Nigeria, empirical evidence consistently documents earnings smoothing and accrual manipulation, particularly around periods of regulatory change and IFRS adoption (Ozili & Outa, 2019; Madugba & Ogbonnaya, 2017; Ugbede et al., 2013). These sector-specific dynamics reinforce the suitability of ratio-based distributional methods for detecting earnings management.

Macroeconomic shocks further complicate earnings management behavior by altering incentives and constraints. Research on the global financial crisis of 2007–2008 shows that financial distress and heightened uncertainty increased earnings management activities as firms attempted to conceal poor performance and stabilize market perceptions (Habib et al., 2013; Cimini, 2015). Persakis and Iatridis (2016) provide global evidence that earnings quality deteriorated during crisis periods, with variation across institutional environments. These findings are consistent with earlier insights that earnings management responds dynamically to economic conditions and regulatory pressure (Dechow & Skinner, 2000; Ball & Shivakumar, 2008). Although the COVID-19 crisis represents a different type of shock, the literature on financial crises suggests that periods of systemic stress are likely to intensify earnings management incentives, making distributional and ratio-based analyses particularly relevant.

Overall, the literature demonstrates that earnings management is a multifaceted phenomenon that cannot be fully captured by a single detection method. Accrual-based, real activities, and distributional approaches each provide distinct but complementary insights into managerial reporting behavior (Sun & Rath, 2010; Dechow et al., 2012). The growing body of evidence on ratio-based and distributional techniques supports their use as robust tools for identifying earnings management under varying institutional and macroeconomic conditions (Beretka, 2019; Shen & Chih, 2005). Building on this literature, the present study situates the distribution of ratios approach within the Nigerian context and extends prior research by examining how major economic crises shape the detected patterns of earnings management.

3. METHODOLOGY

This study adopts an ex post facto research design to examine earnings management behavior among Nigerian listed non-financial services firms. The sample comprises firms listed on the Nigerian Exchange Group (NGX) with complete and consistent financial statement data over the study period. Firms operating in the financial services sector are excluded due to their distinct regulatory and reporting frameworks. Annual firm-level data are obtained from audited financial statements published by the NGX and company reports.

Earnings management is investigated using a distribution-of-ratios approach rather than traditional accrual-based models. A comprehensive set of financial ratios is constructed to capture profitability, liquidity, capital structure, and performance dynamics. These include return on assets, profit margin, liquidity ratio, leverage ratio, capital adequacy measures, and other commonly reported accounting ratios. Ratios are scaled consistently to ensure comparability across firms and time.

To detect earnings management, the study applies nonparametric distributional analysis grounded in the earnings distribution framework of Burgstahler and Dichev. Specifically, the one-sample

Kolmogorov–Smirnov (K–S) test is employed to assess the smoothness of each ratio's empirical distribution. Statistically significant discontinuities or clustering around economically meaningful thresholds are interpreted as evidence of earnings management behavior. This approach avoids strong distributional assumptions and reduces model misspecification concerns associated with accrual estimation.

Additional analyses are conducted to assess heterogeneity in earnings management behavior across accounting regimes and macroeconomic conditions. The sample is partitioned into pre- and post-IFRS adoption periods to evaluate changes in reporting behavior following accounting standard reforms. Furthermore, crisis-period subsamples, covering the 2007–2008 global financial crisis and the COVID-19 pandemic, are analyzed to examine whether economic stress intensifies earnings management incentives. All statistical analyses are conducted at conventional significance levels, and robustness is ensured through alternative ratio specifications and distributional checks. Table 1 shows the financial ration use and their measurements.

Table 1: Measurement of the specific ratios

Ratio	Descriptions	Measurement [Computation Formula]
CAD	Capital Adequacy*	Eligible Capital$_t$/Risk-Weighted Assets$_t$
COF	Cost of Funds*	Cost of Debt$_t$ + Cost of Equity$_t$
ETA	Equity to Assets	Average Equity$_t$/Assets$_t$
ETL	Equity to Loan	Equity$_t$/Loan$_t$
GMI	Gross Margin Index	Gross Margin$_{t-1}$/Gross Margin$_t$
GYA	Gross Yield on Assets	Total Interest Income$_t$/Total Assets$_t$
LQY	Liquidity Ratio*	Cash$_t$ + Accounts Receivables$_t$ + Marketable Securities$_t$/Current Liabilitie
LTA	Loans to Assets	Loans$_t$/Assets$_t$
LTD	Loans to Deposits*	Loans$_t$/Deposits$_t$
NIM	Net Interest Margin*	(Total Interest Income$_t$ − Total Interest Expense$_t$)/Total Assets$_t$
NPL	Non-performing Loan Coverage*	Loan-Loss Allowance$_t$/Total Non-performing loans$_t$
PATM	Profit Margin*	PAT$_t$/Net Interest$_t$
ROA	Return on Average Assets*	PAT$_t$/Assets$_t$
ROA	Return on Average Equity*	PAT$_t$/Equity$_t$

Note: These ratios are also referring as the corresponding name in parenthesis: Capital Adequacy [capital-to-risk weighted assets] ratio, Equity to Assets [Leverage] Ratio, Loans to Deposits [Credit-deposit] Ratio, Cost of Funds [Rate Paid on Funds] and Profit Margin [Cost to Income] Only GMI is Index, others are ratios. Total Assets was used in the computation, thus the reference GYA instead of Gross Yield on Earning Assets, GYEA (Beretka, 2019). Unless otherwise specified, Asset [Equity] used as denominator in the computation means 'Average' Assets (Equity), while those used on the numerators are 'Total' Assets (Equity).

PAT: Profit after Tax.

*Obtain from various Financial sources: NSE records, and Fitch Rating Reports.

COF replaces Rate Paid on Funds (RPF), whereas secondary sourced Cost to Income is used as proxy for PATM in Beretka (2019). As directed by CBN, the DMBs use stricter test of liquidity (Quick Ratio) in the computation of liquidity ratio (CBN, 2009).

Other ratios (ETA, ETL, GYA, LTA) are calculated using the corresponding Measurement [defined in column 3]. Except otherwise indicated, each ratio is computed for the firm within same time-frame, e.g., firm 'i' in year, t. Where:

Gross Margin = (Total Interest Income$_t$ − Total Interest Expense$_t$)/Total Interest Income

Average Equity = (Equity$_t$ + Equity$_{t-1}$)/2.

Average Asset = (Asset$_t$ + Asset$_{t-1}$)/2.

Cost of Debt = Interest Expenses $\times$ (1 $-$ Tax Rate)/Total Debt.

Cost of Equity = Risk Free Rate of Return + (Beta of the stock $\times$ Market Risk Premium).

Where Market Risk Premium = Market Rate of Return $-$ Risk Free Rate of Return. Market Rate of Return is the rate of interest; Beta of the stock is a measure of the stock's volatility relative obtained from NSE or computed as standard deviation of stock price. The Treasury Bill rate is predominantly standard for the risk-free rate of return in Nigeria.

4. RESULTS AND IMPLICATIONS

4.1 Results Interpretation

The descriptive statistics reported in Table 2 provide an essential baseline for understanding the structural behavior of Nigerian firms over the sample period. The mean capital adequacy ratio (CAD) of 0.270, alongside moderate dispersion, indicates that firms generally complied with prudential capital requirements, though the wide range suggests heterogeneous risk appetites and capitalization strategies. From an earnings management perspective, this dispersion is critical because capital regulation has long been identified as a central incentive for accrual manipulation in firms, particularly when regulatory thresholds are binding (Beatty et al., 1995; DeFond & Jiambalvo, 1994). The profitability indicators—PATM, ROA, and ROE—exhibit substantial volatility, including negative minima, reinforcing the relevance of threshold-based incentives to smooth or inflate earnings to avoid losses or earnings declines, as theorized by Burgstahler and Dichev (1997) and Degeorge et al. (1999). Liquidity (LQY) and loan structure ratios (LTA, LTD) further suggest that balance-sheet management is a key channel through which firms may influence reported performance. Consistent with Healy and Wahlen (1999), such environments—characterized by regulatory scrutiny, volatile profitability, and heterogeneous balance sheets—create fertile ground for earnings management. Importantly, the descriptive patterns alone do not imply manipulation, but they establish the economic conditions under which managerial discretion becomes valuable, thereby justifying the subsequent use of distributional tests and regime-based analyses in Tables 3 through 10.

Table 3 deepens this analysis by applying the Kolmogorov–Smirnov distributional smoothness test (EM1), which directly targets discontinuities around critical reporting thresholds. The evidence of earnings management detected in CAD, COF, GYA, LTA, NIM, PATM, and ROA aligns closely with classical accrual-based manipulation channels documented in the literature (Jones, 1991; Dechow et al., 1995; McNichols & Wilson, 1988). Particularly notable is the strong evidence for PATM and ROA, where Z-values exceed conventional significance thresholds, suggesting aggressive smoothing of bottom-line performance. This finding resonates with the theoretical argument that profitability measures are focal points for market participants and regulators, making them prime targets for manipulation (Schipper, 1989; Dechow & Skinner, 2000). Conversely, the absence of earnings management signals in ETA, ETL, GMI, LTD, and NPL suggests that not all balance-sheet components are equally malleable or strategically relevant. Barton and Simko (2002) emphasize that balance-sheet constraints can limit income-statement manipulation, which may explain why certain structurally rigid ratios show no discontinuities. Table 3 confirms that earnings management in Nigerian firms is selective rather than pervasive, consistent with the view that managers optimally choose manipulation instruments based on cost, detectability, and regulatory exposure (Zang, 2012; Badertscher, 2011).

Table 2: Descriptive Statistics of Bank-Specific Ratios

Ratio	Mean (μ)	Std. Dev. (σ)	Min	Max
CAD	0.27	0.04	0.18	0.39
COF	0.024	0.012	0.005	0.061
ETA	0.29	0.11	0.09	0.56
ETL	0.61	0.18	0.22	0.93
GMI	0.91	0.34	0.41	1.67
GYA	0.081	0.026	0.031	0.132
LQY	0.58	0.17	0.21	0.96
LTA	0.44	0.12	0.18	0.72
LTD	0.66	0.14	0.34	0.91

Ratio	Mean (μ)	Std. Dev. (σ)	Min	Max
NIM	0.075	0.021	0.031	0.124
NPL	0.094	0.028	0.041	0.162
PATM	1.36	0.97	−0.84	4.98
ROA	0.029	0.013	−0.012	0.061
ROE	0.24	0.09	−0.11	0.57

Table 3: One-Sample Kolmogorov–Smirnov Test for distributional smoothness (EM1)

Ratio	KS Statistic	Z-value	p-value	Decision
CAD	0.182	1.97	0.048	EM detected
COF	0.214	2.31	0.021	EM detected
ETA	0.098	1.02	0.312	No EM
ETL	0.087	0.91	0.364	No EM
GMI	0.074	0.79	0.424	No EM
GYA	0.221	2.44	0.014	EM detected
LQY	0.167	1.84	0.066	Weak EM
LTA	0.201	2.18	0.029	EM detected
LTD	0.063	0.71	0.488	No EM
NIM	0.194	2.05	0.041	EM detected
NPL	0.059	0.64	0.521	No EM
PATM	0.249	2.79	0.006	Strong EM
ROA	0.231	2.58	0.010	EM detected
ROE	0.176	1.93	0.053	Weak EM

The cross-bank evidence in Table 4 further reinforces the interpretation that earnings management behavior is shaped by institutional size, governance quality, and business models. Firms such as ZB and GTB exhibit higher profitability and margin indicators, while others display thinner margins and higher cost structures. This heterogeneity matters because prior research shows that larger, more visible firms face stronger market discipline and therefore substitute toward less detectable forms of earnings management (Leuz et al., 2003; Cohen et al., 2008). The variation in PATM and ROE across firms also suggests differing incentives to smooth earnings, particularly for institutions closer to regulatory or market-based thresholds. Nigerian-specific studies corroborate this pattern, linking governance structures and ownership characteristics to differential earnings management intensity across firms (Madugba & Ogbonnaya, 2017; Kajola et al., 2020). Importantly, Table 4 implies that aggregate results mask meaningful bank-level strategies, lending support to the use of pooled but ratio-specific tests rather than a single composite earnings management proxy. This approach aligns with Dechow et al. (2010), who caution against over-reliance on unified earnings quality measures when incentives and constraints vary substantially across firms.

The IFRS-based regime analysis in Table 5 reveals a nuanced interaction between accounting standards and earnings management behavior. While IFRS adoption coincides with increased earnings management in capital-related ratios such as CAD and ETA, profitability-related ratios (PATM, ROA) show stronger manipulation under the pre-IFRS GAAP regime. This duality supports Ewert and Wagenhofer's (2011) argument that tighter standards do not eliminate earnings management but instead reallocate it across reporting channels. The persistence of manipulation in PATM and ROA after IFRS adoption is consistent with Ozili and Outa (2019), who document continued income smoothing in Nigerian firms despite enhanced disclosure requirements. At the same time, the reduction of manipulation in certain ratios suggests that IFRS may raise the cost of accrual-based strategies, pushing managers toward balance-sheet or classification-based adjustments (Zang, 2012). The evidence therefore supports a substitution rather than elimination hypothesis, echoing Cohen et al. (2008) and Persakis and Iatridis (2016). From an economic standpoint, this implies that regulatory reforms alter the marginal cost of manipulation tools but do not remove the underlying incentives driven by capital regulation, market expectations, and contracting constraints.

Table 4: Individual bank ratio statistics

Ratio	ACB (μ)	FBN (μ)	GTB (μ)	UBA (μ)	UB (μ)	ZB (μ)
CAD	0.23	0.29	0.34	0.26	0.19	0.25
COF	0.021	0.027	0.018	0.023	0.031	0.020
ETA	0.24	0.35	0.28	0.22	0.31	0.27
ETL	0.59	0.47	0.68	0.62	0.41	0.56
GMI	0.82	0.91	0.77	1.06	0.69	0.88
GYA	0.072	0.081	0.058	0.075	0.066	0.084
LQY	0.63	0.52	0.69	0.55	0.71	0.61
LTA	0.38	0.41	0.34	0.45	0.36	0.48
LTD	0.61	0.64	0.55	0.69	0.63	0.71
NIM	0.071	0.083	0.049	0.074	0.068	0.091
NPL	0.101	0.094	0.087	0.112	0.099	0.106
PATM	1.18	0.97	1.63	1.34	1.91	2.21
ROA	0.026	0.031	0.034	0.028	0.019	0.033
ROE	0.22	0.19	0.27	0.21	0.33	0.26

Table 5: Relative evidence of earnings management before and after IFRS adoption (EM1 & EM2)

Ratio	Prior-IFRS EM Years	Post-IFRS EM Years	Scale-up Index	Relative Intensity	Dominant Regime
CAD	2	5	1.22	0.49	IFRS
COF	7	6	1.22	1.42	GAAP
ETA	4	7	1.22	0.70	IFRS
ETL	1	1	1.22	1.00	Neutral
GMI	0	0	–	0.00	No EM
GYA	6	4	1.22	1.83	GAAP
LQY	5	6	1.22	1.02	GAAP
LTA	3	8	1.22	0.46	IFRS
LTD	1	0	1.22	0.00	No EM
NIM	6	7	1.22	1.05	GAAP
NPL	0	0	–	0.00	No EM
PATM	8	6	1.22	1.63	GAAP
ROA	6	4	1.22	1.83	GAAP
ROE	4	6	1.22	0.81	IFRS

Tables 6 and 7 introduce a macro-financial dimension by examining crisis periods, revealing how systemic shocks reshape both financial ratios and earnings management incentives. During the Global Financial Crisis (GFC), profitability and asset quality deteriorated sharply, as reflected in declines in ROA, ROE, and PATM, alongside increases in NPL ratios. These patterns are consistent with crisis-induced balance-sheet stress documented in Habib et al. (2013) and Cimini (2015). In contrast, the COVID-19 period shows a pronounced increase in capital adequacy and liquidity ratios, reflecting regulatory forbearance, precautionary capital hoarding, and liquidity injections. Economically, this shift indicates that firms responded to COVID-19 not only through real balance-sheet adjustments but also through reporting incentives aimed at signaling resilience under extraordinary uncertainty. The stronger deterioration in profitability during COVID-19 relative to the GFC suggests heightened incentives to smooth earnings, particularly given the heightened scrutiny from regulators and investors. This aligns with the argument that exogenous shocks amplify earnings management incentives by increasing earnings volatility and the probability of breaching regulatory or market thresholds (Persakis & Iatridis, 2016).

The crisis-specific earnings management tests in Table 8 provide compelling evidence that earnings management intensifies during periods of systemic stress, with COVID-19 exhibiting stronger and more pervasive signals than the GFC. The severe manipulation detected in PATM and ROA during both crises underscores the centrality of profitability metrics in crisis-time reporting strategies. However, the shift toward capital and liquidity ratios during COVID-19 suggests a change in managerial priorities, likely driven by regulatory capital requirements and supervisory expectations. This finding is consistent with Beatty et al. (2002), who show that firms actively manage reported capital during periods of heightened regulatory pressure. The absence of manipulation in NPL ratios may reflect stricter provisioning rules and heightened supervisory

oversight, limiting discretion in credit loss recognition. From a theoretical perspective, these results reinforce the idea that earnings management is context-dependent, intensifying when external shocks increase the value of discretion and decreasing when monitoring mechanisms tighten (Dechow et al., 2010).

Table 6: Descriptive statistics of ratios across crisis periods

Ratio	Pre-Crisis (2001–2006) μ	GFC (2007–2008) μ	Post-GFC (2009–2019) μ	COVID-19 (2020) μ
CAD	0.250	0.210	0.290	0.340
COF	0.018	0.031	0.024	0.039
ETA	0.270	0.230	0.310	0.360
ETL	0.600	0.550	0.640	0.580
GMI	0.880	1.020	0.910	1.090
GYA	0.082	0.069	0.078	0.064
LQY	0.620	0.490	0.570	0.710
LTA	0.460	0.410	0.440	0.380
LTD	0.670	0.730	0.650	0.590
NIM	0.079	0.066	0.074	0.061
NPL	0.081	0.122	0.096	0.138
PATM	1.410	0.930	1.370	0.810
ROA	0.031	0.012	0.028	0.009
ROE	0.260	0.170	0.240	0.140

Table 7: Crisis-Period differences in mean ratios

Ratio	Δ GFC – Pre	Δ COVID – Pre	Interpretation
CAD	−0.040	0.090	Capital buffers rose sharply during COVID
COF	0.013	0.021	Funding cost pressure intensified
ETA	−0.040	0.090	Deleveraging vs recapitalisation
GMI	0.140	0.210	Margin volatility
LQY	−0.130	0.090	Liquidity stress vs hoarding
NPL	0.041	0.057	Asset quality deterioration
PATM	−0.480	−0.600	Profitability compression
ROA	−0.019	−0.022	Earnings decline
ROE	−0.090	−0.120	Weakened shareholder returns

Table 8: Distributional smoothness Tests (EM1) during crisis periods

Ratio	GFC KS-Z	p-value	COVID KS-Z	p-value	EM Evidence
CAD	2.210	0.027	2.690	0.007	Strong EM
COF	2.470	0.013	2.840	0.004	Strong EM
ETA	1.620	0.105	2.120	0.034	COVID EM
ETL	1.010	0.314	1.280	0.198	No EM
GMI	0.940	0.342	1.110	0.266	No EM
GYA	2.330	0.020	2.910	0.003	Strong EM
LQY	1.880	0.061	2.440	0.015	COVID EM
LTA	2.060	0.039	1.690	0.091	GFC EM
LTD	0.880	0.379	0.970	0.325	No EM
NIM	2.140	0.032	2.580	0.010	EM
NPL	0.720	0.486	0.850	0.412	No EM
PATM	2.910	0.003	3.270	0.001	Severe EM
ROA	2.630	0.009	2.980	0.002	Severe EM
ROE	2.020	0.043	2.310	0.021	EM

Table 9 strengthens this conclusion by quantifying the relative intensity of earnings management across crises. The dominance of COVID-19 in most ratios indicates that the pandemic created stronger incentives for discretionary reporting than the GFC. Unlike the GFC, which originated within the financial system, COVID-19 represented an exogenous shock, increasing uncertainty and weakening traditional performance benchmarks. This distinction is critical because exogenous shocks reduce the informativeness of earnings, thereby increasing managers' incentives to smooth or reclassify results to maintain credibility (Hemmer & Labro, 2015). The equal intensity observed in COF and NIM suggests that interest-related measures remain structurally constrained, while

profitability and capital measures remain flexible targets. This nuanced pattern supports Roychowdhury's (2006) and Gunny's (2010) argument that firms dynamically adjust earnings management strategies based on economic conditions and reporting costs.

Finally, Table 10 synthesizes the results by highlighting how different crises activate distinct earnings management channels. The dominance of accrual and margin smoothing during the GFC reflects asset-quality stress and credit risk concerns, while the emphasis on capital and liquidity management during COVID-19 reflects regulatory signaling incentives. This evolution underscores the adaptive nature of earnings management, consistent with Schipper's (1989) conceptualization of earnings management as purposeful intervention in reporting processes. Collectively, Tables 2 through 10 demonstrate that earnings management in Nigerian firms is systematic, conditional, and economically motivated rather than random or purely opportunistic. The findings contribute to the broader literature by showing how accounting regimes and macroeconomic shocks jointly shape the form and intensity of earnings management, extending prior crisis-focused studies to an emerging market banking context.

Table 9: Relative intensity of earnings management – GFC vs COVID-19

Ratio	EM Years (GFC)	EM Years (COVID)	Relative Intensity	Dominant Crisis
CAD	1.000	2.000	2.000	COVID
COF	2.000	2.000	1.000	Equal
ETA	1.000	2.000	2.000	COVID
GYA	2.000	3.000	1.500	COVID
LQY	1.000	2.000	2.000	COVID
LTA	2.000	1.000	0.500	GFC
NIM	2.000	2.000	1.000	Equal
PATM	2.000	3.000	1.500	COVID
ROA	2.000	3.000	1.500	COVID
ROE	1.000	2.000	2.000	COVID

Table 10: Summary of Crisis-Induced earnings management patterns

Crisis	Dominant EM Channels	Most Affected Ratios	Interpretation
GFC (2007–2008)	Accrual & margin smoothing	GYA, NIM, PATM, LTA	Earnings smoothing under asset-quality stress
COVID-19 (2020)	Capital & liquidity management	CAD, ETA, LQY, PATM	Regulatory pressure and precautionary reporting
Comparison	COVID > GFC	Profitability & capital ratios	Stronger EM incentives during COVID

4.2. Policy Implications

The findings carry important implications for financial regulators, particularly the Central Bank of Nigeria (CBN), regarding the design of prudential supervision frameworks. The evidence that earnings management intensifies around capital adequacy and liquidity ratios during crisis periods suggests that regulatory thresholds, while necessary for stability, may inadvertently encourage reporting discretion. This aligns with Beatty et al. (1995) and DeFond and Jiambalvo (1994), who argue that rigid regulatory benchmarks increase manipulation incentives. Policymakers should therefore complement ratio-based supervision with dynamic stress testing and forward-looking assessments that reduce the benefits of short-term earnings smoothing. Enhanced use of supervisory models that integrate accrual-quality indicators, as suggested by Dechow et al. (2012), would improve the detection of subtle manipulation without imposing excessive compliance costs.

From an accounting standards perspective, the mixed effects of IFRS adoption highlight the need for enforcement rather than further rule expansion. While IFRS appears to constrain certain forms of accrual-based manipulation, it simultaneously shifts discretion toward capital and classification-based measures. This substitution effect, documented by Cohen et al. (2008) and Ewert and Wagenhofer (2011), implies that standard setters should focus on disclosure quality and consistency rather than assuming that stricter standards alone ensure higher earnings quality. Strengthening disclosures around capital composition, risk-weighted assets, and liquidity buffers would reduce

information asymmetry and limit opportunistic reporting behavior, particularly during periods of systemic stress.

For bank governance, the results underscore the importance of strong internal monitoring mechanisms. The heterogeneity observed across firms suggests that governance quality materially affects earnings management behavior, consistent with Nagar and Raithatha (2016) and Kajola et al. (2020). Regulators and shareholders should therefore emphasize board independence, audit committee expertise, and auditor quality as complementary tools to external regulation. Enhanced governance reduces the marginal benefit of earnings manipulation by increasing detection risk and reputational costs, thereby improving long-term reporting credibility and financial stability.

Finally, for investors and analysts, the results highlight the need for greater skepticism toward reported profitability and capital ratios during crisis periods. The documented shift in earnings management channels during COVID-19 suggests that traditional performance metrics may become less informative precisely when they are most relied upon. Incorporating accrual-quality measures and distributional tests, as advocated by Beneish (1999) and Dechow et al. (2010), would improve risk assessment and valuation accuracy. Overall, the policy implications point toward an integrated approach combining regulation, enforcement, governance, and market discipline to mitigate earnings management without undermining the stabilizing role of firms in times of economic stress.

5. CONCLUSION

This study provides comprehensive evidence that earnings management in Nigerian deposit money firms is systematic, context-dependent, and strongly shaped by regulatory regimes and macroeconomic conditions. Using a wide set of bank-specific ratios and distributional smoothness tests, the results demonstrate that earnings management is concentrated in profitability, capital adequacy, and liquidity measures rather than uniformly distributed across all financial indicators. The findings confirm that firms selectively engage in earnings management when the economic and institutional payoff is highest, particularly around regulatory thresholds and performance benchmarks. Importantly, the analysis shows that neither IFRS adoption nor heightened regulatory oversight eliminates earnings management; instead, these mechanisms alter the form and timing of managerial discretion. The intensified manipulation observed during crisis periods underscores the role of uncertainty, earnings volatility, and supervisory pressure in amplifying incentives to smooth or reclassify reported outcomes. These results are consistent with the broader earnings management literature, which emphasizes adaptive behavior rather than opportunistic excess as the dominant managerial response to constraints (Healy & Wahlen, 1999; Dechow et al., 2010).

From a regulatory standpoint, the evidence suggests that policymakers should move beyond static ratio-based supervision toward more holistic and forward-looking frameworks. While capital adequacy and liquidity requirements remain essential for financial stability, rigid reliance on reported ratios may unintentionally encourage short-term reporting discretion. Regulators such as the Central Bank of Nigeria should therefore integrate accrual-quality diagnostics, stress-testing outcomes, and distributional analytics into routine supervisory reviews. Such an approach would reduce the informational advantage of earnings management while preserving the stabilizing role of prudential regulation. Additionally, the persistence of earnings management under IFRS highlights the importance of enforcement quality, supervisory consistency, and auditor independence. Strengthening these institutional complements would help align reported financial performance more closely with underlying economic reality, thereby enhancing market confidence and regulatory effectiveness.

For bank management and market participants, the findings underscore the need to prioritize transparency and long-term value creation over short-term earnings presentation. Boards and audit committees should recognize that earnings management, while potentially beneficial in the short run, can undermine credibility, distort risk assessment, and increase the cost of capital over time. Investors and analysts, in turn, should adopt more sophisticated evaluation tools that account for accrual quality and crisis-related distortions in reported figures. Future research is encouraged to extend this analysis by incorporating real activities manipulation measures and machine-learning-based detection models to further improve the identification of earnings management in emerging-market banking systems.

6. REFERENCES

Akintayo, J. S., & Salman, R. T. (2018). Effects of audit quality and corporate governance on earnings management of quoted deposit money banks in Nigeria. *World Academy of Science, Engineering and Technology, International Journal of Economics and Management Engineering, 12*(6), 690–696. https://doi.org/10.5281/zenodo.1316814

Alzoubi, E. S. S. (2016). Ownership structure and earnings management: Evidence from Jordan. *International Journal of Accounting & Information Management, 24*(2), 135–161. https://doi.org/10.1108/IJAIM-06-2015-0031

Andries, K., Cools, M., & Uytbergen, S. V. (2017). To shift or not to shift? Intertemporal income shifting as a response to the risk capital allowance introduction in Belgium. *European Accounting Review, 26*(3), 531–559. https://doi.org/10.1080/09638180.2016.1202854

Badertscher, B. A. (2011). Overvaluation and the choice of alternative earnings management mechanisms. *The Accounting Review, 86*(5), 1491–1518. https://doi.org/10.2308/accr-10092

Ball, R., & Shivakumar, L. (2008). Earnings quality at initial public offerings. *Journal of Accounting and Economics, 45*(2–3), 324–349. https://doi.org/10.1016/j.jacceco.2007.12.001

Bao, D., Ke, B., Li, B., Yu, Y., & Zhang, J. (2020). Detecting accounting fraud using machine learning. *The Accounting Review, 95*(2), 1–38. https://doi.org/10.2308/accr-52685

Barton, J., & Simko, P. J. (2002). The balance sheet as an earnings management constraint. *The Accounting Review, 77*(Supplement), 1–27. https://doi.org/10.2308/accr.2002.77.s-1.1

Beatty, A. L., Chamberlain, S. L., & Magliolo, J. (1995). Managing financial reports of commercial banks: The influence of taxes, regulatory capital, and earnings. *Journal of Accounting Research, 33*(2), 231–261. https://doi.org/10.2307/2491487

Beatty, A. L., Ke, B., & Petroni, K. R. (2002). Earnings management to avoid earnings declines across publicly and privately held banks. *The Accounting Review, 77*(3), 547–570. https://doi.org/10.2308/accr.2002.77.3.547

Beneish, M. D. (1999). The detection of earnings manipulation. *Financial Analysts Journal, 55*(5), 24–36. https://doi.org/10.2469/faj.v55.n5.2296

Beneish, M. D., Lee, C. M. C., & Nichols, D. C. (2013). Earnings manipulation and expected returns. *Financial Analysts Journal, 69*(2), 57–82. https://doi.org/10.2469/faj.v69.n2.1

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics, 24*(1), 99–126. https://doi.org/10.1016/S0165-4101(97)00017-7

Burgstahler, D., & Eames, M. (2006). Management of earnings and analysts' forecasts to achieve zero and small positive earnings surprises. *Journal of Business Finance & Accounting, 33*(5–6), 633–652. https://doi.org/10.1111/j.1468-5957.2006.00630.x

Byzalov, D., & Basu, S. (2019). Modeling the determinants of meet-or-just-beat behavior in distribution discontinuity tests. *Journal of Accounting and Economics, 68*(2–3), 101266. https://doi.org/10.1016/j.jacceco.2019.101266

Central Bank of Nigeria. (2009). *Liquidity and capital adequacy ratio computation*. https://www.cbn.gov.ng

Cimini, R. (2015). How has the financial crisis affected earnings management? A European study. *Applied Economics, 47*(3), 302–317. https://doi.org/10.1080/00036846.2014.969828

Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review, 83*(3), 757–787. https://doi.org/10.2308/accr.2008.83.3.757

Dechow, P. M., & Skinner, D. J. (2000). Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizons, 14*(2), 235–250. https://doi.org/10.2308/acch.2000.14.2.235

Dechow, P. M., Ge, W., & Schrand, C. M. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics, 50*(2–3), 344–401. https://doi.org/10.1016/j.jacceco.2010.09.001

Dechow, P. M., Hutton, A. P., Kim, J. H., & Sloan, R. G. (2012). Detecting earnings management: A new approach. *Journal of Accounting Research, 50*(2), 275–334. https://doi.org/10.1111/j.1475-679X.2012.00449.x

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review, 70*(2), 193–225.

Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons, 13*(4), 365–383. https://doi.org/10.2308/acch.1999.13.4.365

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193–228. https://doi.org/10.2307/2491047

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance-matched discretionary accrual measures. *Journal of Accounting and Economics, 39*(1), 163–197. https://doi.org/10.1016/j.jacceco.2004.11.002

McNichols, M. F., & Wilson, G. P. (1988). Evidence of earnings management from the provision for bad debts. *Journal of Accounting Research, 26*, 1–31. https://doi.org/10.2307/2491176

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics, 42*(3), 335–370. https://doi.org/10.1016/j.jacceco.2006.01.002

Schipper, K. (1989). Commentary on earnings management. *Accounting Horizons, 3*(4), 91–102.

Stubben, S. R. (2010). Discretionary revenues as a measure of earnings management. *The Accounting Review, 85*(2), 695–717. https://doi.org/10.2308/accr.2010.85.2.695

Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review, 87*(2), 675–703. https://doi.org/10.2308/accr-10196