

Credit Risk Management as a Strategic Capability and its Impact on the Financial Performance of Ghanaian Banks

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Abstract

This study investigates the effect of credit risk management on the financial performance of Ghanaian banks, with emphasis on how capital adequacy, non-performing loans, and liquidity influence profitability. Using panel data from 17 commercial banks from 2012 to 2021, the study employs a quantitative design with a fixed-effects model to capture the unique dynamics within each bank. Financial performance is measured by Return on Assets (ROA), while key credit risk indicators include the capital adequacy ratio, non-performing loan ratio, and liquidity ratio. The study also controls for bank-specific and macroeconomic factors. The results reveal that credit risk management is a decisive determinant of bank profitability. Specifically, the capital adequacy ratio exhibits a significant positive effect on ROA, indicating that well-capitalised banks are more resilient and efficient in absorbing financial shocks. Conversely, non-performing loans exert a significant negative influence on profitability, underscoring the threat that poor asset quality poses to bank earnings and stability. Liquidity, although positively related to ROA, is statistically insignificant, suggesting its role is primarily stabilising rather than profit-generating. The findings validate the propositions of Risk Management Theory and Agency Theory, highlighting that financial performance depends not only on regulatory compliance but also on internal governance and strategic resource deployment. The study contributes to the empirical literature by providing context-specific evidence from an emerging African economy. It offers clear, practical guidelines for both regulators and bank managers, helping them enhance credit appraisal, monitor loans more proactively, and manage capital to promote profitability and business sustainability.

Keywords: Credit Risk Management, Financial Performance, Ghanaian Banks, Non-Performing Loans, Capital Adequacy

Introduction

The financial performance of banking institutions worldwide largely depends on the efficiency of their credit risk management systems (Kwashie et al., 2022). The global financial crisis of 2008 underscored the catastrophic consequences of weak credit assessment, poor loan monitoring, and inadequate regulatory oversight (Mahmood & Ahmed, 2022). Since then, credit risk management has become a cornerstone of banking supervision, as regulators and financial institutions alike seek to safeguard profitability and systemic stability through sound risk governance frameworks (Sahiti et al., 2022). Effective risk management allows banks to identify, evaluate, and mitigate potential credit losses while aligning risk-taking with profitability objectives.

In Ghana, the banking sector has experienced significant reforms and structural shifts following episodes of bank failures, recapitalisation directives, and new prudential regulations by the Bank of Ghana. These reforms, such as the introduction of Basel II/III frameworks, the 2017–2019 recapitalisation policy, and enhanced monitoring of non-performing loans (NPLs), were designed to strengthen credit risk management and improve institutional resilience (Nyebare et al., 2023). However, challenges persist. High levels of NPLs, inadequate liquidity management, and weak internal controls continue to undermine profitability and raise questions about the efficacy of risk management practices in the Ghanaian banking context (Kwashie et al., 2022). These persistent weaknesses suggest a possible disconnect between regulatory reforms and actual improvements in bank-level credit risk management performance.

Empirical evidence on the nexus between credit risk management and financial performance has been mixed across countries and contexts. Several studies (Qazi et al., 2022; Siddique et al., 2022; Saiful & Ayu, 2019; Sleimia, 2020) demonstrate that efficient credit risk practices enhance bank profitability, while others (Ekinici & Poyraz, 2019; Oketch et al., 2018; Bara et al., 2021) find that excessive credit exposure and rising NPLs significantly erode earnings. Theoretically, this divergence may reflect differences in institutional capacity to manage the trade-off between risk and return. As explained by Risk Management Theory, effective risk identification and mitigation directly improve financial performance by reducing expected losses and earnings volatility (Bouri et al., 2021). Likewise, Agency Theory emphasises that conflicts of interest between shareholders and managers can lead to suboptimal credit decisions if incentive structures do not align with prudent risk-taking (Meckling & Jensen, 1976). Hence, when managerial incentives prioritise short-term gains over long-term asset quality, banks may increase exposure to non-performing loans, undermining profitability despite regulatory safeguards.

Despite these theoretical insights, a critical empirical and conceptual gap remains in understanding how credit risk management mechanisms, guided by both Risk Management and Agency theoretical perspectives, translate into financial performance outcomes in the Ghanaian banking sector. Existing studies often predate the recent post-recapitalisation regulatory environment or fail to explicitly integrate these theoretical lenses to explain why risk management systems succeed or fail in enhancing profitability. Moreover, few studies have simultaneously accounted for both micro-level (bank-specific) and macro-level (economic and regulatory) factors within a longitudinal framework that captures how risk governance evolves.

This study addresses these gaps by examining the effect of credit risk management on the financial performance of Ghanaian banks from 2012 to 2021, a period covering both pre- and post-reform phases. Drawing on Risk Management Theory, the study examines how capital adequacy, liquidity, and loan quality affect profitability by enhancing risk-absorption capacity. Guided by Agency Theory, it also explores how managerial alignment and governance mechanisms influence the prudent management of credit portfolios. By employing a panel fixed-effects model, this research contributes to the literature in three ways. First, it provides post-reform, theory-grounded evidence on how credit risk management affects profitability in Ghana's banking sector. Second, it integrates two complementary theoretical frameworks to explain both the technical and behavioural dimensions of credit risk governance. Third, it offers actionable implications for bank managers and regulators on aligning credit risk practices with sustainable performance and stakeholder interests.

The remainder of the paper is structured as follows: Section 2 presents the theoretical and empirical literature; Section 3 outlines the research methodology and model specification; Section 4 discusses the empirical results and implications; and Section 5 concludes with policy recommendations and directions for future research.

Literature Review

Theoretical Framework

Understanding the relationship between credit risk management and financial performance requires a multidimensional theoretical perspective. This study integrates Risk Management Theory, Agency Theory, and the Resource-Based View (RBV) to explain how Ghanaian banks manage credit exposures, align managerial incentives, and leverage internal capabilities to achieve financial stability and profitability. These complementary theories jointly explain why some banks perform better under similar risk conditions and how internal governance, capital adequacy, and resource deployment determine long-term sustainability.

Risk Management Theory

Risk Management Theory provides the foundation for understanding how financial institutions identify, assess, and mitigate risks to sustain performance. Originating from Markowitz's (1952) modern portfolio theory and expanded by Engle (1982), it emphasises diversification, capital adequacy, and proactive risk assessment as mechanisms for reducing volatility in financial returns. In the context of banking, the theory posits that systematic, well-structured risk management enhances a bank's ability to absorb losses, maintain liquidity, and ensure capital soundness (Bouri et al., 2021).

From this perspective, credit risk management is not merely a compliance activity but a strategic function that safeguards earnings against loan defaults. Empirical evidence supports that effective credit appraisal, monitoring, and provisioning reduce non-performing loans (NPLs) and improve profitability (Agbana, et al., 2023). In Ghana, where high NPL ratios persist despite regulatory interventions, the theory underscores that robust risk management systems directly translate into enhanced capital adequacy and financial performance. Thus, it forms the first theoretical pillar linking effective risk practices to stable profitability.

Agency Theory

While Risk Management Theory explains how institutions manage risks technically, Agency Theory explains why these mechanisms often fail due to misaligned incentives. Meckling and Jensen (1976) introduced the theory to describe the conflict of interest between principals (shareholders) and agents (bank managers). In the banking context, management may engage in excessive risk-taking to maximise short-term returns or bonuses, leaving shareholders and depositors exposed to credit losses (Chen et al., 2012). Similarly, moral hazard problems can arise in borrower–lender relationships when borrowers conceal information or undertake risky projects, increasing default probabilities (Cihak & Hesse, 2010).

Agency Theory, therefore, highlights that ineffective governance and weak monitoring can lead to higher NPLs, capital erosion, and declining profitability. Conversely, aligning managerial incentives with shareholder value through transparent governance, risk-based compensation, and internal audit oversight can foster prudent lending, ensure liquidity discipline, and strengthen credit risk management outcomes (Agbana et al., 2023). In this way, Agency Theory complements Risk Management Theory by introducing the behavioural and governance dimensions of credit risk: performance depends not only on technical controls but also on the alignment of managerial behaviour with organisational objectives.

Resource-Based View (RBV)

To bridge the technical and behavioural dimensions with long-term competitiveness, the Resource-Based View (RBV) offers a third explanatory lens. The RBV, popularised by Barney (1991), asserts that sustainable financial performance arises from the development and deployment of valuable, rare, inimitable, and non-substitutable (VRIN) resources. In the context of Ghanaian banks, credit risk management systems, risk analytics technologies, human expertise, and governance structures constitute internal strategic resources that enhance resilience and profitability (Fosu et al., 2021).

From this perspective, effective credit risk management is not only a compliance necessity but also a strategic resource that differentiates high-performing banks from their competitors. When combined with adequate capital and skilled risk professionals, these capabilities can transform risk governance into a competitive advantage that supports both financial stability and shareholder value creation.

Empirical Literature Review

The effect of credit risk management on banks' financial performance has been a central theme in banking research; however, empirical findings remain fragmented, inconsistent, and often context-dependent. Effective credit risk management is theoretically positioned as a determinant of bank profitability, capital strength, and solvency (Bouri et al., 2021). From a Risk Management Theory perspective, the capability to identify, measure, and mitigate credit exposures determines the sustainability of financial institutions. Conversely, Agency Theory warns that even well-designed risk frameworks may fail when managerial incentives promote excessive risk-taking at the expense of shareholders' interests (Meckling & Jensen, 1976; Chen et al., 2012). This tension between technical efficiency and behavioural misalignment explains the heterogeneous results observed across different empirical studies.

A growing body of literature affirms that robust credit risk management practices improve profitability and stability. Kwashie et al. (2022) found that Ghanaian banks with sound risk assessment systems experience lower default rates and stronger returns on assets. Similarly, Agbana et al. (2023) and Siddique et al. (2022) reported that proactive risk monitoring enhances financial performance by minimising non-performing loans (NPLs) and improving capital adequacy. These results are consistent with the Resource-Based View (RBV), which views risk management capabilities as strategic resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). Banks that invest in advanced credit analytics, staff competence, and governance systems thus gain a competitive edge by converting risk control mechanisms into performance-enhancing capabilities.

However, other studies provide a more cautionary narrative. Duho et al. (2020) and Ekinci and Poyraz (2019) found that credit risk has a significant adverse effect on profitability, arguing that higher NPLs increase loan-loss provisions and reduce the earning capacity of assets. Fosu et al. (2021) confirmed that while capital adequacy enhances profitability, its benefits diminish when credit portfolios deteriorate, as management diverts earnings to cover default exposures. This paradox underscores a double-edged effect: capital strength cushions shocks but cannot compensate for persistent weaknesses in asset quality. Similarly, Temba et al. (2024) demonstrated that excessive exposure to high-risk borrowers magnifies earnings volatility.

The Ghanaian evidence further reveals the limits of regulation-driven reforms. Despite recapitalisation and stricter Basel standards, several banks continue to record high NPL ratios and periodic liquidity crises (Nyebare et al., 2023). Von Tamakloe et al. (2023) observed that Ghanaian bank managers perceive NPLs not only as a financial burden but also as constraints on liquidity planning and credit expansion. This observation suggests that risk management in many banks remains reactive rather than strategic, a compliance exercise rather than a competitive capability. The persistence of high default rates, despite enhanced regulation, signals deeper governance inefficiencies and misaligned incentive structures. This is explained by Agency Theory, which holds that short-term managerial goals undermine prudent credit appraisal and monitoring.

Empirical studies also differ widely in their methodological rigour. While many adopt linear regression models (Agbana et al., 2020), few account for endogeneity or dynamic interactions among credit risk indicators, macroeconomic shocks, and managerial behaviour. This methodological gap limits causal inference and obscures the mechanisms through which credit risk translates into financial outcomes. Moreover, most Ghanaian studies rely on bank-level quantitative data, neglecting qualitative dimensions such as governance culture, digital credit risk analytics, and risk-awareness training, all of which the RBV identifies as intangible capabilities that shape performance differentials (Fosu et al., 2021; Bouri et al., 2021). The existing empirical literature often treats risk management as a homogenous construct, overlooking its multidimensionality. Credit risk, liquidity management, and capital adequacy are interdependent and should not be analysed in isolation. Weakness in any dimension can offset the benefits of others, a reality evident in Ghana's banking crises, where high liquidity holdings coexisted with rising NPLs and eroding profits. This interplay reflects the agency risk paradox: even well-capitalised banks may underperform when governance incentives favour loan volume over loan quality.

Despite this extensive scholarship, critical gaps persist. Most studies focus narrowly on universal banks, ignoring the distinctive credit risk dynamics of indigenous and smaller financial institutions that lack sophisticated risk infrastructure. Additionally, few studies incorporate the post-2017 banking reforms, which transformed Ghana's regulatory landscape. The existing evidence base, therefore, underrepresents how credit risk management frameworks operate under new capital adequacy regimes and evolving macroeconomic pressures. Furthermore, limited attempts have been made to integrate theory-driven models that explain why and how credit risk management practices influence performance outcomes, rather than simply documenting statistical associations.

Based on the above empirical evidence, we hypothesised the following:

H1: There is a positive and statistically significant relationship between the Capital Adequacy Ratio (CAR) and the Financial Performance of Ghanaian banks.

H2: There is a negative and statistically significant relationship between the Non-Performing Loan Ratio (NPL) and the Financial Performance of Ghanaian banks.

H3: There is a positive but statistically insignificant relationship between the Liquidity Ratio (LR) and the Financial Performance of Ghanaian banks

Conceptual Framework.

The conceptual framework of this study is anchored in Risk Management Theory, Agency Theory, and the Resource-Based View (RBV), which explain how credit risk management operates as a strategic capability that influences banks' financial performance. These theoretical foundations converge on the idea that prudent risk practices, managerial alignment, and the effective utilisation of firm-specific resources are essential for sustaining profitability, resilience, and long-term competitiveness in the banking sector. Figure 1 below presents the details.

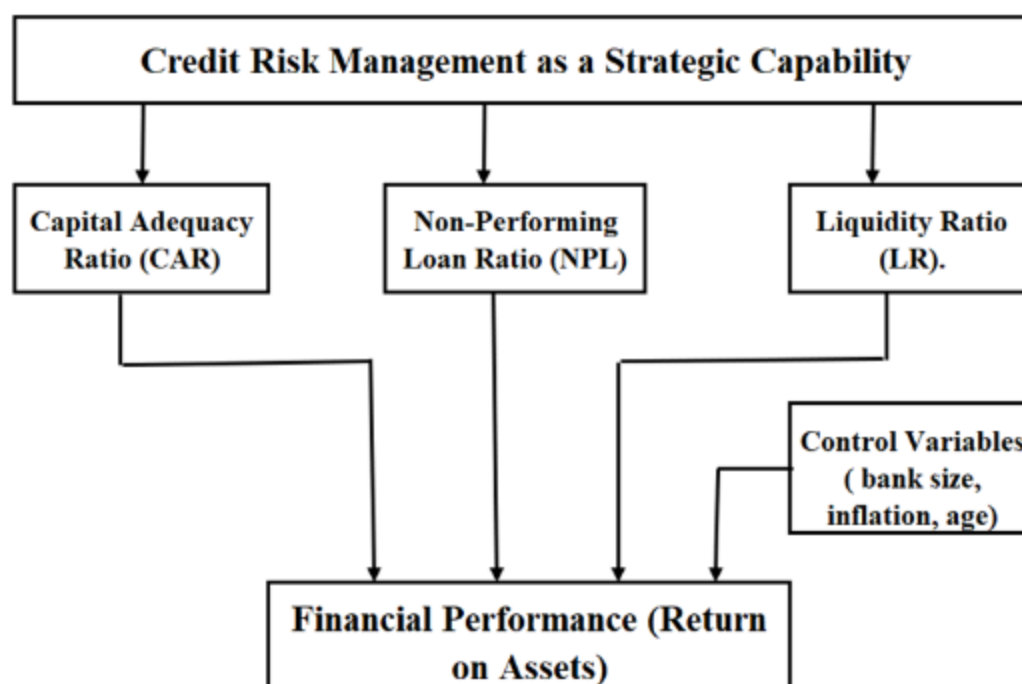


Figure 1: Conceptual Framework

Within this framework, we operationalised Credit Risk Management (CRM) through the Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPL), and Liquidity Ratio (LR). Credit Risk Management is conceptualised as a multidimensional construct that directly affects Financial Performance, measured by Return on Assets (ROA). Empirically, the Capital Adequacy Ratio (CAR) reflects a bank's ability to absorb financial shocks and maintain stability under adverse conditions. Studies such as Fosu et al. (2021), Al Zaidanin and Al Zaidanin, (2021) and Kwashie et al. (2022) affirm that well-capitalised banks exhibit greater resilience, higher investor confidence, and enhanced profitability due to their reduced vulnerability to external disruptions. Consistent with the Risk Management Theory, maintaining adequate capital buffers mitigates insolvency risks and enhances a bank's capacity to manage unexpected losses. Therefore, a positive relationship is expected between capital adequacy and financial performance, implying that banks with strong capital positions are better equipped to manage credit exposure and sustain profitability.

In contrast, the Non-Performing Loan Ratio (NPL) serves as an indicator of credit quality and asset soundness within the banking portfolio. High levels of NPLs often signal weak loan appraisal processes and ineffective recovery mechanisms, both of which undermine profitability. Empirical studies by Ekinci and Poyraz (2019), Oketch et al. (2018), and Von Tamakloe et al. (2023) consistently report a significant negative association between NPLs and bank profitability. This relationship is theoretically supported by Agency Theory, which posits that information asymmetry and misaligned incentives between bank management and shareholders can lead to excessive risk-taking, thereby increasing credit defaults. Effective management of NPLs is therefore essential to preserving asset quality, minimising financial distress, and sustaining long-term profitability.

The Liquidity Ratio (LR) captures a bank's ability to meet short-term obligations without incurring losses, reflecting its operational flexibility and funding stability. Empirical evidence on liquidity and profitability presents mixed findings. While studies such as Agbana et al. (2020) and Kwashie et al. (2022) indicate that adequate liquidity mitigates financial shocks and supports stability, excessive liquidity holdings can constrain lending and reduce profitability. Drawing from the Resource-Based View (RBV), liquidity can be viewed as a valuable internal resource that, when optimally managed, enhances operational efficiency and strengthens a bank's capacity to respond to market uncertainties. Accordingly, this study anticipates a positive, albeit modest, association between liquidity and financial performance.

To ensure empirical robustness, the framework incorporates three control variables: bank size, inflation rate, and bank age that account for both firm-specific and macroeconomic influences on financial performance. Larger and older banks often benefit from economies of scale, institutional learning, and brand credibility, while inflation may have either a positive or negative effect depending on monetary policy conditions and interest rate transmission mechanisms. Prior studies, including Bara et al. (2021) and Kaimu and Muba (2021), emphasise that these variables significantly moderate the relationship between credit risk management and profitability.

Research Methodology

This section outlines the research methodology used to examine the effect of credit risk management on the financial performance of Ghanaian banks. It details the research design, data sources, and analytical techniques.

The study employed a quantitative research methodology, utilising secondary data from the annual financial statements of 17 commercial banks from 2012 to 2021. The selection of banks and the time period for this study were based on data availability. Data were sourced from bank websites, the Bank of Ghana, and the Ghana Statistical Service. Analytical procedures included descriptive statistics, Pearson correlation analysis, and multiple regression using the Ordinary Least Squares (OLS) method with a fixed-effect model. Diagnostic tests, including the Hausman and Breusch-Pagan tests, were conducted to assess robustness. Statistical significance was set at $P < 0.05$ and $P < 0.01$. Ethical approval was obtained from the relevant institutional review board. The description and measurement of variables are presented in Table 1.

Model Specification

The study specifies a panel-data regression model for estimation, following Kwashie et al. (2022) and Siddique et al. (2022). The panel estimation technique is appropriate given the panel nature of the data. It captures both cross-sectional and time-series variation, enabling a comprehensive understanding of the banking sector's dynamics. The following equation was estimated:

$$FP_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 NPL_{it} + \beta_3 LR_{it} + \beta_4 SIZE_{it} + \beta_5 INF_{it} + \beta_6 AGE_{it} + \mu_i + \varepsilon_{it}$$

Where FP_{it} = Financial performance (measured by Return on Assets, ROA); **CAR**, **NPL**, **LR** = Capital adequacy, non-performing loans, and liquidity risk; **SIZE**, **INF**, **AGE** = Bank size, inflation rate, and bank age; β_0 = intercept; β_1 – β_6 = Coefficients of explanatory variables; μ_i = Unobserved bank-specific effect; and ε_{it} = Random error term

Table 1

Variables Description and Measurement

Category	Variables	Symbol	Measures	Justification
Dependent Variable	Return on Asset	ROA	$\frac{\text{Net income}}{\text{Total assets}}$	Kwashie et al. (2022); Siddique et al., (2022)
Independent Variables	Capital Adequacy Ratio	CAR	$\frac{\text{Risk weighted, assets}}{\text{Total equity}}$	Kwashie et al. (2022); Siddique et al. (2022)
	Non-performing loans	NPL	$\frac{\text{Non – performing loans}}{\text{total gross loans}}$	Kwashie et al. (2022); Siddique et al., (2022)
	Liquidity risk	LR	$\frac{\text{Total loans}}{\text{Total deposits}}$	Siddique et al., (2022) & Khan et al. (2022)
Control Variable	Bank Size	BZ	Log (total assets)	Kwashie et al. (2022); Siddique et al. (2022)
	Inflation	INF	Annual inflation rate declared by the World Bank	Siddique et al. (2022)
	Age	AGE	Age of commercial banks	Kwashie et al. (2022); Siddique et al. (2022)

Results and Discussion

Results

This section presents and interprets the study's empirical findings. The discussion is structured around three analytical stages: (1) preliminary data analysis, (2) correlation diagnostics, and (3) inferential analysis. The discussion integrates theoretical reasoning to explain the observed relationships between credit risk indicators and the financial performance of Ghanaian banks. Table 2 below presents the descriptive statistics.

Table 2

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	170	0.031	0.020	-0.037	0.074
CAR	170	0.216	0.085	0.083	0.600
NPL	170	0.164	0.110	0.010	0.720
LR	170	0.788	0.234	0.000	1.475
SIZE	170	17.031	2.927	13.004	22.416
INF	170	0.120	0.035	0.071	0.174
AGE	170	37.265	32.018	3.000	125.00

The descriptive results reveal that Ghanaian banks were, on average, profitable during the study period, with a mean Return on Assets (ROA) of 3.1%. However, the minimum ROA value (-3.7%) indicates that some banks recorded losses, underscoring variability in financial performance across the sector. The average Capital Adequacy Ratio (CAR) of 21.6% reflects overall compliance with the Basel II capital threshold. However, the minimum value of 8.3% suggests that certain banks operated near or below regulatory limits, exposing them to solvency risks.

The mean Non-Performing Loan (NPL) ratio of 16.4%, with a maximum of 72% signals serious asset quality challenges in some institutions. This aligns with prior findings by Kwashie et al. (2022), who identified persistent NPL accumulation as a major constraint on profitability. The mean Liquidity Ratio (LR) of 78.8% indicates that banks generally maintained adequate liquid reserves, though the minimum value of 0% suggests episodes of severe liquidity strain. The wide range in bank age and size illustrates the structural diversity of Ghana's banking system, with large, long-established banks coexisting with relatively young, smaller institutions.

From a Risk Management Theory standpoint, these variations reflect differences in banks' capabilities to manage credit exposure and liquidity trade-offs. Similarly, the Resource-Based View (RBV) suggests that larger or more mature banks may benefit from better-developed risk systems, specialised personnel, and data analytics capacity resources that smaller banks often lack. The analysis reveals several key initial insights. The average Return on Assets (ROA) is 3.1%, confirming that the sampled commercial banks are, on average, profitable. However, the minimum value of -3.7% indicates that some banks experienced losses during the period. Credit risk metrics show significant variation. The Non-Performing Loan (NPL) ratio stands at 72.0%, well above the mean of 16.4%, suggesting severe asset quality issues at some banks. The Capital Adequacy Ratio (CAR) has a mean of 21.6%, suggesting overall regulatory compliance, though the minimum of 8.3% indicates that some banks fell short of the Basel II benchmark. The Liquidity Ratio (LR) also shows considerable disparity, with a mean of 78.8%

but a minimum of 0%, highlighting potential liquidity shortfalls in parts of the sector. Finally, the control variables reflect a diverse sample, with bank size (SIZE) and age (AGE) showing substantial standard deviations, capturing a broad spectrum of bank maturity and scale within the Ghanaian market.

A Pearson correlation analysis was also conducted to examine relationships among variables and test for multicollinearity. The results are presented in Table 3.

Table 3

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) ROA	1.000						
(2) CAR	0.354	1.000					
(3) NPL	-0.125	-0.052	1.000				
(4) LR	0.210	0.449	0.134	1.000			
(5) SIZE	0.099	0.315	0.208	0.118	1.000		
(6) INF	-0.024	-0.321	0.044	-0.287	-0.092	1.000	
(7) AGE	0.161	-0.066	0.203	0.058	-0.089	-0.045	1.000

All correlation coefficients in Table 3 are below 0.8, indicating that multicollinearity is not a concern in the subsequent regression (Kwashie et al., 2022). The highest correlation value, 0.449, falls well within acceptable limits. Following Lassoued (2018), a coefficient of at least 0.20 with a sample size of at least 100 indicates statistical significance at the 5% confidence level, suggesting that several relationships in the data are meaningful.

The results reveal several important patterns. As expected, a negative correlation (-0.125) exists between Non-Performing Loans (NPL) and Return on Assets (ROA), confirming that an increase in loan defaults adversely affects bank profitability. This finding is consistent with Agency Theory, which attributes poor asset quality to weak internal controls, managerial inefficiencies, and misaligned incentives between bank managers and shareholders. It also aligns with prior empirical findings by Ekinci and Poyraz (2019) and Mensah et al. (2021), which demonstrated that rising NPL levels erode profitability due to higher provisioning costs and impaired asset value. In contrast, both the Capital Adequacy Ratio (CAR) and Liquidity Ratio (LR) show positive correlations with ROA (0.354 and 0.210, respectively). These results support the Risk Management Theory and Resource-Based View (RBV), which emphasise the strategic role of adequate capitalisation and liquidity as buffers against financial distress and as resources that enhance operational stability. Higher CAR values indicate stronger capital positions, which reduce exposure to insolvency risk and promote investor confidence, while sufficient liquidity enables banks to meet obligations promptly and take advantage of lending opportunities, thereby improving financial performance. However, the modest strength of the liquidity–profitability relationship suggests that liquidity, while important for stability, may not directly generate profits but instead serves as a safeguard for sustaining performance under adverse conditions.

The control variables also exhibit relationships that offer additional insights into the structure and dynamics of Ghana's banking sector. Bank size (SIZE) has a weak positive correlation (0.099) with ROA, implying that larger banks may achieve marginally higher profitability through economies of scale, diversification, and broader customer bases. This observation aligns with the Resource-Based View, which posits that larger institutions possess

superior organisational resources such as advanced technology, skilled personnel, and established market networks that enhance efficiency and competitiveness. Nevertheless, the low magnitude of this correlation suggests that size alone does not guarantee superior performance, as managerial efficiency and strategic capability remain decisive factors. Inflation (INF) shows a weak negative correlation (-0.024) with profitability, suggesting a potentially adverse macroeconomic environment for Ghanaian banks. High inflation can erode real interest margins, distort asset values, and increase credit risk, especially in markets where lending rates do not fully adjust to price volatility. This result is consistent with prior empirical evidence by Kaimu and Muba (2021), who found that persistent inflation undermines bank stability by increasing the cost of funds and reducing customer purchasing power. Lastly, bank age (AGE) shows a positive correlation (0.161) with ROA, suggesting that older banks tend to perform better than younger banks. This relationship highlights the role of institutional experience, learning effects, and established reputation in driving financial success. Older banks often benefit from accumulated managerial expertise, established risk cultures, and long-term customer relationships that enhance their ability to manage credit exposure effectively. This finding resonates with RBV arguments that organisational maturity enhances the development of unique, inimitable resources that sustain profitability over time.

Following the correlation analysis, which confirmed the absence of multicollinearity and revealed meaningful relationships among the study variables, the next diagnostic step was to determine the most suitable panel estimation technique for the regression analysis. To this end, the Hausman specification test was conducted to compare the fixed-effects and random-effects estimators. The test results are presented in Table 4.

Table 4

Hausman (1978) Specification Test

	Coef.
Chi-square test value	13.113
P-value	0.041

The results, reported in Table 4, show a chi-square statistic of 13.113 with a corresponding probability value of 0.041. Since this p-value is below the conventional 5 per cent significance threshold, the null hypothesis favouring the random-effects model is rejected. Consequently, the fixed-effects estimator is identified as the most appropriate and consistent model for this analysis. This finding implies that variations in the financial performance of Ghanaian banks are better explained by firm-specific characteristics that remain constant over time, such as governance structures, managerial culture, and internal control systems. In line with Agency Theory and the Resource-Based View, this reinforces the argument that bank-level attributes, rather than random external shocks, play a dominant role in shaping the relationship between credit-risk indicators and profitability.

Having confirmed, through the Hausman specification test, that the fixed-effects estimator yields the most consistent and unbiased results, the study proceeded with the regression analysis to quantify the influence of credit risk management variables on the financial performance of Ghanaian banks. The fixed-effects model was preferred because it accounts

for unobserved heterogeneity across banks — such as managerial efficiency, governance culture, and institutional risk appetite — that may otherwise bias the results. The details are presented in Table 5 below.

Table 5
Regression Results

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
CAR	0.049	0.015	3.25	0.001	0.019	0.078	***
NPL	-0.034	0.012	-2.84	0.005	-0.058	-0.011	***
LR	0.000	0.005	0.02	0.987	-0.010	0.010	
SIZE	-0.001	0.001	-0.99	0.321	-0.003	0.001	
INF	0.024	0.030	0.80	0.424	-0.035	0.082	
AGE	0	0	0.13	0.900	0	0	
Constant	0.037	.016	2.29	0.022	0.005	0.069	**
Mean dependent var	0.031		SD dependent var	0.020			
Overall r-squared	0.087		Number of obs	170			
Chi-square	23.435		Prob > chi2	0.001			
R-squared within	0.132		R-squared between	0.062			

*** $p < .01$, ** $p < .05$, * $p < .1$

The regression results in Table 5 present the empirical estimation of the effect of credit risk management on the financial performance of Ghanaian banks, measured by Return on Assets (ROA). The fixed-effects model was selected based on the Hausman test, which confirmed its appropriateness for controlling bank-specific characteristics that remain constant over time. The model explains approximately 13.2% of within-bank variations in profitability ($R^2 = 0.132$), with an overall model significance of $p < 0.01$, suggesting that the explanatory variables jointly influence financial performance.

The results show a positive and statistically significant relationship between capital adequacy and profitability ($\beta = 0.049$, $t = 3.25$, $p < 0.01$). This confirms H_1 , which hypothesised that higher capital adequacy enhances bank performance. The finding implies that a 1% increase in CAR improves ROA by 0.049%, demonstrating that well-capitalised banks are better able to absorb financial shocks, maintain stability, and sustain profitability. This result aligns with Risk Management Theory, which emphasises capital buffers as a cushion against insolvency risk, and with Agency Theory, which argues that higher capitalisation reduces agency costs by aligning managerial decisions with shareholder interests. Empirically, the finding corroborates studies by Embaye et al. (2017) and Fosu and Agyei-Boapeah (2021), which reported that adequately capitalised banks attract investor confidence and enjoy lower financing costs.

A significant negative relationship exists between non-performing loans and profitability ($\beta = -0.034$, $t = -2.84$, $p < 0.01$), thereby confirming H_2 that higher NPL ratios reduce financial performance. A 1% increase in NPLs is estimated to lead to a 0.034% decline in ROA. This outcome demonstrates that deteriorating loan quality directly erodes profits by increasing provisioning for bad debts and reducing interest income. The finding supports Agency Theory, which attributes such inefficiencies to moral hazard and poor credit monitoring, and Risk Management Theory, which links weak loan appraisal practices to elevated default risk. This result echoes prior evidence from Ebenezer and Omar (2016), Oketch et al. (2018), and Ekinici

and Poyraz (2019), all of whom established that asset quality deterioration constrains banks' profitability and solvency.

The liquidity ratio, though positively signed ($\beta = 0.000$, $p = 0.987$), is statistically insignificant, leading to the rejection of H_3 , which posited a significant relationship between liquidity and profitability. This suggests that liquidity levels among Ghanaian banks do not directly affect profitability. While liquidity enhances solvency and operational stability, excessive liquidity may constrain income generation due to idle funds and reduced lending activity. From the Resource-Based View (RBV), this finding implies that liquidity, though an essential internal resource, must be strategically optimised to balance short-term stability and long-term value creation.

The control variables bank size, inflation, and age exhibit statistically insignificant effects on profitability, although their signs and directions provide important contextual insights. Bank size ($\beta = -0.001$, $p = 0.321$) has a negative but weak effect on ROA, suggesting that scale economies alone do not guarantee profitability. Larger banks may face higher administrative costs and inefficiencies, consistent with the RBV's emphasis on the quality rather than the quantity of resources as the source of advantage. Inflation ($\beta = 0.024$, $p = 0.424$) shows a positive but insignificant relationship, implying that banks may partially adjust interest rates in inflationary environments to maintain margins. However, persistent inflation could still distort real asset values and increase credit risk, as observed by Kaimu and Muba (2021). Bank age ($\beta = 0.000$, $p = 0.900$), though insignificant, indicates that institutional experience and established risk culture alone may not guarantee profitability unless accompanied by innovation, technological adaptation, and dynamic credit practices.

Overall, the findings confirm that credit risk management functions as a strategic capability that significantly shapes financial performance in Ghanaian banks. The acceptance of H_1 and H_2 underscores the importance of capital strength and asset quality as critical determinants of profitability, while the rejection of H_3 indicates that liquidity management plays a stabilising but indirect role. The control variables, though not statistically significant, highlight that profitability in Ghana's banking sector is driven less by size or longevity and more by effective risk governance, dynamic capital management, and disciplined credit control. These results reaffirm that banks must treat credit risk management not merely as a regulatory requirement but as a strategic competency that underpins sustainable financial success.

To ensure the robustness and validity of the fixed-effects regression estimates, diagnostic tests for serial correlation and heteroscedasticity were conducted, as summarised in Table 6.

Table 6

Diagnostic Tests

Breusch-Godfrey LM test for autocorrelation	df	Prob>Chi2
71.540	6	0.000

H_0 : no serial correlation

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Assumption: Normal error terms

Variable: Fitted values of ROA

H0: Constant variance

$$\chi^2(1) = 2.37$$

$$\text{Prob} > \chi^2 = 0.1240$$

The Breusch–Godfrey LM test revealed the presence of autocorrelation in the Return on Assets (ROA) model, indicated by a significant chi-square statistic ($p < 0.05$), while the Breusch–Pagan/Cook–Weisberg test showed no evidence of heteroscedasticity, as the chi-square value was statistically insignificant ($p > 0.05$). The detection of autocorrelation suggests that profitability patterns among Ghanaian banks exhibit time-dependent behaviour, possibly reflecting persistent credit-risk trends and regulatory adjustments that evolve gradually rather than abruptly. Therefore, this leads to rejection of the null hypothesis that there is no serial correlation. This is consistent with Risk Management Theory, which views risk exposure and performance outcomes as dynamic processes influenced by continuous monitoring and adaptation. However, the absence of heteroscedasticity confirms that the error variances are stable across observations, enhancing the reliability of the estimated coefficients. In light of these results, the use of the fixed-effects estimator remains appropriate. However, the presence of serial correlation implies that future models could be further refined using robust or Driscoll–Kraay standard errors to correct for time-series dependence and strengthen inference.

Discussion

The regression findings provide compelling empirical evidence that credit risk management indicators are critical determinants of bank profitability in Ghana, reaffirming that risk governance lies at the core of financial stability and performance. The results reveal distinct but interrelated mechanisms through which capital adequacy, loan quality, and liquidity interact to influence returns, consistent with the study's theoretical foundations, Risk Management Theory, Agency Theory, and the Resource-Based View (RBV).

The Capital Adequacy Ratio (CAR) has a positive, statistically significant effect on Return on Assets (ROA), indicating that well-capitalised banks are more resilient and better able to sustain profitability. A 1% increase in CAR improves ROA by approximately 0.049%, reflecting the ability of strong capital bases to absorb unexpected losses and enhance confidence among depositors and investors. This finding supports Agency Theory, which posits that higher capitalisation reduces agency costs by aligning managerial actions with shareholder interests and discouraging excessive risk-taking (Jensen & Meckling, 1976). Similarly, Risk Management Theory contends that adequate capital buffers serve as protective mechanisms against credit shocks, promoting financial stability and institutional credibility (Bouri et al., 2021). Empirically, the result aligns with Fosu and Agyei-Boapeah (2021) and Embaye et al. (2017), who reported a positive relationship between CAR and profitability in emerging markets. However, it diverges from Ekinçi and Poyraz (2019), whose study in Turkey found mixed evidence—potentially reflecting differences in supervisory intensity, macroeconomic volatility, and the depth of capital markets. The implication is that, in Ghana, capital strength operates not merely as a regulatory compliance measure but as a strategic capability that differentiates sustainable banks from vulnerable ones.

The Non-Performing Loans (NPL) ratio shows a significant and negative relationship with profitability, confirming that deteriorating asset quality remains a fundamental threat to bank performance. A 1% increase in NPLs leads to an estimated 0.034% decline in ROA, underscoring how default risk erodes net interest margins and diminishes shareholder value. This outcome resonates with findings by Oketch et al. (2018), Duho et al. (2020), and Ekinci and Poyraz (2019), who established that rising loan delinquencies depress profitability through provisioning costs and impaired interest income. From a Risk Management Theory perspective, persistent NPL accumulation reflects deficiencies in credit appraisal, monitoring, and recovery systems, which weaken banks' risk–return balance. Agency Theory offers an additional governance explanation: misaligned incentives and moral hazard, such as politically motivated lending or aggressive loan expansion, often undermine prudent credit practices. In Ghana, this outcome signals a persistent structural governance gap, as post-2017 banking reforms have improved supervision but not fully harmonised internal credit risk management across banks. Through the lens of the RBV, this finding also highlights the heterogeneity of risk capabilities: banks that strategically invest in credit analytics, a risk-oriented culture, and skilled personnel are better able to convert these internal resources into superior performance, even under similar regulatory and macroeconomic conditions.

The Liquidity Ratio (LR), though positively signed, is statistically insignificant, implying that liquidity in Ghanaian banks primarily serves a stabilising rather than profit-enhancing function. This result suggests that while adequate liquidity strengthens solvency and operational resilience, excess reserves may constrain income generation by reducing lending opportunities. It aligns with Nyebar et al. (2023), who observed that high liquidity levels in Ghana limit earning potential, and contrasts with Siddique et al. (2022) in South Asia, where liquidity efficiency improved profitability. The divergence underscores contextual variations in financial market depth and liquidity utilisation in emerging markets like Ghana, limited investment options mean that excess liquidity seldom translates into higher returns. Theoretically, this outcome supports Risk Management Theory's assertion that liquidity functions as a buffer against systemic shocks rather than a direct profitability driver.

Interestingly, the control variables bank size, age, and inflation exert statistically insignificant effects on profitability, suggesting that structural characteristics and macroeconomic factors play secondary roles compared to internal governance quality and strategic resource management. The weak and negative effect of bank size implies that scale economies alone do not guarantee superior performance, as larger banks may face diseconomies of scale and bureaucratic inefficiencies. The positive but insignificant coefficient of inflation indicates that while banks may partially adjust lending rates to offset rising costs, macroeconomic volatility still constrains profitability. The insignificance of bank age suggests that longevity and institutional maturity, though beneficial for experience and brand credibility, are insufficient without adaptive risk management systems. These findings reinforce the Resource-Based View, emphasising that profitability heterogeneity arises less from structural differences and more from how effectively banks deploy and integrate their internal resources—technological capacity, governance quality, and human expertise—to manage risk dynamically.

Conclusion

This study provides compelling empirical evidence that credit risk management is a fundamental determinant of financial performance in Ghana's banking sector. Drawing on panel data from 17 commercial banks (2012–2021), the findings confirm that capital adequacy, non-performing loans, and liquidity risk collectively shape banks' profitability profiles. The significant positive effect of the Capital Adequacy Ratio (CAR) on Return on Assets (ROA) demonstrates that a strong capital base enhances financial resilience, mitigates exposure to unexpected shocks, and promotes investor confidence. This outcome validates the propositions of Risk Management Theory and Agency Theory, which assert that well-capitalised banks can absorb risk efficiently while aligning managerial decisions with long-term shareholder value. Conversely, the significant negative influence of Non-Performing Loans (NPLs) underscores that weak credit appraisal and ineffective loan monitoring continue to erode profitability. This finding resonates with the behavioural predictions of Agency Theory, which holds that misaligned incentives and governance failures can lead to excessive risk-taking. It also emphasises that credit quality management is not a regulatory compliance task but a strategic necessity for sustainability. Although liquidity showed an insignificant relationship with profitability, its role as a stabilising factor remains evident. In line with Risk Management Theory, liquidity ensures solvency and operational continuity, serving as a buffer against systemic uncertainty rather than a direct profitability driver.

Policy and Practical Recommendations

The empirical findings of this study reaffirm that effective credit risk management is indispensable for the profitability, resilience, and sustainability of Ghanaian banks. We, therefore, offered the following recommendations:

1. The Bank of Ghana should continue to enforce stringent capital adequacy requirements while introducing counter-cyclical buffers that reflect evolving market conditions and bank-specific vulnerabilities. Strengthening supervisory oversight and adopting risk-based monitoring frameworks will ensure that regulatory standards remain responsive to institutional risk profiles rather than applying a uniform approach across all banks.
2. Regulators should mandate the adoption of early warning systems and advanced credit risk analytics in banks' reporting frameworks to facilitate the timely detection of problem loans and prompt corrective measures.
3. There is a need to reinforce governance and accountability mechanisms by ensuring robust board oversight, independence of internal audit functions, and periodic fit-and-proper evaluations for directors and key risk management officers.
4. Policymakers should encourage the digital transformation of risk management by deploying automated risk assessment tools, artificial intelligence, and digital credit scoring models to improve credit appraisal accuracy and efficiency.
5. The establishment of a centralised Credit Risk Intelligence Repository jointly managed by the Bank of Ghana and the Ghana Association of Banks would help reduce information asymmetry, improve sector-wide credit assessments, and mitigate systemic contagion from borrower defaults.

Contribution of the Study

This study contributes to the literature by integrating Risk Management Theory, Agency Theory, and the Resource-Based View to explain how credit risk management functions as a strategic capability that drives bank performance. Empirically, it provides

updated evidence from Ghana's post-reform banking sector, demonstrating that capital strength and loan quality, not structural factors such as size or age, are the primary determinants of profitability. In the context of the findings, internal governance quality and risk-management capabilities shape bank outcomes, offering regulators and managers actionable guidance to strengthen credit systems and financial stability.

Limitations of the Study

This study is limited by its reliance on secondary quantitative bank-level data from 2012–2021, which excludes recent post-COVID-19 and digitalisation effects, as well as qualitative governance factors. While the fixed-effects model controls for heterogeneity, it restricts generalisability, indicating the need for future mixed-method and dynamic panel research.

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