

Journal of Finance and Accounting



ISSN Online: 2616-4965



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ISSN: 2616-4965

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How to cite this article: Kariuki, F. N., & Aluoch, M. O. (2025). Bank Characteristics, Central Bank Rate and Profitability of Tier Three Commercial Banks in Kenya. *Journal of Finance and Accounting*, 9 (4), 64-83. <https://doi.org/10.53819/81018102t5386>

Abstract

Kenya's tier three commercial banks have experienced declining profitability, with the Central Bank of Kenya reporting slowed profit growth in 2023 due to rising operational costs and increasing non-performing loans that constrain profit margins. Thus, this study examined the effects of market share, asset quality, and capital adequacy on the profitability of Kenyan tier three commercial banks, with central bank rates as a moderating variable. The research employed a descriptive design using secondary data from audited financial reports spanning 2015-2024, applying panel data methodology with multiple regression and diagnostic tests to analyze relationships between variables and profitability. Findings showed that profitability in Kenya's tier three banks was positively shaped by market share, asset quality, and capital adequacy. Stronger market positions boosted earnings, sound assets reduced default rates, and robust capital improved financial stability. While market share and asset quality also reinforced one another, capital adequacy appeared less connected to loan quality, suggesting different underlying drivers. The central bank rate had a weaker and less consistent influence, though modest increases could enhance profitability through interest margins; however, its overall direct effect in the panel model was negative, indicating that higher rates generally dampen returns. When monetary policy context was considered, the explanatory power of the model improved, with larger banks and well-capitalized institutions showing greater ability to withstand tighter policy conditions. Asset quality's interaction with monetary policy was not significant, but it still trended positively, hinting at potential benefits under certain conditions. The study concludes that profitability in Kenya's tier three banks is shaped by the combination of internal elements—capital strength, asset quality, and market share—and external forces like central bank rates. The study recommends that banks should prioritize market share expansion through strategic diversification and digital transformation while strengthening asset quality management through robust credit appraisal systems and comprehensive risk frameworks. The study recommends that tier three banks should develop comprehensive capital management strategies beyond regulatory compliance and establish sophisticated monitoring systems for macroeconomic indicators, particularly Central Bank Rate movements. The study recommends that banks should strengthen governance structures through independent board composition, empowered risk committees, and transparent leadership practices to ensure regulatory compliance and build stakeholder confidence.

Keywords: *Bank Characteristics, Central Bank Rate, Profitability, Tier Three Commercial Banks, Kenya*

<https://doi.org/10.53819/81018102t5386>

1.0 Background of the Study

Microfinance institutions and commercial banks function as essential financial intermediaries that drive economic development, with their performance directly affecting broader economic stability and growth (CBK, 2015). When non-performing loans increase, banks become more vulnerable to economic downturns, making effective institutional functioning crucial for cushioning economies from instability. The Central Bank of Kenya reported a concerning rise in NPLs, which reached 16.4% of total issued credit by December 2024—the highest level in a decade—posing major challenges for the banking sector and affecting businesses, individuals, and the overall economy. This surge has highlighted the critical need for enhanced CBK enforcement, particularly in credit assessment practices, to reduce systemic risk across the financial sector.

This deteriorating asset quality situation underscores how significantly asset quality influences commercial bank performance by either boosting interest income or increasing bad debt management costs, with regulations requiring banks to set aside provisions to buffer against loan defaults (Levine, 2008). An increased NPL ratio weakens asset quality, creating an inverse relationship with financial performance, as demonstrated by Ombaba (2013), while Cheruiyot (2016) found that better asset quality was positively linked to higher profitability among Kenyan commercial banks. The NPL ratio serves as a critical metric measuring the percentage of loans in default or at risk compared to the overall loan portfolio, with high ratios proving detrimental to profitability by indicating poor loan quality, leading to higher provisioning costs and reduced interest income (Chege, 2022). This asset quality challenge becomes particularly pronounced when examining how banks compete for market positioning within Kenya's banking landscape.

Market share dynamics reveal another dimension of banking performance challenges, as market share represents the percentage of total industry sales controlled by a company, with Kenya's tier three banks holding modest market shares despite their numbers and struggling with profitability due to declining revenues, shrinking profits, and reduced capitalization. Research has indicated that financial risk adversely affects their performance, emphasizing the importance of strong risk management practices. The reliability of reported links between market share and profitability has been questioned by scholars, prompting Szymanski, Sundar, Bharadwaj, and Varadarajan (1993) to conduct a meta-analysis of 276 findings from 48 studies, which indicated a generally positive effect though its strength varied due to model specification errors, sample attributes, and measurement factors. This market positioning challenge connects directly to banks' ability to maintain adequate capital buffers for operational resilience.

Capital adequacy emerges as another crucial factor signaling a bank's ability to withstand losses and maintain stability, calculated as capital over risk-weighted assets, with higher ratios suggesting stronger financial resilience that central banks use as a key metric to ensure commercial banks maintain sufficient capital levels. Gacanja (2023) found that capital adequacy strongly influenced ROE in Kenya's tier three banks, urging directors to focus on capital strength, asset quality, and income diversity, while Ngatia, Makori, and Theuri (2024) confirmed a positive link between ROA and capital adequacy ($\beta = 0.0309$; $p = 0.040$). This research supported earlier work by Isanzu (2017) and Ombui (2019), who confirmed that higher capital adequacy strengthened financial stability, though when moderated by ownership identity, the coefficient turned negative and non-significant, implying that ownership structure does not alter capital adequacy's effect on ROA. These capital considerations become particularly important when viewed alongside regulatory policies that shape the operating environment for banks.

Regulatory policies, particularly those governing interest rates, significantly influence how market rates interact with financial institutions' overall performance, with many developing countries implementing interest rate caps primarily to protect consumers from exorbitant borrowing costs during periods of heightened inflation or economic uncertainty (Otieno & Njiru, 2023). Kenya's Banking Amendment Act of 2016 established strict limits on lending rates, aiming to make credit more accessible and affordable for individuals and businesses, though these measures simultaneously restrict banks from adjusting rates upward during favorable market conditions, thus compressing profit margins (Central Bank of Kenya, 2018; Otieno & Njiru, 2023). While such regulations contribute to more stable lending environments by curbing extreme fluctuations in loan demand and interest rates, ultimately promoting greater predictability and financial stability, sustaining profitability under regulatory constraints remains particularly challenging in economies characterized by persistent inflation and high credit costs (Dondi et al., 2023). These regulatory dynamics directly connect to how central bank rate policies influence banking operations and profitability measures.

The Central Bank Rate represents the base interest rate from which commercial banks determine their lending and borrowing rates, with Kenya's CBK Monetary Policy Committee reviewing and announcing the CBR every two months as a primary vehicle for monetary policy implementation. As of April 8, 2025, the CBR stood at 10.00%, playing a key role in shaping lending rates and directly affecting bank earnings, with research by Mungai (2013) showing that a one-point rise in CBR corresponded to a 0.752 increase in profitability among nine publicly listed Kenyan banks. International studies support these findings, with Claudio, Leonardo, and Hofman (2015) studying 109 leading banks across 14 developed nations from 1995 to 2012, finding that higher short-term interest rates and steeper yield curves were positively associated with profitability, while Girnara (2017) confirmed that interest rate shifts affected profitability in Indian banks using metrics such as profit after tax, ROA, and return on capital employed. These interest rate dynamics directly influence how banks measure and report their financial performance.

Profitability measurement becomes central to understanding banking performance, as it reflects how effectively a bank converts available resources into earnings beyond operational costs, with Brown and Lee (2020) defining it through net income ratios linked to assets, equity, or expenses while emphasizing its role in financial stability. Commercial banks track profitability through ratios in annual reports, with Return on Assets (ROA) serving as a key indicator measuring how efficiently income is generated from total assets, while Return on Equity (ROE) focuses on how effectively banks use shareholders' equity to generate profits (Mwangi & Gathuru, 2022; Kimani, 2023). Profitability plays a central role in banking, with sector stability closely linked to national economic health, as emphasized by Lipunga (2014) and Adeusi, Kolapo, and Aluko (2014), who noted that firm financial strength depends heavily on profit levels. Recent global trends show significant banking profitability, with Kenyan commercial banks attaining historic pre-tax profits of Sh262.3 billion in 2024, driven by elevated lending rates and revenue from government securities, though this environment also led to private sector lending contraction (Business Daily, 2025). These performance indicators reveal the structural challenges facing different tiers of banks within Kenya's banking system.

Kenya's banking sector structure demonstrates how these various factors culminate in differential performance outcomes, with the sector comprising 47 commercial banks according to CBK records, including 22 classified as tier three, 9 as tier two, and 8 as tier one institutions, while eight banks operate as non-operating holding companies. Bank tiering relies on a weighted index incorporating deposits, assets, capital, reserves, and account diversity, with eight major banks dominating 76.6% market share as of December 2023, nine mid-tier banks

<https://doi.org/10.53819/81018102t5386>

holding 15%, and 22 smaller institutions managing just 8.4% (Mutua & Wanjiru, 2023). Tier three banks face particular performance challenges, having experienced a 2.2% drop in pre-tax profits between 2015-2016, with ROA falling steadily from 3.5% in 2017 to 5.5% in 2020, while several institutions reported significant losses including First Community Bank (Kshs 41 million), Jamii Bora (Kshs 490 million), and Consolidated Bank (Kshs 277 million). These deteriorating conditions, characterized by liquidity shortfalls, capital gaps, rising NPLs, and poor governance, ultimately led to Dubai Bank and Imperial Bank entering administration, highlighting how the interplay of asset quality, market positioning, capital adequacy, and regulatory environment determines banking sector stability and individual institution survival (CBK, 2018; 2019).

1.1 Statement of the Problem

Banks serve as the principal source of credit for enterprises and individuals across multiple nations, making their performance crucial for both international and local economic stability (Leoni, 2013). Kenya's tier three commercial banks have encountered significant profitability challenges in recent years, with the CBK (2024) reporting slower profit growth in 2023 and several banks experiencing decreased net earnings due to rising operating costs and increasing non-performing loans that limit profit margins. The Kenya Bankers Association (2024) documented a decline in the sector's return on assets from 1.8% in 2022 to 1.3% in 2023, with lower profitability linked to operating expenses, regulatory compliance costs, and the negative effects of economic slowdowns and fiscal policy tightening on banks' ability to generate high returns on assets.

Multiple factors contribute to the deteriorating performance of Kenyan tier three banks, including declining market share, volatile interest rates, and rising non-performing loans. Market share has been steadily decreasing across major banks, with Standard Chartered Bank's share falling from 7.11% in 2017 to 5.70% in 2021, while Diamond Trust declined from 6.72% to 5.64% over the same period (CBK, 2017; CBK, 2021). The Central Bank's benchmark lending rate has fluctuated significantly, spiking to 9.0% in 2023 from 7.5% the previous year, creating uncertainty in lending and borrowing costs and making revenue stream prediction difficult for banks (Central Bank of Kenya, 2024). Additionally, Kenya's non-performing loans reached an 18-year high in 2024, with the gross NPL ratio hitting 16.1% in April and NPL values exceeding KSh 674.9 billion by August 2024, attributed to high interest rates that impacted borrowers' ability to repay loans (CBK, 2024).

Research on tier three banks reveals ongoing challenges in financial performance and regulatory compliance, with studies highlighting both struggles and potential improvement strategies. International research by Patra and Padhi (2022) in India found links between risk, capital, inefficiency, and profitability in tier-three banks, while EU studies showed that Basel II and Basel III regulatory reforms affected bank performance differently based on size, with smaller banks struggling more than larger institutions (Inan, Sasa & Ivana, 2023). Local studies by Wekesa and Dayim (2022) confirmed that credit risk measured by NPLs had clear negative effects on profitability in Kenya's tier-three banks, while Ngatia, Theuri, and Makori (2024) found that Capital Adequacy, Asset Quality, Management, and Liquidity strongly influenced stability but noted that many studies fail to fully examine key success drivers. Given the significant role of tier three commercial banks in facilitating credit access, promoting financial inclusivity, fostering competition, and ensuring banking sector efficiency, hence, the study examined the relationship between bank characteristics, central bank rates, and profitability of tier three commercial banks in Kenya.

1.2 Objectives of the Study

- i. To establish the effect of Market Share on the profitability of Kenyan tier three commercial banks.
- ii. To examine the effect of Asset Quality on the profitability of Kenyan tier three commercial banks.
- iii. To investigate the effect of Capital Adequacy on the profitability of Kenyan tier three commercial banks.
- iv. To assess the moderating effect of Central Bank Rates on the relationship between bank characteristics and profitability of Kenyan tier three commercial banks.

Research Hypotheses

H₀₁: There is no significant effect of Market Share on the profitability of Kenyan tier three commercial banks.

H₀₂: There is no significant effect of Asset Quality on the profitability of Kenyan tier three commercial banks.

H₀₃: There is no significant effect of Capital Adequacy on the profitability of Kenyan tier three commercial banks.

H₀₄: There is no significant moderating effect of Central Bank Rates on the relationship between bank characteristics and profitability of Kenyan tier three commercial banks.

2.0 Literature Review

The literature review concentrated on both theoretical and empirical analyses. The research focused on theories proposed concerning the research topic throughout the theoretical review. Thus, the research provided an empirical evaluation that concentrated on the existing literature related to the research.

2.1 Theoretical Review

The study was anchored on market power theory, capital buffer theory, monetary policy theory, and profitability theory to provide theoretical foundations for examining the relationships between bank characteristics, central bank rates, and profitability.

2.1.1 Market Power Theory

Market Power Theory, originally proposed by Bhagwati (1965), asserts that market structure serves as the sole determinant of banking success, with banks possessing dominant market share and distinct products in concentrated markets being able to shape pricing and boost profits beyond normal levels (Fu & Heffernan, 2009). The theory argues that banking market concentration leads to potential market power, thereby enhancing bank profitability through banks' ability to offer low deposit rates while imposing high loan rates, resulting in monopolistic profits. This theory is particularly relevant to the current study's examination of market share effects on profitability among Kenya's tier three banks, as it provides the theoretical foundation for understanding how banks with larger market positions can leverage their dominance to achieve superior financial performance, though the theory's assumption of market concentration may be limited in Kenya's fragmented tier three banking segment where individual banks hold relatively small market shares.

2.1.2 Capital Buffer Theory

Capital Buffer Theory, developed by Calem and Rob (1996), proposes that banks retain surplus capital to mitigate losses and meet regulatory requirements, suggesting that banks nearing

<https://doi.org/10.53819/81018102t5386>

minimum capital ratios may reinforce their capital and reduce risk to avoid penalties, while undercapitalized banks might pursue higher-risk strategies expecting increased returns to rebuild capital buffers. This theory directly supports the current study's investigation of capital adequacy effects on profitability in tier three banks, as it explains the behavioral mechanisms through which capital levels influence bank decision-making and risk-taking, providing theoretical justification for why well-capitalized banks should demonstrate better profitability outcomes. The theory's relevance is particularly strong given the regulatory emphasis on capital adequacy ratios in Kenya's banking sector and the documented capital challenges faced by several tier three banks.

2.1.3 Monetary Policy Theory

Monetary Policy Theory has evolved through contributions from economists including Milton Friedman, John Maynard Keynes, Taylor, and Bernanke, arguing that central banks influence macroeconomic conditions such as inflation, unemployment, and economic growth through control of money supply and interest rates (Friedman, 2019). The theory posits that monetary policy impacts commercial banks by influencing lending and deposit rates, ultimately affecting profitability, though it assumes policy changes seamlessly affect the banking sector, which may be disrupted by external factors like global financial shocks (Moyo & Okoli, 2022). This theory is central to the current study's examination of Central Bank Rate effects on tier three bank profitability, providing the theoretical framework for understanding how monetary policy transmission mechanisms operate and why CBR changes should influence bank performance, though the theory's limitations regarding uniform transmission across different bank sizes and market segments are particularly relevant given the unique challenges faced by smaller tier three banks.

2.1.4 Profitability Theory

Profitability Theory encompasses multiple sub-theories including Schumpeter's Innovation Theory (1942), which views profit as a reward for implementing innovations that reduce costs or enhance product demand, and Knight's Risk and Uncertainty Bearing Theory (1921), which describes profits as compensation for bearing non-calculable uncertainties in business operations. Additional components include the Frictional Theory (Stigler, 1957), explaining profits as normal returns on capital from temporary market imbalances, and Monopoly Theory (Dewey, 1959; McGee, 1971), asserting that firms with monopoly power can limit output and impose elevated prices for supernormal profits. These theories collectively provide the foundational understanding for the current study's dependent variable - profitability - explaining why banks generate profits and what factors contribute to profit variations, though the theories' individual limitations, such as Innovation Theory's neglect of uncertainty and Monopoly Theory's oversimplification of market conditions, suggest that profitability in tier three banks likely results from multiple interacting factors rather than any single theoretical mechanism.

2.2 Empirical Review

Research on market share and profitability demonstrates consistent positive relationships across different banking contexts, with Genchev (2012) analyzing 22 Bulgarian banks from 2006-2010 using ROE as the profitability measure and finding a strong positive link between market share and profits, attributing financial outcomes more to internal management than macroeconomic factors. Evans and Appiah (2021) employed panel data methodology with fixed effects, random effects, and system GMM models on 12 Ghanaian banks, revealing strong positive impacts of market share on profitability and recommending strategies like

innovation, improved customer relations, and strategic hiring to strengthen performance. In Kenya's context, Ooyi, Wafula, and Agong (2023) examined tier-three banks and found that increased share core capital significantly boosted financial stability, with heightened emphasis on retained earnings leading to reduced interest expenses and enhanced organizational financial health.

Capital adequacy research reveals strong correlations with bank performance across various institutional contexts, with Kimotho and Aluoch (2022) finding moderate links between capital adequacy, management strength, and credit performance in Kenyan microfinance institutions, though noting that institutions with higher loan portfolios relative to capital demonstrated better credit performance ratios. Ngima (2018) established that tier-three banks in Kenya should maintain a minimum capital adequacy ratio of 8.0% to ensure sufficient reserves for loss coverage and depositor fund safety, while Kimeu (2020) assessed capital adequacy's influence on financial health in Kenyan listed firms, concluding that core capital performance matched the combined impact of other factors. Makori and Aluoch (2024) conducted comprehensive analysis on firm characteristics' impact on microfinance bank performance in Kenya, identifying capital adequacy as the major factor affecting financial success while revealing that asset quality negatively influences performance, and Wanjiru, Jangogo, and Ndede (2024) surveyed all 39 Kenyan commercial banks using descriptive and inferential statistics, showing positive links between capital adequacy and financial health ($\beta=0.0333113$, $p=0.027$) despite 33% of banks struggling with liquidity requirements.

Asset quality research consistently demonstrates its critical role in banking profitability, with Cheruiyot (2016) observing favorable links between asset quality and profitability in Kenyan commercial banks, where lower percentages of NPLs to net assets indicate strong asset quality and suggest favorable trade-offs with profitability. Kimanzi (2014) investigated asset quality's effect on profitability in Kenyan banks through correlation analysis, finding negative links between Gross NPAs and ROA (Pearson $r = -0.363$; $R^2 = 0.043$), indicating weak inverse relationships and affirming that poor credit management lowers profitability while maintaining asset quality supports financial strength. These findings align with Kosmidou (2008), who noted that higher credit risk typically harms bank performance, reinforcing the importance of sound asset management practices in maintaining institutional profitability.

Central bank rate research reveals varying impacts on banking profitability across different monetary policy instruments and geographical contexts, with Nyamita and Dima (2021) studying listed Kenyan banks' stock return reactions to central bank rate shifts from 2006-2014 using cross-sectional and longitudinal quantitative methods with GMM panel data regression, finding strong positive links between annual CBR fluctuations and stock returns as measured by CAPM. Hoque et al. (2020) examined monetary policy impacts through Cash Reserve Ratio analysis on 15 Bangladeshi banks, finding that higher CRR reduced ROA (-0.1133), ROE (-0.0577), and ROI (-0.0504) with significant negative impacts at the 10% level, while Rui (2020) analyzed five years of data from 30 Bangladeshi banks using descriptive analysis, linear and multivariate regression, ANOVA, and correlation analysis to assess interest rate fluctuation relationships with profitability, finding that profitability was strongly shaped by interest rate changes as wider spreads boosted ROE, ROA, and NIM.

The transmission mechanisms of central bank policy to commercial bank operations show varied effectiveness across different market structures, as demonstrated by Musimbi et al. (2023), who explored central bank rate effects on lending rates in Kenya using quarterly data from 2010-2021 sourced from CBK, KNBS, and NSE through non-experimental approaches rooted in loanable funds and cost-of-capital theories. Their error correction model revealed that

lending rates respond weakly to central bank rate changes, indicating partial interest rate pass-through linked to foreign banks' limited reliance on central bank liquidity, sluggish policy transmission, and structural market constraints. Global studies by Henri, Mathias, and Thesmar (2017) showed that tighter capital rules limit lending through credit multiplier effects, with shifts in capital requirements significantly affecting corporate investment strategies, where raising capital requirements by 1% reduces productive capital and causes approximately 8% declines in lending, 4% reductions in firm borrowing, 1.5% drops in assets, 1% cuts in trade credit, and 2.5% declines in fixed assets.

2.3 Conceptual Framework

A conceptual framework presents the relationships between research variables in a visual representation, illustrating how the independent variables (market share, asset quality, capital adequacy), the moderating variable (central bank rates), and the dependent variable (profitability) interact within the study context, as summarized in Figure 1.

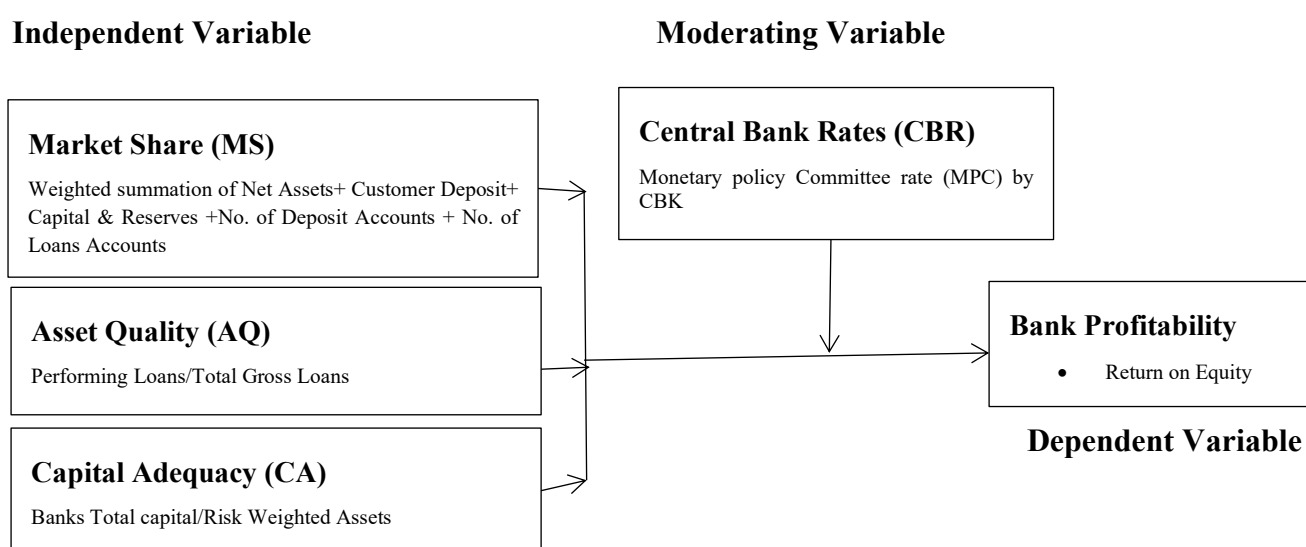


Figure 1: Conceptual Framework

3.0 Research Methodology

The study employed a descriptive research design to systematically examine the relationships between bank characteristics, central bank rates, and profitability among Kenya's tier-three commercial banks. The research targeted all 22 tier-three commercial banks licensed by December 2024, utilizing a census approach that included the entire population rather than sampling. Secondary data was collected from audited financial reports spanning 2015-2024, obtained through official bank publications, regulatory bodies, and financial repositories after securing NACOSTI research permits. The data collection process involved systematic extraction of financial indicators including profitability, efficiency, and cash management metrics, with uniform structuring to enable year-to-year comparisons and trend identification across the 10-year period. Data analysis utilized SPSS software for coding and processing, employing descriptive statistics (frequencies, means, percentages) and multiple regression techniques to examine variable relationships. The study applied panel data methodology to account for institutional differences and temporal changes across banks and time periods, using the regression model:

$$Y_{it} = \alpha + \beta_1 MS_{it} + \beta_2 AQ_{it} + \beta_3 CBR_{it} + \beta_4 CA_{it} + \mu_{it} \dots$$

where variables represented profitability, market share, asset quality, central bank rates, and capital adequacy respectively. Comprehensive diagnostic tests were conducted including multicollinearity assessment using Variance Inflation Factor (VIF), heteroscedasticity testing through Breusch-Pagan tests, normality verification using Shapiro-Wilk and Kolmogorov-Smirnov tests, autocorrelation detection via Durbin-Watson tests, and linearity assessment through ANOVA. The Hausman test was employed to determine the appropriateness of fixed versus random effects models, while ethical considerations included institutional approval from NACOSTI and university authorities, with bank anonymity maintained through unique coding systems.

4.0 Data Analysis, Findings and Discussion

This chapter presents the analysis, results, and interpretation of how bank characteristics and central bank rates relate to profitability in Kenya's tier-three commercial banks. Time-series secondary data for ten years (2015 to 2024) was utilized. The study results were visualized using descriptive and inferential statistics.

4.1 Descriptive Statistics

This part outlines descriptive results drawn from ten years of firm-level annual reports, highlighting each variable's mean, variance, and standard deviation. The study analyzed 220 observations, drawn from 22 tier-three banks over a 10-year span. Table 1 presents descriptive statistics. Market Share (MS) was computed by weighting net assets, deposits, capital, reserves, and account volumes. Asset Quality (AQ) reflected the proportion of performing loans to gross loans. Capital Adequacy (CA) was gauged via total capital over risk-weighted assets. The Central Bank Rate (CBR), indicating monetary policy, was based on the MPC rate from CBK. Profitability was measured using Return on Assets (ROA).

Table 1: Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Error	Std. Deviation	Variance
Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Market Share (MS)	220	3935.07	536.79	4471.86	2488.821	80.13303	1188.565	1412686
Asset Quality (AQ)	220	0.239	0.751	0.99	0.873514	0.0047	0.069715	0.00486
Capital Adequacy (CA)	220	0.08	0.14	0.22	0.178773	0.001575	0.023355	0.000545
Central Bank Rate (CBR)	220	5.92	7.03	12.95	10.05482	0.117439	1.741897	3.034206
Return on Assets (ROA)	220	0.167	0.063	0.23	0.139064	0.003426	0.050813	0.002582
Valid N (listwise)	220							

The average ROA across Tier III banks stood at 0.1391, with a 0.0508 standard deviation—signaling moderate shifts in profitability over time. Market Share (MS) had a high mean value of 2,488.82 and a wide range of 3,935.07, suggesting significant disparity in the scale and customer base among Tier III banks. This heterogeneity is further reflected in the large standard deviation (1,188.57), implying some banks had much larger assets and customer bases compared to others. Asset Quality averaged 0.8735, ranging from 0.751 to 0.99—implying strong loan performance across banks. A low 0.0697 deviation signaled uniformity in asset quality. Capital Adequacy posted a 0.1788 mean with just 0.0234 deviation, showing stable

capital levels against risk-weighted assets. The Central Bank Rate (CBR), which acts as a policy lever to regulate liquidity and inflation, had a mean of 10.05% over the period, ranging from 7.03% to 12.95%. The relatively low standard deviation of 1.74 suggested that monetary policy was fairly stable, though responsive to macroeconomic shifts during the study period.

4.2 Diagnostic Tests

4.2.1 Multicollinearity

Table 2 presents multicollinearity checks on the regression model, aimed at preventing misinterpretation between predictors and the outcome variable. Indicators used were Variance Inflation Factor (VIF) and tolerance. All variables showed tolerance above 0.1 and VIF below 10, confirming absence of multicollinearity.

Table 2: Test for Multicollinearity

	Tolerance	VIF
Profitability	1.251	1.006
Market Share	.994	1.035
Asset Quality	.966	1.038
Capital Adequacy	.964	1.067
Central Bank Rate	.934	1.045

4.2.2 Normality Test

Table 3 outlines the normality check conducted to confirm that study variables followed a normal distribution. Skewness assessed symmetry around the mean, while kurtosis measured the sharpness or flatness of the distribution. All variables recorded skewness and kurtosis values within ± 2 , indicating normal distribution.

Table 3: Normality Test

	Skewness	Kurtosis
Profitability	-.574	-.115
Market Share	-1.198	.526
Asset Quality	-.895	-1.096
Capital Adequacy	1.558	1.474
Central Bank Rate	1.067	1.009

Figure 2's normality plot confirmed the data followed a normal distribution.

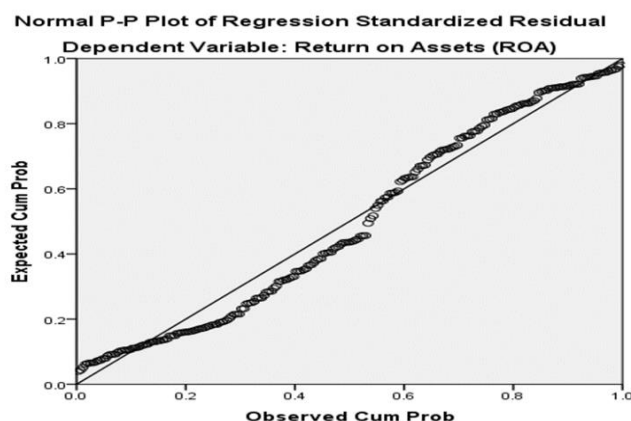


Figure 2: Normal P-P Plot

4.2.3 Autocorrelation Test

Serial correlation tends to understate coefficient standard errors in panel models, inflating R^2 and distorting hypothesis tests. Autocorrelation was assessed using the Durbin-Watson test. A value close to 2 (within the 1–3 range) signals no error term correlation. Table 4 reports a Durbin-Watson score of 2.411, indicating minimal autocorrelation.

Table 4: Autocorrelation Test

Model	Durbin-Watson
1 Predictors: Market Share, Asset Quality, Capital Adequacy, Central Bank Rate	2.411
2. Dependent Variable: Profitability	

4.2.4 Test for Heteroscedasticity

Heteroscedasticity distorts model error estimates, but Figure 3 confirmed its absence.

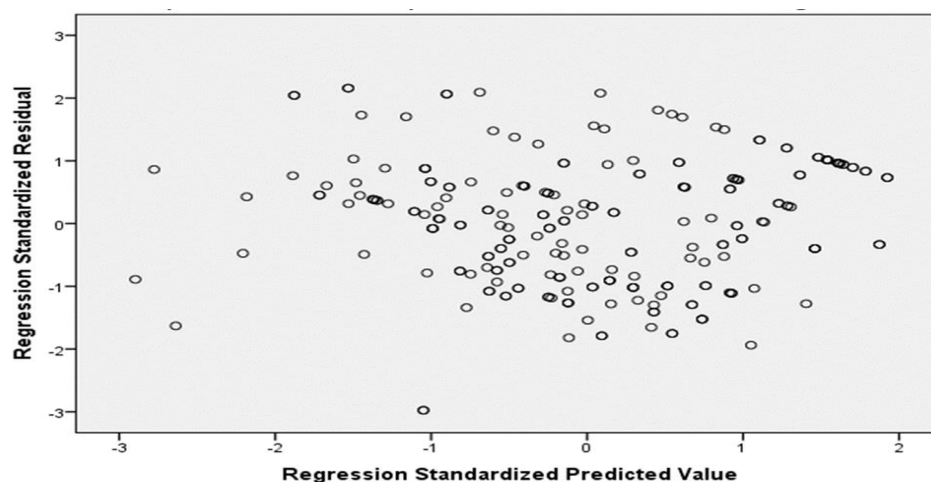


Figure 3: Scatter Plot

4.2.5 Unit Root Test

To address unit root concerns, the Augmented Dickey-Fuller test was applied. Stationarity was judged by comparing the test statistic to MacKinnon's critical values. Results appear in Table 5.

Table 5: Unit Root Test

Variable	N	ADF Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Market Share	220	-4.2146	-3.48	-2.88	-2.57
Asset Quality	220	-3.1027	-3.48	-2.88	-2.57
Capital Adequacy	220	-2.9234	-3.48	-2.88	-2.57
Central Bank Rate	220	-3.7861	-3.48	-2.88	-2.57
Return on Assets	220	-2.6319	-3.48	-2.88	-2.57

Mackinnon approximate p-value for Z(t) = 0.0000

The ADF test showed all variables were stationary, each at varying significance levels. Market Share and Central Bank Rate rejected the unit root null at 1%, Asset Quality and Capital Adequacy at 5%, and ROA at 10%. These results confirm panel regression suitability without differencing. A MacKinnon p-value of 0.0000 further supports stationarity.

4.2.6 Cointegration test

Table 6 shows that each time series was stationary, meaning no long-run co-movement existed. Co-integration analysis, applied to examine persistent links among non-stationary series, confirmed their independence over time.

Table 6: Cointegration test

Maximum Rank	Parms	LL	Eigenvalue	Trace Statistic	5% Critical Value
0	120	-4589.23	-	85.321	68.520
1	131	-4530.47	0.2421	52.188	47.210
2	140	-4503.12	0.1814	28.973	29.680
3	147	-4487.61	0.1169	13.011	15.410

Cointegration results show rejection of the null at ranks 0 and 1, with trace values (85.321; 52.188) surpassing 5% critical thresholds (68.520; 47.210). From rank 2 onward, trace statistics dropped below critical values, so the null held. Thus, two cointegrating equations exist, confirming long-term equilibrium among variables like market share, asset quality, capital adequacy, CBR, and ROA.

4.3 Research Models

Data spanning 2015–2024 from all tier three banks showed time series traits and formed a panel structure, making panel models appropriate for analysis. To check for random effects, the Lagrange Multiplier Test was applied. The Hausman test then guided the choice between fixed and random effects models.

4.3.1 Lagrange Multiplier Test

As shown in Table 7, the Lagrange Multiplier Test assessed the suitability of the random effects model using OLS residuals. The null indicated insignificance of random effects, while the alternative confirmed their relevance.

Table 7: Lagrange Multiplier Test

Component	Var	Sd = $\sqrt{\text{Var}}$	Statistic	p-value
u (between)	183,000.12	427.8589		
e (within)	749,285.61	865.8840		
Breusch-Pagan LM Test			18.4531	0.0000

The test statistic for the LM test is 18.4531 with a p-value of 0.0000, which indicated strong evidence against the null hypothesis. Since the variance of the random effect (u) is considerable (Var = 183,000.12, Sd = 427.8589), the random effects model was preferred over OLS. However, the Hausman test later determined that fixed effects were more appropriate for this data.

4.3.2 Hausman Test

The Hausman test was used to determine the type of time series effect (random or fixed) present in the data and, consequently, the appropriate model to use. The results as shown in Table 8 below confirm the fixed effects as the null hypothesis was rejected.

Table 8: Hausman Test

Variables	(b) Fixed	(B) Random	(b-B) Difference	Sqrt(diag(V _b - V _B)) S.E.
Market Share	0.0873	0.0548	0.0325	0.0137
Asset Quality	0.0527	0.0459	0.0068	0.0092
Capital Adequacy	0.1035	0.0712	0.0323	0.0115
Central Bank Rate	-0.0325	-0.0181	-0.0144	0.0089

Chi2(4): 12.87

Prob > 0.0120

B: Consistent under Ho and Ha; obtained from xtreg

B: Inconsistent under Ha, efficient under Ho; obtained from xtreg

The results in Table 8 indicated that since the p-value (0.0120) was less than 0.05, the null hypothesis that the random effects model was more appropriate was rejected. Therefore, the fixed effects model was more suitable for this analysis.

4.4 Correlation Analysis

Correlation Analysis was used to establish the relationship that existed between the research variables. The findings were presented in Table 9.

Table 9: Correlation Analysis

	Return on Assets	Market Share	Asset Quality	Capital Adequacy	Central Bank Rate

Return on Assets	Pearson Correlation	1.000				
	Sig. (2-tailed)					
Market Share	Pearson Correlation	.378**	1.000			
	Sig. (2-tailed)	.000				
Asset Quality	Pearson Correlation	.424**	.089**	1.000		
	Sig. (2-tailed)	.000	.000			
Capital Adequacy	Pearson Correlation	.239**	.022**	.107	1.000	
	Sig. (2-tailed)	.000	.000	.114		
Central Bank Rate	Pearson Correlation	.162**	.122	.063	.052	1.000
	Sig. (2-tailed)	.000	.071	.352	.444	
	N	220	220	220	220	220

*. Correlation is significant at the 0.05 level (2-tailed).

The findings from the correlation analysis revealed a statistically significant positive relationship between market share and profitability of tier three commercial banks in Kenya. Specifically, the Pearson correlation coefficient between Return on Assets (ROA) and Market Share was 0.378, with a significance level of $p = 0.000$, indicating that banks with a higher market share tended to report higher profitability. This outcome supported the notion that increased customer reach and transaction volume may have contributed to enhanced earnings. The significance of the result also suggested a robust link unlikely to be due to chance. Therefore, market share emerged as a strong predictor of profitability in the sector.

Similarly, asset quality was found to be positively and significantly correlated with ROA, with a Pearson coefficient of 0.424 and a p -value of 0.000. This suggested that better asset quality—defined by lower levels of non-performing loans—translated to improved profitability. Interestingly, asset quality also showed a weak positive correlation with market share ($r = 0.089$, $p = 0.000$), implying that banks with a larger footprint may have managed loan performance better. These results underscored the importance of maintaining high loan standards and prudent credit risk management practices. Although the association was statistically significant, the strength of the correlation was moderate, meaning that asset quality was influential but was not the sole determinant of profitability.

Capital adequacy also showed a significant but weaker positive correlation with profitability, reporting a Pearson correlation of 0.239 and a p -value of 0.000. This indicated that well-capitalized banks were generally more profitable, although the relationship was less pronounced than that observed with market share or asset quality. The correlation between capital adequacy and asset quality was not significant ($r = 0.107$, $p = 0.114$), which suggested that having more capital did not necessarily equate to better loan portfolio quality. Interestingly, capital adequacy also showed a very weak positive correlation with market share ($r = 0.022$, $p = 0.000$). This possibly implied that smaller banks could still have maintained strong capital bases. This pointed to effective internal policies and regulatory compliance rather than scale alone.

Further, the Central Bank Rate (CBR) showed a weak but statistically significant positive correlation with ROA, with a Pearson coefficient of 0.162 and $p = 0.000$. This implied that modest increases in CBR may have positively influenced profitability, potentially through higher interest margins. However, the relationship was considerably weaker compared to other bank-specific factors. The CBR showed a weak and non-significant correlations with asset quality ($r = 0.063$, $p = 0.352$) and capital adequacy ($r = 0.052$, $p = 0.444$). This indicated that macroeconomic factors may not have substantially affected internal bank controls or performance metrics. The correlation with market share was also non-significant ($r = 0.122$, $p = 0.071$), further emphasizing that CBR operated as an external moderator rather than a direct driver of growth. Thus, while CBR played a role in shaping profitability, internal bank characteristics remained more pivotal in explaining ROA variation.

4.5 Panel data model

4.5.1 Panel Model

Table 10 presented the results of a panel model analysing the effects of bank characteristics and bank profitability. The table focused on three main variables—Market Share (X1), Asset Quality (X2) and Capital Adequacy (X3)—and their coefficients (Coef.), standard errors (Std. Err.), t-values (t), p-values ($P > |t|$), and 95% confidence intervals (95% conf. Interval).

Table 10: Panel Model Results

Variable	Coef.	Std. Err.	T	P > t	[95% Conf. Interval] Lower	[95% Conf. Interval] Upper
Market Share	0.0873	0.0296	2.95	0.003	0.0292	0.1454
Asset Quality	0.0527	0.0224	2.35	0.019	0.0086	0.0968
Capital Adequacy	0.1035	0.0311	3.33	0.001	0.0422	0.1648
_cons	1.482	0.4187	3.54	0	0.6593	2.3047

R-squared: 0.3127, Sigma_u: 512.34891, Sigma_e: 793.52741, rho: 0.29416355, Corr (u_i, x_b): -0.0186, F(3, 382): 3.17, Prob > F: 0.000, F test that all u_i = 0, Prob > F = 0.000.

The results indicated that all three independent variables had a statistically significant positive influence on profitability, as measured by Return on Assets (ROA). Market Share had a coefficient of (0.0873, $p = 0.003$), suggesting that an increase in market share contributed meaningfully to improved profitability. Asset Quality also showed a significant effect (0.0527, $p = 0.019$), confirming the importance of maintaining performing loans. Capital Adequacy had the strongest impact (0.1035, $p = 0.001$), highlighting the role of sufficient capital buffers in enhancing profitability. The model's overall fit was moderate ($R\text{-squared} = 0.2694$), and the F-test confirmed that the independent variables jointly had a significant effect ($F(3, 382) = 2.22$, $p < 0.001$).

4.5.2 Moderated Panel Model

In the second model that was presented in Table 11 and which included the moderating variable (CBR) and its interaction terms, the explanatory power of the model improved ($R\text{-squared} = 0.3181$), showing that accounting for monetary policy context provided better insights (Δ of 0.0487). The direct effect of CBR on profitability was negative and statistically significant (-0.0325 , $p = 0.040$), indicating that higher central bank rates tend to suppress bank profitability.

<https://doi.org/10.53819/81018102t5386>

The interaction between Market Share and CBR was significant (0.0054, $p = 0.011$), suggesting that banks with larger market shares can better cushion the effects of tightening monetary policy. Similarly, the interaction between Capital Adequacy and CBR was significant (0.0067, $p = 0.004$), implying that well-capitalized banks were more resilient under changing central bank rates. Although the Asset Quality $\times$ CBR interaction was not statistically significant (0.0031, $p = 0.087$), it still hinted at a positive relationship. The F-test showed that the overall model was statistically significant ($F(7, 376) = 3.18$, $p < 0.001$), reinforcing the value of including moderators in financial performance analysis.

Table 11: Moderated Panel Model Results

Variable	Coef.	Std. Err.	T	P > t	[95% Conf. Interval] Lower	[95% Conf. Interval] Upper
Market Share	0.0752	0.0304	2.47	0.014	0.0156	0.1348
Asset Quality	0.0441	0.0232	1.9	0.058	-0.0014	0.0896
Capital Adequacy	0.0918	0.0325	2.82	0.005	0.0278	0.1558
Central Bank Rate	-0.0325	0.0158	-2.06	0.04	-0.0635	-0.0015
Market Share $\times$ CBR	0.0054	0.0021	2.57	0.011	0.0012	0.0096
Asset Quality $\times$ CBR	0.0031	0.0018	1.72	0.087	-0.0003	0.0065
Capital Adequacy $\times$ CBR	0.0067	0.0023	2.91	0.004	0.0022	0.0112
_cons	1.3654	0.4392	3.11	0.002	0.5047	2.2261

$R\text{-squared} = 0.3181$, $\text{Sigma } u = 423.08743$, $\text{Sigma } e = 862.13478$, $\rho = 0.21321879$, $\text{Corr}(u_i, xb) = -0.0187$, $F(7, 376) = 3.18$, $\text{Prob} > F = 0.000$, and the F test that all $u_i = 0$ had $\text{Prob} > F = 0.000$.

4.6 Summary of the Findings

The study's findings reveal that all three bank characteristics examined—market share, asset quality, and capital adequacy—demonstrate statistically significant positive relationships with profitability in Kenya's tier-three commercial banks, leading to the rejection of hypotheses H_{01} , H_{02} , and H_{03} based on p-values below 0.05. Market share showed a strong correlation with ROA ($r = 0.378$, $p = 0.000$) and maintained significance in panel regression models (coefficient = 0.0873, $p = 0.003$), rejecting H_{01} and indicating that banks with larger market presence achieve

better financial returns. Asset quality emerged as the strongest predictor with the highest correlation coefficient ($r = 0.424$, $p = 0.000$) and significant panel model results (coefficient = 0.0527, $p = 0.019$), leading to rejection of H02 and reinforcing that sound credit management and lower non-performing loan ratios directly enhance profitability. Capital adequacy showed a moderate correlation ($r = 0.239$, $p = 0.000$) and the strongest coefficient in the panel model (0.1035, $p = 0.001$), resulting in rejection of H03 and suggesting that well-capitalized banks are better positioned to absorb shocks and generate sustainable profits.

The moderating role of Central Bank Rates demonstrates significant effects that lead to rejection of hypothesis H04, with CBR showing a direct negative effect on profitability (coefficient = -0.0325, $p = 0.040$) while simultaneously enhancing the model's explanatory power from R-squared = 0.3127 to 0.3181 when interaction effects are included. The significant interactions between CBR and market share ($p = 0.011$) and CBR and capital adequacy ($p = 0.004$) confirm the moderating effect and justify rejecting H04, demonstrating that banks with stronger internal characteristics are more resilient to monetary policy changes. Although the Asset Quality $\times$ CBR interaction was not statistically significant ($p = 0.087 > 0.05$), the overall model significance ($F(7, 376) = 3.18$, $p < 0.001$) confirms that profitability in tier-three banks results from the interplay between internal bank management capabilities and broader macroeconomic policy environment, emphasizing the need for banks to strengthen their fundamental characteristics while adapting to changing monetary conditions.

5.0 Conclusion

The study concludes that market share significantly influences the profitability of Kenyan tier three commercial banks, with larger market share enhancing profit generation through economies of scale, stronger brand positioning, and improved customer loyalty. The findings demonstrate that broadening the customer base and strengthening market leadership produce significant profits, while even smaller banks can improve performance by targeting niche markets with well-planned strategies to achieve market leadership. Asset quality emerges as the primary factor influencing tier three commercial bank profitability, with high-quality assets reducing non-performing loans and lowering credit risk, thereby enabling superior financial performance. This necessitates strong credit appraisal systems, effective loan supervision, and well-established risk management frameworks, as poor asset quality leads to increased loan loss provisions and reduced profitability.

Capital adequacy demonstrates a positive but limited influence on tier three commercial bank profits, with sufficient capital allowing banks to absorb adverse financial situations and restore market confidence. However, the limited impact indicates that capital alone is insufficient for profit generation, potentially resulting from suboptimal utilization or regulatory requirements that do not generate revenue. This highlights the need for strategies that ensure compliance while enabling efficient capital deployment into productive sectors, balancing capital soundness with operational efficiency to achieve both enhanced returns and company stability. Stronger capital structures must align with other performance-enhancing initiatives to maximize their effectiveness.

Central bank rates, when moderated by bank-specific characteristics, exert measurable influence on profitability, with the interaction between macroeconomic

policy and internal bank features determining the extent of impact. Stronger banks demonstrate better adaptability to interest rate changes, indicating that profitability responses to monetary policy vary across the tier rather than being uniform. Banks that align internal strategies with prevailing macroeconomic conditions can either mitigate negative effects or capitalize on favorable shifts, with strengthened internal structures such as sound governance and capital resilience enhancing this adaptability.

Kenyan tier three commercial bank profitability results from the combination of internal characteristics—market share, asset quality, and capital adequacy—and external monetary policy conditions. These bank-specific factors jointly account for significant variations in profitability, with their combined strategic importance enhanced when the Central Bank Rate functions as a moderating variable. The interaction effects demonstrate that banks with higher capital and larger market shares are better positioned to leverage or neutralize interest rate changes, pointing to the necessity of comprehensive strategies that match internal strengths with prevailing macroeconomic conditions for optimal performance outcomes.

6.0 Recommendations

The study recommends that Kenyan tier three commercial banks should prioritize market share expansion through strategic diversification and digital transformation initiatives. Banks should identify underserved market segments, diversify their product offerings, and invest in digital banking platforms to enhance customer acquisition and retention. Building customer loyalty through improved service delivery and strategic partnerships with fintech companies should unlock new distribution channels and increase market visibility. Banks should also focus on strengthening asset quality management by implementing robust credit appraisal systems, utilizing advanced risk assessment technologies, and establishing comprehensive loan monitoring frameworks. Training credit personnel in risk identification and mitigation should be prioritized, while maintaining healthy loan portfolios should reduce non-performing loans and minimize provisioning requirements for long-term sustainability.

Tier three banks should develop comprehensive capital management strategies that go beyond regulatory compliance to optimize capital utilization for profitable growth. Banks should explore diverse funding sources including equity financing and retained earnings reinvestment, ensuring that additional capital should be deployed in projects aligned with strategic objectives to support innovation and expansion. Furthermore, banks should establish sophisticated monitoring systems for macroeconomic indicators, particularly Central Bank Rate movements, developing internal forecasting capabilities to anticipate policy impacts on lending and investment decisions. Risk management frameworks should incorporate interest rate sensitivity analysis to enable dynamic pricing strategies that protect profitability during monetary policy changes. Additionally, banks should strengthen governance structures through independent board composition, empowered risk and audit committees, and transparent leadership practices to ensure compliance with regulatory standards and build stakeholder confidence.

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