Credit Risk Management, Institutional Quality, and Financial Performance of Commercial Banks in Sub-Saharan Africa

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ARTICLE DETAILS	ABSTRACT

Purpose

This study examines the relationship between risk management and the financial performance of commercial banks in Sub-Saharan Africa, with particular emphasis on credit risk indicators and institutional quality.

Methodology

The study adopts an ex post facto research design. It uses secondary data from audited annual reports and financial statements of publicly listed commercial banks in Sub-Saharan Africa for the period 2018–2023. A two-step Generalized Method of Moments (GMM) estimator is employed to analyze the panel data and address potential endogeneity concerns.

Findings

The empirical findings reveal that the non-performing loans ratio exerts a statistically significant effect on bank financial performance. While the ratio of total loans and advances to total deposits shows a positive but statistically insignificant impact on profitability, changes in this ratio significantly influence bank profitability. Moreover, institutional quality is found to have a negative, statistically significant relationship with the return on equity (ROE) of commercial banks in Sub-Saharan Africa.

Conclusion

The results indicate that credit risk management and institutional quality play a critical role in shaping banks' financial performance in Sub-Saharan Africa. The study recommends that banks strengthen credit appraisal and risk monitoring mechanisms and ensure strict regulatory compliance to mitigate loan default risks. Additionally, policymakers are encouraged to enhance supervisory and regulatory frameworks to promote sustainable, resilient banking operations across the region.

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1. Introduction

Credit risk management encompasses credit evaluation, credit monitoring, and credit recovery systems designed to reduce default rates (Greuning & Bratanovic, 2020; Saunders & Cornett, 2018). Effective credit risk management has become a critical determinant of financial performance for deposit-taking banks, given the inherent risks in lending practices. Regulatory authorities, including the central banks of Nigeria, Ghana, and South Africa, have established credit risk management guidelines to promote financial soundness (CBN, 2021). However, persistent increases in non-performing loans (NPLs) and recurring bank distress suggest that credit risk management policies implemented by African deposit-taking banks are either inadequate or ineffectively applied (Okezie & Afolabi, 2022; Owojori et al., 2020). This situation raises concerns regarding the effectiveness of existing risk assessment models, loan approval procedures, and credit monitoring systems within African banks (Adeusi et al., 2020; Boahene et al., 2012).

Beyond credit risk factors, institutional quality has become a significant external determinant of financial outcomes in banking operations (Oladele & Sanni, 2022). Institutional quality refers to the effectiveness of formal structures, including the legal system, regulatory enforcement, corruption control, governance, and political stability, in shaping financial sector outcomes (World Bank, 2022). Weak institutions often lead to poor contract enforcement, regulatory forbearance, and low accountability, which can result in relaxed lending standards and higher default rates (Laeven & Levine, 2020). In Africa, variability in institutional quality across countries contributes to inconsistent outcomes in credit risk management and bank performance.

Empirical studies, such as Fofack (2020), have highlighted concerns that African banks lack robust risk management frameworks necessary to sustain financial performance amid rising credit risk. While research on the relationship between credit risk management and financial performance is extensive in other regions, there is limited evidence from the African banking sector. This study addresses this gap by providing both geographic and sectoral contextualization. Unlike previous research focused on single-country contexts (e.g., Nigeria, Kenya, Vietnam), this study examines the continental African setting and assesses the effects of non-performing loans, loan-to-deposit ratio, loan-to-asset ratio, and institutional quality on financial performance. This multidimensional approach facilitates a deeper understanding of the interaction between internal bank operations and external institutional environments in terms of profitability. Whereas prior studies often employed ordinary least squares (OLS) or fixed- or random-effects models, this research uses the System Generalized Method of Moments (System GMM) to address potential endogeneity, measurement error, and unobserved heterogeneity, thereby providing more reliable and robust estimates. Additionally, the inclusion of institutional quality extends the analysis beyond bank-specific variables to encompass macro-institutional factors, bridging the gap between micro-level financial variables and macroeconomic governance variables.

Although studies such as Li and Zou (2019) have established a positive relationship between effective credit risk management and financial performance in developed economies, the applicability of these findings to the African banking sector remains uncertain. Distinct characteristics of African financial systems, including inefficiencies in legal frameworks and political instability, necessitate a localized examination of the impact of credit risk management on bank profitability. Accordingly, the objectives of this study are to (i) examine the impact of credit risk management on the financial

performance of Sub-Saharan African countries and (ii) evaluate the influence of institutional quality on financial performance in the same context. The following sections present a literature review, outline the methodology, present and analyze the data, and conclude with recommendations.

2. Literature Review

This section outlines the principal theories informing the study and reviews previous research relevant to the topic.

2.1. Anticipated Income Theory

Prochanow (1949) developed the Anticipated Income Theory after World War II, finding that commercial banks adjusted their income assets as the government shifted from the public to the private sector. Eleje, Chuks, Adeoye, and Onyeike (2025) found that, since 2000, commercial banks in Nigeria have strengthened their focus on loan portfolio management to enhance profitability. This trend reflects banks expanding their lending activities across a wider range of purposes and maturities to meet high demand.

The bank management had become more skilled at managing deposit outflows. It recognized that optimal liquidity could be achieved through a balanced combination of readily accessible and less readily accessible assets. Thus, postwar loan portfolios were not only composed of intermediate- and long-term loans to individuals, homeowners, and businesses, which could not be considered liquid under traditional liquidity theories; rather, they could be regarded as liquid only to a limited extent under the shiftability theory. Nevertheless, such loans are consistent with the Anticipated Income Theory (Prochanow, 1949). This theory outshines the real bills doctrine and the shiftability theory because it addresses three primary objectives: liquidity, safety, and profitability. It can also be used as a guide for assessing borrowers' creditworthiness, providing banks with a basis for determining the likelihood of timely repayment (Prochanow, 1949).

The theory also recommends that banks test debtors' repayment capacity by conducting detailed cash-flow estimates, which are strong predictors of loan quality. Therefore, the loans' self-liquidating nature is based on the borrower's future cash flow and does not depend on the type of transaction financed, ensuring repayment of principal and interest. Accurate income estimates play a crucial role in helping banks maintain steady cash flow, enabling them to meet the needs of depositors and loan borrowers and supporting overall liquidity and risk management. Although the study by Bagana, Lateef, and Ene (2024) focuses on Nigerian consumer goods manufacturing firms, it highlights that effective liquidity management is essential for financial stability and operational success, a principle also applicable in the banking sector, improving repayment abilities, maintaining liquidity, and minimizing default risk.

According to Prochanow (1949), the Anticipated Income Theory holds that banks can maintain liquidity when loan repayments are structured around borrowers' ongoing income streams, thereby ensuring steady cash flow rather than relying on collateral. The theory also implies that the structure of loan maturities, including short-term business loans or consumer instalment loans, can increase liquidity compared to real estate-backed loans. Sound credit risk management will therefore increase interest income and ensure adequate liquidity. In short, the Anticipated Income Theory is a fundamental theory of credit management, as it assesses a borrower's ability to repay the loan. It gives banks the tools to assess loan viability, which directly affects interest income and liquidity.

Effective credit management under this theory increases earnings from interest, increases investment opportunities, and improves a firm's operations and financial performance.

2.2.   Liability Management Theory

Liability Management Theory, developed in the 1960s, fundamentally changed the approach to bank liquidity management (Minsky, 1980). The theory emphasizes that banks function not only as passive managers of assets but also as active managers of liabilities. Rather than depending exclusively on asset liquidity, banks can maintain liquidity by raising funds as needed. This is achieved through issuing certificates of deposit, borrowing in the interbank market, or obtaining funding from the central bank.

This theory underpins many modern banking practices. In contemporary settings, liquidity crises are often addressed by accessing capital markets or utilizing repo markets to trade securities. Liability Management Theory also facilitates dynamic balance sheet management, enabling banks to maintain greater operational flexibility during periods of liquidity stress. Nwaguru, Law-Biaduo, and Anukam (2024) applied this theory to forty years of Nigerian data (1981–2020). Their findings indicate that while demand deposits and credit-deposit ratios influence liquidity, liability management alone is insufficient to guarantee liquidity. They advocate for the inclusion of asset-side strategies. The research critiques exclusive reliance on liability-based approaches and recommends a balanced asset–liability strategy. The emergence of Liability Management Theory marked a significant advancement over earlier liquidity theories, such as the Commercial Loan Theory and the Shiftability Theory, which primarily emphasized the asset side of the balance sheet. In contrast, Liability Management Theory acknowledges a bank's ability to promptly access external funding sources, thereby increasing its responsiveness and flexibility during sudden liquidity shocks.

This theoretical shift coincided with broader transformations in international financial markets during the 1960s and 1970s. During this period, money markets became increasingly dynamic, and financial innovation enabled banks to diversify their funding sources (Battellino & McMillan, 2007). Financial institutions could no longer depend solely on deposits and short-term loans to meet liquidity requirements. They also began issuing various debt instruments and borrowing from other institutions in wholesale markets (Bank for International Settlements [BIS], 2018).

A major contribution of Liability Management Theory is its emphasis on the strategic use of liability instruments, such as negotiable certificates of deposit (CDs), federal funds borrowing, and repurchase agreements (repos). These instruments enable banks to convert illiquid assets into liquidity without liquidating them, thereby preserving portfolio integrity while meeting liquidity demands. This approach aligns with Basel III liquidity requirements, which mandate that banks hold high-quality liquid assets (HQLA) and establish contingency funding facilities (Basel Committee on Banking Supervision [BCBS], 2018). Despite its advantages, Liability Management Theory has notable limitations. Its reliance on volatile, short-term funding poses significant risks, particularly during periods of systemic stress. For instance, during the 2007–2008 global financial crisis, many banks were unable to roll over short-term obligations as interbank markets froze and investor confidence waned. This experience underscored the dangers of excessive dependence on liability-side liquidity provisions and highlighted the need for diversified liquidity management strategies (Acharya & Mora, 2021).

Empirical research by Nwaguru, Law-Biaduo, and Anukam (2024) supports this perspective. Their analysis demonstrates that while liability management significantly influences liquidity, its effects are not enduring, as evidenced by factors such as the demand-deposit and credit-deposit ratios. The authors recommend that banks also adopt asset-side measures, including maintaining liquid securities, implementing effective loan recovery plans, and managing credit risks prudently. This integrated approach enhances both liquidity and financial stability.

Liability Management Theory has made substantial contributions to modern banking by expanding the range of tools available for managing liquidity risks and emphasizing the active management of liabilities and external funding. Evidence from recent studies and past financial crises indicates that the theory is most effective when integrated with asset-side strategies. Coordinated asset–liability management remains essential for maintaining liquidity and stability in the contemporary banking environment.

2.3.   Empirical Review

Non-performing loans (NPLs) and loan advances are widely recognized as primary indicators of credit risk and play a critical role in shaping banks' financial performance. Consequently, a growing body of empirical literature has examined this relationship across diverse national and institutional contexts. Juma and Jemaiyo (2025) investigated the effects of NPLs and lending rates on the financial performance of deposit money banks in Kenya. Their empirical analysis, which synthesized findings from multiple studies, consistently revealed an inverse relationship between NPLs and bank profitability. The study further demonstrated that lending rates mediate this relationship, as higher interest rates increase credit risk and, in turn, reduce financial performance. These findings highlight the importance of prudent lending practices and effective risk-based pricing mechanisms in sustaining bank profitability. However, the study did not account for the role of institutional quality in influencing the financial performance of commercial banks.

Similarly, Nguyen (2023) examined 26 commercial banks in Vietnam using the Generalized Method of Moments (GMM) approach. The results indicated that the NPL ratio negatively affects both return on assets (ROA) and return on equity (ROE), underscoring the adverse impact of poor loan quality on bank profitability. While GDP growth was found to positively influence financial performance, inflation exhibited mixed effects across performance measures. Nevertheless, the study excluded certain bank-specific variables, such as leverage and age, which may also affect profitability and credit risk. In a broader cross-country context, Onyeagoro and Adeoye (2024) analyzed panel data from 1,631 banks across 111 countries over the period 2007–2021. Their findings revealed a significant positive relationship between bank size and NPLs, suggesting that larger banks may engage in excessive risk-taking. Conversely, profitability, measured by ROE, was negatively associated with NPLs, indicating that stronger earnings can help mitigate credit risk. Despite its extensive coverage, the study did not incorporate bank age as a country-level or firm-level control variable.

Putra and Sari (2023) assessed the impact of macroeconomic conditions and lending risk on corporate financial sustainability in Indonesia. The study found that unfavorable economic conditions intensified NPLs and interest rate risks, thereby weakening financial sustainability. These results imply that financial institutions operating in volatile economic environments must strengthen their credit risk assessment frameworks to maintain stability. However, omitting institutional quality as a control variable limits the

robustness of the study's conclusions. Focusing on Nigeria, Tomomewo, Falayi, and Uhuaba (2023) examined the effect of credit risk management on NPLs using panel data from 14 deposit money banks over the period 2013–2022. The regression results identified capital adequacy, loan loss provisions, and the loan-to-asset ratio as significant determinants of NPLs. The study emphasized the importance of effective credit risk management for improving bank performance in the Nigerian financial sector. Nonetheless, the exclusion of leverage as a control variable represents a notable limitation.

Finally, Che W. Mohd Amil, Haris, and Kassim (2023) explored the determinants of NPLs in Malaysia. Their findings corroborated earlier studies by showing that macroeconomic factors, such as GDP growth and inflation, significantly influence NPL levels, alongside bank-specific factors including credit growth and operational efficiency. These results underscore the joint role of macroeconomic stability and internal bank governance in managing credit risk. However, individual bank characteristics, such as leverage and age, were not included in the analysis.

2.4. Research Gap
This study advances the existing body of knowledge through several key contributions. First, while prior research on credit risk indicators has primarily focused on single-country contexts such as Nigeria, Kenya, and Vietnam, this analysis adopts a continental African perspective. It assesses the impacts of non-performing loans, loan-to-deposit ratio, loan-to-asset ratio, and institutional quality on financial performance. This multidimensional approach facilitates a deeper understanding of the interaction between banks' internal operations and external institutional environments in terms of profitability. Whereas previous studies have typically employed ordinary least squares (OLS) or fixed- and random-effects models, the present research utilizes the System Generalized Method of Moments (System GMM) to address potential endogeneity, measurement error, and unobserved heterogeneity, thereby yielding more reliable and robust estimates. Additionally, by incorporating institutional quality, the study extends the analysis beyond bank-specific variables to include macro-institutional factors, bridging the gap between micro-level financial variables and macroeconomic governance variables.

3. Methodology
The study focused on forty-two Sub-Saharan African countries, each represented by one deposit money bank. The countries included Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroun, Cape Verde, Central African Republic, Chad, Comoros, Republic of Congo, Democratic Republic of Congo, Cote d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea–Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, and South Sudan. Data were collected from the annual reports of these banks over a five-year period (2019–2024). The analysis used the Two-Step Generalised Method of Moments (GMM) panel regression, which is suitable for data with both cross-sectional and time-series characteristics.

3.1. Model Specification
The model is stated as:

$$ROA_{it} = \beta_0 + \beta_1 NPLA_{it} + \beta_2 LATD_{it} + \beta_3 LATA_{it} + \beta_4 INS_{it} + \beta_5 LEV_{it} + \beta_6 AGE_{it} + e_{it} \text{ ----------- ------ (1)}$$

To use GMM, the model is formulated to account for the data's dynamic nature. Hence, the model is stated as:

$$ROA_{it} = \beta_o + \beta_1 ROA\_1_{it} + \beta_2 NPLA_{it} + \beta_3 LATD_{it} + \beta_4 LATA_{it} + \beta_5 INS_{it} + \beta_6 LEV_{it} + \beta_7 AGE_{it} + e_{it} \text{ ------------- (2)}$$

Where;
ROA = Return on Assets
NPLA = Ratio of non-performing loans to loans and advances
LATD = Ratio of loans and advances to total deposits
LATA = ratio of loans and advances to total assets
INS = institutional quality
LEV= leverage
AGE = age of the firm
β_o = Intercept or regression constant
β_{it} = Coefficients to be estimated for firm í in period t
$\beta_1 - \beta_3$= Regression Coefficients

4. Results and Discussions

Table.1.Descriptive Statistic

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	210	0.467	0.403	092	1.99
NPLA	210	6.02	1.0729	3	9
LATD1	210	1.26	.441	1	2
LATA	210	3.38	1.405	2	6
INS	210	4.769	9.881	0.0021	44.158
LEV	210	206.473	511.293	0.0488	1294.879
AGE	210	38.9	16.233	23	74

Source: Author's own elaboration

The descriptive statistics in Table 1 above show that the mean ROA over the years is 0.467, with minimum and maximum ROA values of 0.092 and 1.99, respectively. The fact that the average age of the firms is 38.9 years also supports the inference that these are predominantly mature and well-established institutions, with potential for stable financial performance and managerial experience that can influence profitability and risk-taking behavior.

The Non-Performing Loans to Total Deposits (NPLA) ratio has a mean of 6.02 and relatively low dispersion, indicating a moderate, yet persistent, level of credit risk among firms. The Loans to Deposits (LATD1) and Loans to Assets (LATA) ratios indicate that the intensity of lending is high, with the firms lending out more than they have deposited (LATD1 = 1.26) and lending large percentages of their assets (LATA = 3.38). Although such aggressive loan orientation can increase income, it also exposes the lender to credit and liquidity risks, particularly when the loan is backed by external funds or unreliable funding sources.

Also, there was significant firm variance in Institutional Quality (INS) and Leverage (LEV). The wide range (0.002 to 44.16) and the standard deviation in institutional quality (9.88) indicate that although some firms operate under solid institutional and governance frameworks, others operate under weak ones, which may influence their credit and operational risk models. Likewise, the leverage ratios are highly inconsistent, averaging 206.47% and reaching 1294.88%, suggesting that other companies rely on debt

financing, which could lead to financial weaknesses. Such differences in governance and capital structure may have profound implications for firm stability, risk management, and investment decisions in the banking and finance industry.

Table.2.Estimation Results of One-Step and Two-Step System GMM

Covariates	One-Step System GMM Estimation	Two-Step System GMM Estimation				
	Coefficient	Standard Error	P-Value	Coefficient	t-statistics	P-Value
ROA L1	.997***	.004	0.000	.999***	.028	0.000
NPLA	-.559***	.0423	0.000	-.1149	.155	0.352
LATD	.0188***	.009	0.000	.1785***	.0628	0.002
LATA	-.0004***	.0002	0.000	-.004***	.002	0.000
INS	-.1332***	.00058	0.000	5.191	.381	0.266
AGE	-.1891***	.00023	0.000	5.146	.329	0.431
LEV	.13694	.711	0.166	-.2162***	.0231	0.001
CONS	.1234***	.0953	0.1753	.0043	.0015	0.215

Arellano-Bond test for AR (1)	**Z= -2.62 Prob>Z= 0.000**	**Z= -0.71, Prob>Z= 0.360**
Arellano-Bond test for AR (2)	**Z= 0.09, Prob>Z=**	**Z= -1.74, Prob>Z=0.136**
Hansen and Sargan test for the validity of all instruments as a group:		
Sargan test of over-identification	**$X^2(16)$ =99.825**	**Prob>x^2=0.321**
Hansen test of over-identification	**X^2 (16) = 9.47**	**Prob>x^2=1.000**

Note: ***, ** and * are statistical significance at 1%, 5% and 10% level respectively

Source: Author's own elaboration

The one-step and two-step Generalized Method of Moments (GMM) estimates confirm substantial dynamic persistence in return on assets (ROA), as both models yield statistically significant and positive coefficients for the lagged ROA variable (ROA L1). Specifically, the coefficient in the one-step GMM model is 0.996 ($p < 0.01$), while the two-step GMM model produces a coefficient of 0.998 ($p < 0.01$). These results indicate that prior profitability is a strong predictor of current profitability, suggesting that firms' financial performance tends to remain stable over time and that historical success is a robust indicator of future asset returns.

Regarding the explanatory variables, the Non-Performing Loans to Total Deposits (NPLA) ratio exhibits a negative, statistically significant effect in the one-step model (coefficient = -0.558, $p < 0.01$), indicating that higher credit risk reduces profitability. However, NPLA is statistically insignificant in the two-step model, despite retaining a negative coefficient. This inconsistency suggests that the effect of NPLA on ROA may depend on the choice or strength of the estimation instrument, warranting caution in interpreting risk-return relationships. Loans to Total Deposits (LATD) and Loans to Total Assets (LATA) serve as proxies for lending aggressiveness and asset allocation, respectively. LATD is positive and significant in both models, while LATA is negatively significant in both models, with coefficients of 0.188 ($p < 0.01$) in the one-step and 0.178 ($p < 0.01$) in the two-step model, and coefficients of 0.0004 ($p < 0.01$) in the one-step and 0.004 ($p < 0.01$) in the two-step model. These findings suggest that firms allocating a greater proportion of assets to loans are more likely to achieve higher returns, potentially due to effective intermediation, increased interest income, or economies of scale in lending.

The institutional quality (INS) variable is statistically significant with the negative ROA coefficient (= -0.133, p = 0.01) in the one-step estimation, but is insignificant in the two-step estimation. This unexpected finding might indicate that profitability is constrained by stronger institutional structures or compliance costs, or that the impact of institutional quality interacts with unobservable firm attributes. On the same note, AGE shows a negative correlation with ROA in the one-step model (–0.189, p < 0.01), but this correlation becomes insignificant in the two-step model. This implies that the older firms can be characterized by decreasing marginal returns or operational inertia, but the impact is not strong across estimation techniques. The leverage (LEV) is negligible in the one-step model but is considerably negative in the two-step model (-0.216, p < 0.01), suggesting that overdependence on debt can negatively impact profitability, probably due to higher interest rates or, more simply stated, financial distress costs. The constant term is important in the one-step model but not in the two-step model, which supports the notion that covariates, along with their dynamics, help explain profitability, whereas unexplained fixed effects do not.

The model's validity is supported by diagnostic tests. The Arellano-Bond test for first-order serial correlation (AR (1)) in the differenced values is significant (p = 0.000 in the one-step test), as expected. In contrast, the AR (2) test is not significant (p = 0.09 and 0.791), indicating the absence of second-order autocorrelation, which is essential for GMM consistency. Furthermore, the Sargan test (p = 0.321) and the Hansen test (p = 1.000) confirm that the instruments are valid and not over-identified. These results indicate that the GMM estimators are appropriately specified and that the instruments effectively address endogeneity concerns. Overall, the findings highlight the significance of dynamic profitability, lending practices, and capital structure in explaining firm-level performance, and underscore the importance of considering variables sensitive to instrument strength and model specification.

The results from both the one-step and two-step System GMM estimations indicate that bank profitability exhibits strong persistence, as evidenced by significant positive coefficients for lagged return on assets (ROA). This suggests that historical profitability exerts a substantial influence on current performance, contributing to the stability and path dependence of African banks' financial outcomes. This finding is consistent with Nguyen (2023), who reported that previous performance is a strong predictor of future profitability. Regarding credit risk, the one-step model shows that a higher Non-Performing Loans to Total Deposits (NPLA) ratio has a negative, significant effect on ROA, supporting the view that higher credit risk reduces bank profitability. This result aligns with the findings of Juma and Jemaiyo (2025), Nguyen (2023), and Onyeagoro and Adeoye (2024), who also identified an inverse relationship between NPLs and profitability. However, in the two-step model, NPLA is not significant, indicating that this relationship is sensitive to model specification and estimation efficiency. These results underscore the need for caution when interpreting the risk–return trade-off and highlight the importance of robust estimation techniques in credit risk analysis.

The lending behavior variables offer further insight into profitability dynamics. The positive and significant relationship between Loans to Total Deposits (LATD) and ROA across both models indicates that increased lending activity enhances profitability, likely through higher interest income generation. This finding aligns with the emphasis placed by Tomomewo, Falayi, and Uhuaba (2023) on the role of effective credit management in improving bank performance. In contrast, the negative and significant effect of Loans to Total Assets (LATA) suggests that excessive loan allocation may expose banks to

heightened credit risk, ultimately dampening profitability. This outcome resonates with the broader literature on the risks of aggressive asset concentration in lending portfolios, particularly in environments with weak credit monitoring.

Institutional quality has a negative and significant effect on ROA in the one-step model, but this effect disappears in the two-step model. This suggests that stronger institutions might entail additional costs or restrictions that lower profitability, especially as banks adjust to stricter rules. Previous studies, such as Putra and Sari (2023) and Che W. Mohd Amil, Haris, and Kassim (2023), discussed the impact of macroeconomic and governance factors on credit risk but did not include institutional quality in their profitability models. These results show that institutional quality can have complex effects on bank performance, depending on how it is measured.

Firm age is negatively and significantly associated with ROA in the one-step model, indicating that older banks may experience lower returns, potentially due to reduced flexibility or innovation. However, this effect is not significant in the two-step model, suggesting inconsistency across estimation methods. This result extends earlier studies, such as Nguyen (2023) and Onyeagoro and Adeoye (2024), which did not account for firm age, and underscores the importance of considering the bank life cycle in profitability analyses. Leverage yields divergent results across the two models. While it is not significant in the one-step model, it exhibits a strong negative effect on ROA in the two-step model. This finding suggests that excessive reliance on debt can adversely affect profitability by increasing interest expenses and financial stress. The significance of leverage in the two-step model addresses a gap in prior research, including Tomomewo et al. (2023) and Che W. Mohd Amil et al. (2023), which did not examine leverage.

Finally, the diagnostic tests confirm the validity and robustness of the System GMM estimations. The absence of second-order serial correlation. The diagnostic tests show that the System GMM estimations are valid and reliable. There is no second-order serial correlation, and both the Sargan and Hansen tests are passed, indicating that the instruments are suitable and that endogeneity has been handled. These results strengthen the findings and support the study's contribution to research methods. Asset allocation and sustainable capital structures. The mixed effects observed for institutional quality, age, and credit risk indicators further emphasize the importance of model specification and instrument strength. By adopting a continental perspective and incorporating institutional quality within a dynamic GMM framework, this study bridges the gap between micro-level banking behavior and macro-institutional environments, thereby extending the existing literature on credit risk and financial performance.

5. Conclusion and Recommendations

The findings demonstrate that effective credit risk management and asset allocation are critical determinants of bank financial performance in Sub-Saharan Africa. The results suggest that profitability is persistent, with past performance influencing current returns. Although increased lending can enhance profits, elevated credit risk, weak institutional frameworks, and excessive leverage pose significant threats to banks' long-term success.

Non-performing loans (NPLs) negatively impact return on assets (ROA), underscoring the necessity for robust credit risk evaluation and monitoring. Banks are advised to enhance loan assessment procedures, borrower screening, and the implementation of early warning systems to mitigate default risk. Additionally, a higher loan-to-deposit ratio may improve profitability if lending is managed prudently. However, an excessive

loan-to-asset ratio can adversely affect financial performance if not properly controlled. Institutional quality exerts complex yet significant effects. While stronger institutions may increase operational costs and temporarily reduce profits, they are essential for ensuring long-term stability and effective risk management. Similarly, excessive leverage diminishes profitability, highlighting the importance of maintaining sustainable capital structures.

In summary, enhancing bank profitability in Sub-Saharan Africa requires a balance of effective credit risk management, strategic asset allocation, and prudent leverage within a robust institutional framework. Policymakers and regulators, particularly central banks, should implement stricter loan standards, strengthen supervisory practices, and ensure compliance with credit limits. Bank managers are encouraged to adopt risk-sensitive lending strategies and adapt operations to evolving institutional conditions to promote long-term stability and growth.
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Author Contributions

The author contributed to conceptualization, formal analysis, results estimation, data tabulation, and manuscript revision, including addressing reviewers' comments.

Funding

Conflicts of Interest

No conflict of interest.

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