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Loan Defaults and Financial Performance in Rural Banks: An Empirical Assessment of Internal and Macroeconomic Determinants

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Abstract

This study examines the impact of loan default on the financial performance of rural banks in Ghana, recognizing that while lending constitutes the core operational activity of commercial banks, it simultaneously represents their primary source of financial risk exposure. Both internal institutional variables and external macroeconomic determinants of loan default are systematically investigated. A quantitative, explanatory research design is employed, utilizing panel data regression analysis to assess relationships between loan default indicators, financial performance measures, and prevailing macroeconomic conditions. Empirical findings reveal that return on equity (ROE) and asset quality are the dominant internal determinants exerting significant negative effects on financial performance through loan default channels. Externally, interest rates, unemployment, and inflation are identified as critical macroeconomic drivers of default risk. The study underscores an urgent need for rural banks to strengthen credit risk management frameworks, with particular emphasis on rigorous collateralization practices prior to loan disbursement and the institutionalization of early warning systems for timely identification of non-performing loans. Continuous monitoring of asset quality and macroeconomic indicators is strongly recommended, given their demonstrated influence on default outcomes and overall financial performance.

Keywords: Loan defaults; Financial performance; Rural banks; Panel data analysis; Macroeconomic determinants

Introduction

Loan portfolios constitute the dominant asset component of banking institutions and remain the primary source of income generation through interest earnings and related fees [1,2]. Consequently, lending activities are central to banks' intermediation role and profitability objectives, as they directly influence key financial performance indicators such as return on equity (ROE). By extending credit to households and firms, banks stimulate economic activity while simultaneously exposing themselves to credit risk, particularly the risk of loan default. Empirical evidence consistently demonstrates that while loan expansion enhances profitability under stable conditions, deteriorating loan quality significantly undermines banks' financial performance [3-5]. Moreover, in recent banking literature, non-performing loans (NPLs) have been identified as a principal driver of banking distress and financial fragility. Alnabulsi systematically documented that rising NPL ratios weaken asset quality, erode capital buffers and impair profitability across both advanced and emerging banking systems [6]. Similarly, Radivojevic and Golitsis showed that poor loan performance reflects deficiencies in credit appraisal, monitoring and macroeconomic stability [7]. These findings underscore the critical role of asset quality in sustaining bank profitability, particularly in environments characterized by informational asymmetries and borrower vulnerability. Within developing economies, the NPL–profitability nexus becomes even more pronounced due to structural constraints such as limited diversification, weaker legal enforcement mechanisms and heightened exposure to macroeconomic shocks [8,9]. Similarly, recent empirical studies further reveal that rising loan defaults not only reduce banks' earnings but also undermine investor confidence and growth

prospects, thereby reinforcing adverse feedback loops within the financial system [10-11]. As a result, the management of credit risk and asset quality has become a central concern for regulators and bank managers alike.

In Ghana, credit provision remains a cornerstone of banking operations, with consumer and microenterprise lending forming a significant share of banks' asset portfolios [12-14]. Banking institutions extend loans to both corporate entities and individuals; however, rural and community banks (RCBs) occupy a distinct niche within the financial system. RCBs primarily serve rural and semi-urban communities and account for approximately 45 percent of Ghana's banking population, largely through microcredit and microfinance services targeted at financially excluded groups [15]. Consequently, a substantial proportion of their loan portfolios comprises relatively small, unsecured or semi-secured loans, which heightens exposure to default risk. While the dominance of microfinance services enables rural banks to expand financial inclusion, it simultaneously increases their vulnerability to credit risk, particularly when lending to low-income and informal sector borrowers [16]. Empirical evidence suggests that such borrower segments are more sensitive to macroeconomic fluctuations, including inflationary pressures, unemployment and income volatility, which can impair repayment capacity and elevate default rates [17,18]. Consequently, the accumulation of NPLs poses a significant threat to the asset quality and financial sustainability of rural and community banks. To mitigate credit risk, banks in Ghana employ a range of appraisal and monitoring mechanisms, including borrower screening, credit committee assessments, collateral evaluation and continuous loan monitoring [19]. Effective implementation of these mechanisms is critical for preserving asset quality and preventing the migration of performing loans into non-performing status. However, despite these controls, weaknesses persist in credit evaluation procedures, insider lending practices and loan policy enforcement, which continue to undermine loan performance in many financial institutions [20].

Moreover, inadequate collateral valuation, weak loan recovery processes and ineffective legal frameworks for enforcing loan contracts exacerbate the persistence of NPLs. These structural challenges increase loan loss provisioning requirements, reduce net income and ultimately depress profitability indicators such as ROE. Empirical studies across emerging markets consistently demonstrate that rising NPLs translate into higher operating costs and lower shareholder returns [21-23]. From a macroeconomic perspective, adverse conditions such as inflationary pressures and economic slowdowns further compound credit risk. Giammanco and Kryzanowski documented that macroeconomic instability significantly increases default probabilities, particularly within banking systems heavily exposed to retail and small-scale borrowers. In Ghana, the Bank of Ghana Supervision Report (2014) noted that concerns over asset quality and loan performance contributed to moderated credit growth, reflecting the growing importance of credit risk management in safeguarding financial stability. Historically, persistent credit losses within Ghana's banking sector have necessitated regulatory intervention. Under the Financial Institutions Sector Adjustment Programme (FINSAP) in 1998, the Government of Ghana mandated the Bank of Ghana to absorb the credit losses of distressed banks to facilitate restructuring and restore stability. Despite such interventions, rural and community banks have continued to experience financial pressure arising from high default rates and deteriorating asset quality. In the absence of effective credit risk and asset quality management, banks face constrained lending capacity and weakened profitability, thereby threatening their long-term sustainability [24]. Against this background, this study was motivated to empirically examine the effect of non-performing loans on asset quality and return on equity among rural and community banks in Ghana.

Literature Review

Internal determinants of bank financial performance

Asset quality emerged as one of the most critical internal determinants of bank financial performance. It was commonly proxied by the ratio of non-performing loans (NPLs) to total loans or total assets and widely regarded as a key indicator of a bank's financial soundness and risk profile. Deterioration in asset quality was shown to increase loan loss provisions, compress interest income and weaken profitability and shareholders' equity. More recent evidence reinforced this view, demonstrating that rising NPLs were a primary driver of banking distress and financial instability, particularly during periods of economic shocks such as the COVID-19 pandemic. Closely related to asset quality was the issue of loan default, which several scholars consistently identified as a central internal challenge confronting banks. Loan defaults directly eroded earnings through lost interest income and higher provisioning requirements, while simultaneously constraining banks' capacity to extend new credit [25,26]. Empirical studies attributed the accumulation of problem loans to weak credit appraisal systems, inadequate post-disbursement monitoring, insider lending and poor governance structures, particularly in developing financial systems [27]. Evidence from Africa and other emerging markets showed that higher NPL ratios were systematically associated with declining return on equity (ROE), highlighting the adverse implications of credit risk for shareholder value [28].

Recent strands of the studies further emphasized the role of institutional characteristics in shaping loan performance and profitability. Studies examining bank size suggested that larger

banks benefited from economies of scale, improved diversification, stronger capital buffers and enhanced risk-bearing capacity, which could positively influence profitability [29,30]. However, empirical findings were mixed. While some studies documented positive scale effects, others reported non-linear or diminishing returns to size, indicating that excessive growth could generate operational inefficiencies and increase exposure to complex credit risks. Liquidity management also featured prominently as an internal determinant of financial performance. Loan-oriented banks with higher loan-to-asset ratios were found to generate higher interest income, but at the cost of increased liquidity and solvency risk, especially during periods of financial stress. Ineffective liquidity management amplified the adverse effects of loan defaults by limiting banks' ability to absorb losses, thereby accelerating declines in profitability and equity returns. More recently, advances in credit risk modelling and default prediction underscored the importance of internal analytical capacity in mitigating loan default and improving performance. Studies employing machine learning and data-driven approaches demonstrated that improved credit screening and monitoring could significantly reduce default rates and enhance profitability [31-34].

External determinants of bank financial performance

Economic growth, typically measured by gross domestic product (GDP), was consistently found to exert a positive influence on bank profitability. Periods of economic expansion improved household income and business cash flows strengthened borrowers' repayment capacity and reduced default risk, thereby enhancing banks' earnings and equity returns [35-37]. Conversely, economic downturns were associated with rising non-performing loans and declining profitability, underscoring the pro-cyclical nature of bank performance. Interest rate conditions also played a crucial role in shaping profitability. Changes in lending and policy rates directly affected banks' interest income and net interest margins. Several studies found that higher interest rates enhanced profitability when banks were able to reprice loans without significantly suppressing credit demand [38,39]. However, in fragile economic environments, rising interest rates were shown to increase loan defaults, thereby indirectly deteriorating asset quality and ROE [40]. While unanticipated inflation increased operating costs and reduced real returns, anticipated inflation enabled banks to adjust interest rates and protect profitability [41,42]. The net effect of inflation therefore depended on banks' forecasting ability and pricing efficiency. Additionally, unemployment emerged as a particularly important external determinant of loan default and profitability. Rising unemployment reduced household income and business revenues, weakening borrowers' ability to service debt. Empirical evidence consistently documented a strong positive relationship between unemployment and non-performing loans, with adverse implications for profitability and equity returns [43]. Recent studies further highlighted how systemic shocks, such as the COVID-19 pandemic, amplified these effects by simultaneously increasing unemployment and credit risk.

Methodology

Research design

This study adopted an explanatory research design. The explanatory design was considered appropriate because it facilitated the identification and assessment of causal relationships among the study variables. Panel data were used because they combined both cross-sectional and time-series dimensions, thereby increasing the number of observations and improving the efficiency and robustness of the empirical estimations. Consistent with Wooldridge, the use of panel data allowed the study to control for unobserved heterogeneity across banks that could otherwise bias the results [44]. The dataset consisted of an unbalanced panel, as some sampled banks did not have complete observations for all years due to data attrition. Consequently, the empirical analysis focused on unbalanced panel data. The study estimated pooled ordinary least squares (OLS), fixed-effects and random-effects regression models. These estimation techniques enabled the analysis to account for both individual-specific and time-invariant characteristics while ensuring the selection of the most appropriate model for inference.

Population of the study

The population of the study comprised all licensed rural and community banks operating in Ghana. These were selected as the population of interest because of their central role in extending credit to underserved communities and their relatively high exposure to loan default risk.

Sample size and sampling technique

The study employed a purposive sampling technique to select rural and community banks with available and consistent financial data over the study period. Sampling was necessary to reduce the volume of data required while ensuring that the selected sample adequately represented the population under investigation. Accordingly, a total of twenty (20) rural and community banks were selected for the period 2014–2019. The selected time frame was considered appropriate because it provided sufficient observations to support robust panel data analysis and captured recent developments in the rural banking sector. Rural and community banks that did not have complete annual financial reports for the study period were excluded, resulting in an unbalanced panel dataset.

Data collection procedure

The study relied exclusively on secondary data. Financial data for both the dependent and independent variables were obtained from the audited annual financial statements of the sampled rural and community banks for the period 2014–2019. These statements provided consistent and reliable information on key financial indicators, including non-performing loans, asset quality and return on equity. In addition, macroeconomic variables were sourced from the World Development Indicators (WDI) database to capture relevant external factors that influenced loan default and financial performance. The use of secondary data enhanced the reliability and objectivity of the study and facilitated longitudinal analysis.

Data analysis techniques

The data were analyzed using econometric techniques implemented in EViews software. Prior to estimation, several diagnostic tests were conducted to assess the suitability of the data for regression analysis. These included unit root (stationarity) tests to ensure the stability of the variables over time and multicollinearity tests to examine the degree of correlation among the explanatory variables. Furthermore, the Hausman specification test was conducted to determine the most appropriate estimation technique among the pooled OLS, fixed-effects and random-effects models. The Hausman test enabled the selection of a consistent and efficient model by assessing whether individual-specific effects were correlated with the explanatory variables. Based on the results of this test, the final regression estimates were selected, interpreted and discussed.

Description of variables

In this study, bank financial performance was conceptualized as the dependent variable and proxied by return on equity (ROE). The empirical banking literature has consistently employed profitability indicators such as return on assets (ROA) and return on equity (ROE) to evaluate bank performance and financial sustainability [45,46]. While ROA primarily captures managerial efficiency in the utilization of total assets, ROE more directly reflects the returns generated on shareholders invested capital and therefore aligns more closely with the objective of shareholders' wealth maximization. As such, ROE provides a more comprehensive assessment of how effectively bank management translates asset deployment and risk-taking decisions into returns for equity holders. The relevance of ROE is particularly pronounced in the context of rural and community banks, where capital bases are relatively limited and profitability is highly sensitive to asset quality and credit risk. Empirical evidence suggests that rising non-performing loans erode banks' equity through higher provisioning costs and reduced retained earnings, thereby exerting a direct negative effect on ROE. Moreover, studies across both developed and emerging economies have shown that deterioration in loan performance weakens investor confidence and constrains capital growth, reinforcing the centrality of ROE as an indicator of financial health. Within emerging and developing banking systems, ROE has been widely adopted as a robust measure of profitability because it captures both operational efficiency and the consequences of risk exposure, particularly credit risk. This is especially relevant for rural and community banks in Ghana, whose lending activities are heavily concentrated in microcredit and small-scale loans that are inherently more vulnerable to default. As such, fluctuations in non-performing loans and asset quality are more likely to be transmitted directly into equity returns, making ROE an appropriate and policy-relevant performance indicator.

Accordingly, ROE was used in this study to assess the effectiveness of management in generating profits from shareholders' funds within rural and community banks in Ghana. It was measured as the ratio of net profit after tax to total shareholders' equity and expressed as a percentage. Shareholders' equity comprised paid-up capital, statutory reserves, income surpluses, capital surpluses and revaluation reserves. This measurement approach is consistent with prior empirical studies that emphasized ROE as a reliable indicator of profitability, capital efficiency and long-term financial sustainability in the banking sector, particularly under conditions of heightened credit risk [47]. Accordingly, the selection of ROE as the dependent variable was theoretically and empirically justified, as it captures the combined effects of asset quality, loan default and risk management practices on shareholder value. By focusing on ROE, this study provides a direct assessment of how non-performing loans and related credit risk factors influence the financial performance and sustainability of rural and community banks in Ghana (Table 1).

Panel data analysis

The study adopted a panel data methodology in recognition of its superior econometric advantages for analyzing bank-level behavior over time. Panel data combine cross-sectional observations of the same institutions with their time-series dynamics, thereby offering a more comprehensive and reliable representation of economic relationships than single-period cross-sectional analyses. This framework improves estimation efficiency by increasing the number of observations, enhancing variability and mitigating potential multicollinearity among regressors. More importantly, panel data techniques allow for the control of unobserved heterogeneity across banks, which may otherwise bias parameter estimates if ignored. Accordingly, the analysis employed pooled ordinary least squares (OLS), fixed effects and random effects models to account for both time-specific and bank-

specific effects. This approach ensured that the estimated relationships between loan default and its internal and macroeconomic determinants reflected not only cross-sectional differences among rural banks but also their evolution over time.

The basic panel data model is of the form: $Y_{it} = \alpha + X_{it}\beta + \varepsilon_{it}$ ……(1)

Where α is constant, *i* represents the firm and *t* is the time dimension. X_{it} Represents the explanatory variable and ε_{it} is the error term. $\varepsilon_{it} = u_{it} + v_{it}$ Where μ_i is the firm's specific effect and v_{it} is a random term.

Pooled regression model

The pooled regression model combines cross-sectional and time-series observations into a single estimation framework, treating the data as a homogeneous pool and ignoring individual-specific and time-specific effects. Under this approach, the explanatory variables are assumed to be uncorrelated with the error term and all observational units are presumed to share a common intercept and slope coefficients. While pooled ordinary least squares (OLS) provides consistent and efficient estimates under these assumptions, its principal limitation lies in its inability to account for unobserved heterogeneity across individual entities and over time. Consequently, the model does not distinguish between cross-sectional differences among banks or temporal variations, which may lead to biased estimates if such effects are present. Despite this limitation, pooled OLS serves as a useful benchmark model and is commonly employed as a baseline specification in panel data analysis.

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$$

……..……..(2)

Where; Y=Dependent Variable, X=Explanatory Variable, i=Cross Section Unit, t=Time Duration and =Error Termit is assumed that the X's are non-stochastic and that the error term fits the classical assumptions.

Fixed effect regression model

The fixed-effect model requires the individual β1t results to be compared with the explanatory variables X. The fixed effect model is shown below:

$Yit=\beta_{1i} + \beta 2X_{2it} + \beta_3 X_{3it} + \mu_{it}$……..…….(3)

Where; Y =Dependent Variable, X=Explanatory Variable, *i* =Cross section unit, *t* =The time period. While intercept can be different between companies in the Fixed Effect Model, each intercept does not vary over time. In other words, it's time. Fixed Effect Model assumes that the pitch of regression equations are different for individuals or over time.

Random effects regression Model

Unlike the Fixed Effect model, the random effect implies that the error term of the entity is not associated with the describing variables. The model of fixed effect is of the form:

$Yit=\beta_{1i} + \beta 2X_{2it} + \beta_3 X_{3it} + \mu_{it}$ ……..…….(3)

Where; Y =Dependent Variable, X =Explanatory Variable, I = Cross-section Unit, t = Time period. Instead of considering β1i as a set, we presume that it is a random variable with a mean value of β1i (no subscript i). In other words, the individual error components are not associated with each other and are not correlated over the cross-section and time-series units. It is not immediately measurable; it is regarded as an unobservable or latent element. Y =Dependent Variable, X =Explanatory Variable, I = Cross-section Unit, t = Time period. Instead of considering β1i as a set, we presume that it is a random variable with a mean value of β1i (no subscript i).

Model Specification

Model 1: $LoanDeft_{it} = \beta_0 + \beta_1 Bsz_{it} + \beta_2 AssetQy_{it} + \beta_3 Unmply_{it} + \beta_4 LQtt_{it} + \beta_5 GDP_{it} + \beta_6 Infl_{it} + \beta_7 InRat_{it} + \beta_8 ROE_{it} + \varepsilon_{it}$ Model 2: $ROE_{it} = \beta_0 + \beta_1 Bsz_{it} + \beta_2 AssetQy_{it} + \beta_3 Unmply_{it} + \beta_4 LQtt_{it} + \beta_5 GDP_{it} + \beta_6 Infl_{it} + \beta_7 InRat_{it} + \beta_8 LoanDeft + \varepsilon_{it}$

Where

LoanDeft = loan default, ROE= return on equity, Bsz= bank size, AssetQy= asset quality, Umploy= unemployment rate, LQtt= Liquidity, GDP = Gross Domestic Product, Infl = Inflation, InRat = Interest Rate

ε = error term, i & t represent cross-section unit and at time t respectively and β represents coefficient of the variables.

Result

Panel unit root results

All variables were required to be stationary at the 5% level of significance to ensure the robustness of the empirical estimations, with variables marked (**) indicating non-stationarity at levels. Ensuring data validity and reliability was essential to confirm that the dataset was free from systematic errors and statistical inconsistencies. In the context of panel data analysis, testing for stationarity is critical in order to avoid spurious regression results. Accordingly, the Levin, Lin and Chu (LLC) panel unit root test was employed to examine the stationarity properties of the variables. The results presented in (Table 2) indicate that while some variables were stationary at levels, others exhibited unit root

behavior. Consequently, first-difference transformations were applied to the non-stationary variables. Table 3 reports the unit root test results after first differencing, confirming that all variables achieved stationarity at the 5% significance level and were therefore suitable for subsequent panel regression analysis (Table 3).

Table 1: *Description of Variables.*

Variable	Variable	Expected Sign
Dependent Variable	Return on Equity (ROE)	
Independent Variable	Internal Determinants	
	Asset Quality	(+)
	Liquidity risk	(+)
	Loan Default	(-)
	Firm Size	(+)
	External Determinants	
	GDP	(+)
	Interest Rate	(+)
	Inflation	(-)
	Unemployment Rate	(+)
Source: Researcher's Construction (2020)		

Table 2: *Levin, Lin and Chu Panel Unit Root Test (At Level).*

Variable	Level @ Indv. Intecp.	Level@Indv. Intecp& Trend	Level @ None
LoanDeft	0.0000	0.0000	0.0000
ROE	0.0000	0.0000	0.1885**
AssetQy	0.0000	0.0000	0.0000
LQtt	0.0000	0.0000	0.0000
Bsz	0.0000	0.0000	1.0000**
GDP	0.1330**	0.0000	0.0000
IntRat	0.0013	0.0000	0.2696**
Infl	0.0698**	0.0000	0.9319**
Unmply	0.0000	0.0000	0.2806**
Source Financial Statements and World Development Indicator (2014-2019) (E-Views 2020).			

Table 3: *Levin, Lin and Chu Panel Unit Root Test (At First Difference).*

Variable	Level @ Indv. Intecp.	Level@Indv. Intecp& Trend	Level @ None
LoanDeft	0.0000	0.0000	0.0000
ROE	0.0000	0.0000	0.000
AssetQy	0.0000	0.0000	0.0000
LQtt	0.0000	0.0000	0.0000
Bsz	0.0000	0.0000	0.0000
GDP	0.0000	0.0000	0.0227
IntRat	0.0195	0.0001	0.0000
Infl	0.0698	0.0000	0.0000
Unmply	0.0000	0.0000	0.0000
Source Financial Statements and World Development Indicator (2014-2019) (E-Views 2020).			

Table 4: *Descriptive Statistics of the Variables.*

Variable	No.	Mean	Median	Maximum	Minimum	Std Dev.
LoanDeft	82	0.862866	0.879505	1.877163	0.067891	0.212753
ROE	82	0.035746	0.034032	0.076434	0.001000	0.015573
AssetQy	82	0.065252	0.021982	1.190255	0.000351	0.172069
LQtt	82	0.076878	0.027510	1.308016	0.000351	0.191836
Bsz	82	16.79517	16.86584	18.31289	14.45810	0.771342
GDP	82	6.975936	5.649195	14.04600	3.917222	3.695651
IntRat	82	21.06707	21.00000	26.00000	15.00000	4.090611
Infl	82	12.28007	11.60833	17.14507	8.726837	3.275976
Unmply	82	6.644964	6.710000	6.806000	6.430000	0.140641
Source Financial Statements and World Development Indicator (2014-2019) (E-Views 2020).						

Table 5: *Regression Results Using Pooled OLS.*

Variable	***Coefficient***	***Std. Error***	***t-Statistic***	***Prob.***
C	5.438	4.497	1.209	0.2304
ROE	-8.102	2.685	-3.017	0.0035***
LNAssetQtt	-0.101	0.038	2.640	0.0101***
LQtt	-0.749	0.272	-2.748	0.0075***
LNBsz	-0.872	1.061	-0.821	0.4140
LNGDP	-0.011	0.077	-0.151	0.8802
LNIntRat	-0.228	0.304	-0.748	0.4567
LNInfl	0.327	0.182	1.795	0.0567**
LNUnmply	-1.338	2.465	-0.543	0.5887
$R^2 = 0.214$	*Notes: (***), (**) and (*) Denote significance at the 1%, 5% and 10% levels respectively.*			
Adjust. $R^2 = 0.128$				
f-statistic = 2.488				
Prob(f-statistic) = 0.0019				
Source: Financial Statements and World Development Indicator (2014-2019) (E-Views 2020).				

Table 6: *Regression Results Using Fixed Effect.*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.925	5.043	0.976	0.3330
ROE	-8.893	3.975	-2.236	0.0294***
LNAssetQtt	-0.096	0.047	2.057	0.0444***
LQtt	-0.749	0.315	-2.377	0.0209***
LNBsz	-0.273	1.491	-0.183	0.8553
LNGDP	-0.077	0.085	-0.904	0.3695
LNIntRat	-0.464	0.320	-1.449	0.1529
LNInfl	0.504	0.203	2.472	0.0165***
LNUnmply	-1.744	2.485	-0.701	0.0485***
$R^2 = 0.463$	Notes: (***), (**) and (*) Denote significance at the 1%, 5% and 10% levels respectively.			
Adjust. $R^2 = 0.209$				
f-statistic = 1.827				
Prob(f-statistic) = 0.0305				
Source: Financial Statements and World Development Indicator (2014-2019) (E-Views 2020).				

Table 7: *Regression Results Using Random Effect.*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.153	4.593	1.121	0.2656
ROE	-7.157	3.052	-2.345	0.0217***
LNAssetQtt	-0.112	0.040	2.760	0.0073***
LQtt	-0.784	0.283	-2.764	0.0072***
LNBsz	-0.594	1.205	-0.493	0.6234
LNGDP	-0.008	0.077	-0.111	0.9113
LNIntRat	-0.252	0.300	-0.842	0.0422***
LNInfl	0.322	0.180	1.783	0.0386***
LNUnmply	-1.554	2.412	-0.644	0.0521***
$R^2 = 0.182$	*Notes: (***), (**) and (*) Denote significance at the 1%, 5% and 10% levels respectively.*			
Adjust. $R^2 = 0.100$				
f-statistic = 2.129				
Prob(f-statistic) = 0.0434				
Source: Financial Statements and World Development Indicator (2014-2019) (E-Views 2020).				

Table 8: *Redundant Fixed Effects Tests (Hausman Test).*

Test Summary	Chi-Sq. Statistic Chi-Sq. df.	Prob.
Cross-section random 4.39215	0.4944	

Table 9: *Determinants of Loan Default.*

Variable	Pooled OLS		Fixed Effect		Random Effect	
	Relationship	Effect	Relationship	Effect	Relationship	Effect
C	-	Significant	-	Significant	-	Significant
ROE	-	Significant	-	Significant	-	Significant
LNAssetQtt	-	Significant	-	Significant	-	Significant
LQtt	-	Insignificant	-	Insignificant	-	Insignificant
LNBsz	-	Insignificant	-	Insignificant	-	Insignificant
LNGDP	-	Insignificant	-	Insignificant	-	Insignificant
LNIntRat	-	Insignificant	-	Insignificant	-	Significant
LNInfl	+	Significant	+	Significant	+	Significant
LNUnmply	-	Insignificant	-	Significant	-	Significant
Source Financial Statements and World Development Indicator (2014-2019) (E-Views 2020).						

Table 10: *Effect of Loan Default on Rural Bank Performance.*

Variable	Pooled OLS		Fixed Effect		Random Effect	
	Relationship	Effect	Relationship	Effect	Relationship	Effect
	-	Significant	-	Significant	-	Significant
LNLoanDeft	+	Significant	+	Insignificant	+	Significant
LNAssetQtt	-	Significant	-	Insignificant	-	Significant
LQtt	+	Significant	+	Insignificant	+	Significant
LNBsz	+	Insignificant	-	Insignificant	+	Insignificant
LNGDP	+	Insignificant	+	Insignificant	+	Insignificant

LNIntRat	+	Insignificant	+	Insignificant	+	Insignificant
LNInfl	+	Insignificant	+	Significant	+	Significant
LNUnmply	-	Significant	-	Significant	-	Significant
Source Financial Statements and World Development Indicator (2014-2019) (E-Views 2020).						

All variables were required to satisfy the stationarity condition at the 5% level of significance, with (**) indicating non-stationarity at levels. Table 3 reports the results of the Levin, Lin and Chu (LLC) panel unit root test conducted after first differencing. The results show that all variables became stationary at the first difference under the individual intercept, individual intercept with trend and no intercept specifications. In all cases, the associated probability values were less than or equal to 5%, leading to the rejection of the null hypothesis of a unit root. This confirms that the panel series are integrated of order one, I(1) and eliminates concerns of spurious regression. Consequently, the stationarity properties of the data justify their inclusion in subsequent panel regression estimations using pooled OLS, fixed effects and random effects models.

Descriptive statistics

Table 4 reports the descriptive statistics for loan default, return on equity (ROE), asset quality, liquidity, bank size, gross domestic product (GDP), interest rate, inflation and unemployment for the sampled rural and community banks (Table 4). The descriptive results indicate considerable variation across the key variables, reflecting differences in financial conditions among the sampled banks over the study period. With respect to loan default, the results show that non-performing loans constituted a substantial proportion of total loans, with an average value of 86 percent. The minimum and maximum values of 6 percent and 100 percent, respectively, suggest significant disparities in loan performance across banks, with some institutions experiencing relatively low default levels while others faced severe credit deterioration. This wide dispersion underscores the prominence of loan default as a major challenge confronting rural banks in Ghana. Regarding financial performance, the results indicate that return on equity (ROE) recorded a relatively low average of 3 percent. The minimum value of zero suggests that some rural banks did not generate returns for shareholders during certain periods, while the maximum value of 7 percent indicates modest profitability among the better-performing banks. Consequently, the low mean ROE reflects weak profitability within the rural banking sector over the study period.

In terms of asset quality, the descriptive statistics reveal an average ratio of 6 percent, with values ranging from 0 percent to 100 percent. This variation suggests that while some rural banks maintained relatively sound asset portfolios, others experienced severe asset quality deterioration, largely driven by high levels of non-performing loans. Liquidity conditions among rural banks also varied considerably. On average, the liquidity ratio stood at 7 percent, indicating limited liquid asset buffers for most banks. The wide range of values, including ratios exceeding unity, implies that some banks were heavily exposed to liquidity risk, reflecting a high concentration of loans relative to total assets. This finding suggests that liquidity management remains a critical concern for rural banks. Finally, the results for bank size indicate that the average total asset value of rural banks stood at approximately GHS 16 million, with a minimum of GHS 14 million and a maximum of GHS 18 million. This relatively narrow range suggests limited variation in size among the sampled banks, consistent with the small-scale nature of rural and community banking institutions in Ghana.

Presentation of empirical results

The Hausman test was employed to determine the appropriate model for the analysis. The null hypothesis posits that the random effects model is appropriate, while the alternative hypothesis asserts that the fixed effects model is preferable. A p-value greater than 0.05 indicates that the null hypothesis cannot be rejected, supporting the suitability of the random effects model. Conversely, a p-value less than or equal to 0.05 would favor the fixed effects model. Based on the results, the probability values exceeded the 5% significance level, indicating that the random effects model is the appropriate specification for this study.

Pooled OLS model

Table 5 presents the pooled OLS results for internal and external determinants of loan default among rural banks in Ghana (Table 5). The results indicate a negative and statistically significant relationship between return on equity (ROE) and loan default at the 1% level, suggesting that higher profitability reduces the incidence of defaulted loans in rural banks. Similarly, asset quality exhibits a negative and significant association with loan default at the 1% level, indicating that improved asset quality mitigates credit risk and decreases the likelihood of loan default. The liquidity analysis further demonstrates a negative and significant relationship at the 1% level, implying that higher liquidity positions reduce the default rate of rural banks in Ghana. Conversely, bank size shows a negative but statistically insignificant relationship with loan default, suggesting that the scale of the bank does not meaningfully

influence default levels in the sampled rural banks.

Fixed effect model

Table 6 revealed that the relationship between return on equity (ROE) and loan default was negative and statistically significant at the 5 per cent level (Table 6). This indicated that higher profitability among rural banks, as measured by ROE, was associated with lower levels of loan default in Ghana. In essence, improvements in financial performance reduced the likelihood of credit default within the rural banking sector. In addition, asset quality exhibited a negative and statistically significant relationship with loan default at the 5 per cent level, implying that better asset quality contributed to a reduction in defaulted loans among Ghanaian rural banks. The findings further showed a negative and significant association between liquidity and credit default at the 5 per cent level. This suggested that stronger liquidity positions played a crucial role in mitigating default lending, underscoring the importance of effective liquidity management in reducing credit risk in rural banks.

Random effect model

Table 7 indicated that the relationship between return on equity (ROE) and loan default was negative and statistically significant at the 1 per cent level (Table 7). This finding implied that higher profitability, as measured by ROE, was associated with lower levels of loan default among rural banks in Ghana. In effect, more profitable rural banks tended to experience reduced credit default risk. Similarly, the relationship between asset quality and loan default was negative and significant at the 1 per cent level, suggesting that improvements in asset quality were associated with a decline in defaulted loans within the rural banking sector. The empirical results further revealed a negative and statistically significant relationship between liquidity and loan default at the 1 per cent level, indicating that higher liquidity positions reduced the incidence of loan default among rural banks in Ghana. This outcome underscored the importance of effective liquidity management in mitigating credit risk. Conversely, bank size and gross domestic product (GDP) exhibited negative but statistically insignificant relationships with loan default, implying that variations in bank size and macroeconomic output did not exert a meaningful influence on loan default levels within the period under review.

Hausman test

Null Hypothesis: Random Effect is Appropriate (P-value ≥0.05)
Alternative Hypothesis: Fixed Effect is Appropriate (P-value ≤0.05)
The ordinary least squares (OLS) framework comprised three principal panel estimation techniques: the pooled OLS model, the fixed effects model and the random effects model. The selection of the most appropriate model was guided by the Hausman specification test. Under the Hausman test, the null hypothesis posited that the random effects estimator was appropriate, whereas the alternative hypothesis favored the fixed effects estimator. A p-value greater than the 5 per cent significance level implied a failure to reject the null hypothesis. As reported in (Table 8), the p-values exceeded the 5 per cent threshold, indicating that the random effects model was preferable. Consequently, the null hypothesis was retained and the empirical analysis of this study was based on the random effects model (Table 9,10).

Discussion of Result

This study examined the internal and external determinants of loan default among rural and community banks in Ghana and further assessed the effect of default lending on financial performance, measured by return on equity (ROE). The findings provided robust empirical evidence that non-performing loans (NPLs) constitute a critical transmission mechanism through which both bank-specific characteristics and macroeconomic conditions influence the sustainability and profitability of rural banks. The analysis revealed a negative and statistically significant relationship between loan default and financial performance. Specifically, increases in default lending were associated with declines in ROE, indicating that deteriorating loan portfolios eroded shareholder value in Ghanaian rural banks. This finding was consistent with Alnabulsi, who, in a systematic review, identified non-performing loans as one of the most persistent causes of banking fragility across both developed and emerging economies. Similarly, Malenkovic documented that rising NPLs significantly reduced profitability during periods of economic stress, while Gautam and Sharma reported comparable outcomes for commercial banks in Nepal. Within the African context, Oluwafemi and Regassa also found that loan default exerted a direct and adverse effect on bank profitability, primarily through increased provisioning costs, capital impairment and constrained lending capacity. Unlike large commercial banks, rural and community banks in Ghana typically operated with narrower capital bases and limited diversification opportunities. Consequently, increases in default rates disproportionately affected their earnings and capital adequacy, thereby amplifying the adverse impact on financial performance. This finding further supported the argument by Arhinful that non-performing loans send negative signals to investors and stakeholders, undermining confidence and growth prospects within the banking sector. Asset quality emerged as one of the most significant internal determinants of loan default. The results indicated a negative and statistically significant relationship between asset quality and default lending, implying that

improvements in asset quality reduced the incidence of loan default among rural banks. This outcome was consistent with the findings of Golitsis and Radivojevic, who demonstrated that effective credit appraisal, monitoring and recovery mechanisms significantly curtailed the accumulation of NPLs. The result also aligned with Fernandez Lafuerza and Galan, who emphasized that stringent credit standards and disciplined lending practices played a crucial role in mitigating default risk, particularly within fragile banking systems.

From a theoretical standpoint, the negative association between asset quality and loan default reflected the importance of reducing information asymmetry between lenders and borrowers. Rural banks, due to their proximity to local communities, possessed superior information about borrowers' creditworthiness. When effectively leveraged through sound asset management practices, this informational advantage limited adverse selection and moral hazard, thereby lowering default risk. Conversely, weak asset quality signaled deficiencies in credit screening and monitoring processes, increasing the likelihood of problem loans. Liquidity was also found to exhibit a negative and significant relationship with loan default, suggesting that rural banks with stronger liquidity positions experienced lower default rates. This finding supported Alvi, who argued that adequate liquidity buffers enhanced banks' financial resilience and their ability to absorb credit shocks. In the Ghanaian context, statutory liquidity requirements imposed by the Bank of Ghana, including primary and secondary reserve obligations through the ARB Apex Bank, appeared to have played a stabilizing role. Banks with sufficient liquidity were better positioned to restructure loans, manage temporary repayment difficulties and avoid premature loan classification as non-performing. However, bank size showed a negative but statistically insignificant relationship with loan default, indicating that scale did not significantly influence default behavior among rural banks. This result contrasted with evidence from Arhinful and Anvarova and Isakov, who documented that larger banks benefited from diversification advantages that reduced credit risk [48]. The divergence could be attributed to structural differences between rural banks and larger commercial banks. Rural banks in Ghana largely operated within localized markets, limiting the risk diversification benefits typically associated with increased size. Consequently, growth in asset base alone did not necessarily translate into improved credit risk outcomes.

With respect to external determinants, inflation exhibited a positive and significant relationship with loan default. This finding implied that rising price levels weakened borrowers' real incomes and repayment capacity, thereby increasing default rates. The result was consistent with Giammanco, who identified macroeconomic instability as a key driver of non-performing loans in Asian economies, as well as Kryzanowski, who found that inflationary pressures exacerbated credit risk during periods of economic disruption. In Ghana, inflationary trends likely increased the cost of living and business operations, particularly for micro and small-scale borrowers who constituted the primary clientele of rural banks. Interestingly, unemployment showed a negative and significant relationship with loan default. While counterintuitive, this outcome suggested that during periods of high unemployment, rural banks may have adopted more conservative lending practices, extending credit only to low-risk borrowers. This interpretation aligned with Xu and Paragas and Capito, who argued that banks often tighten credit conditions during adverse labour market conditions, thereby reducing exposure to risky borrowers. Similarly, interest rates also exhibited a negative relationship with loan default, implying that higher lending rates may have discouraged excessive borrowing and limited loan exposure to more creditworthy clients. This finding resonated with Agrawal, who observed that risk-based pricing mechanisms could improve loan performance by screening out high-risk borrowers [49]. On the relationship between loan default and financial performance, the results confirmed that default lending exerted a negative and significant effect on ROE, reinforcing the central argument that credit risk management was essential for sustaining profitability. This finding contradicted earlier studies such as Abreu and Mendes, which reported a positive relationship between loan ratios and profitability but strongly aligned with more recent evidence from Malenkovic, Esther and Joel, all of whom demonstrated that excessive loan default undermined financial performance.

Asset quality was also found to positively and significantly influence ROE, indicating that banks with better-quality loan portfolios achieved superior financial outcomes. This result supported Olu and Afolabi, who emphasized that sound asset management enhanced earnings stability and reduced the need for costly loan loss provisions [50-52]. The positive role of asset quality further highlighted the dual function of credit management as both a risk mitigation and profitability-enhancing mechanism. Moreover, unemployment exhibited a negative and significant relationship with financial performance, suggesting that labour market weakness adversely affected rural banks' earnings. This finding was consistent with Nkusu and Chaibi and Ftiti, who documented that higher unemployment impaired borrowers' repayment capacity and reduced banks' income streams. Bank size, however, demonstrated a positive and significant effect on ROE, implying that larger rural banks benefited from economies of scale, improved resource mobilization and operational efficiencies. This outcome aligned with Demirguç-Kunt and Maksimovic, who found that scale advantages enhanced profitability, particularly in banking systems characterized by limited competition. Collectively, the evidence reaffirmed that effective management of loan default was indispensable for the long-term sustainability and

financial resilience of rural and community banks in Ghana.

Conclusion

This study investigated the relationship between loan defaults and financial performance in rural banks in Ghana, highlighting both internal and external determinants of credit default. The findings indicate that loan defaults have a significant impact not only on the profitability of individual banks but also on the stability and performance of the national banking sector. Using quantitative analyses and an explanatory research design, the study employed panel data from the annual financial statements of 20 rural banks in Ghana over the period 2014–2019. The results of the panel data regression analysis reveal that internal factors, specifically return on equity (ROE) and asset quality are significant determinants of loan default in rural banks. In contrast, bank size and liquidity were found to have no significant effect on credit default. Regarding external factors, the study demonstrates that macroeconomic variables, including interest rates, unemployment and inflation, also contribute to loan default, although the influence of GDP appears limited. Therefore, higher incidences of loan defaults negatively affect the financial performance of rural banks, underscoring the critical importance of effective credit risk management and robust internal governance. In summary, the study emphasizes that managing equity returns and maintaining sound asset quality are essential for minimizing loan defaults and enhancing the financial sustainability of rural banks in Ghana, thereby contributing to the stability of the broader banking sector.

Future Research Directions

Future studies may extend this research in several important ways. First, subsequent research could incorporate a longer time horizon and a larger sample of rural and community banks to capture structural changes and cyclical dynamics in Ghana's banking sector. Second, future studies may adopt alternative measures of financial performance, such as return on assets (ROA), net interest margin, or risk-adjusted profitability indicators, to allow for broader comparative insights. Third, the use of advanced econometric techniques, including dynamic panel models or nonlinear specifications, could better address potential endogeneity and persistence in loan defaults. In addition, future research could examine the role of institutional and governance factors such as board characteristics, credit appraisal systems, and regulatory compliance in shaping loan default behavior. Finally, comparative cross-country studies within Sub-Saharan Africa would provide valuable evidence on whether the determinants of loan defaults and their performance effects are context-specific or generalizable across similar emerging banking systems.

References

1. Bonin JP, Huang Y. Dealing with the bad loans of Chinese banks. J Asi Econ. 2001;12: 197-214.
2. Berger AN, DeYoung R. Problem loans and cost efficiency in commercial banks. 2007.
3. Hatfield G, Lancaster C. The signalling effects of bank loan-loss reserve additions. J Fin Strategic Decisions. 2000; 13: 57-73.
4. Ongena S, Roscovan V, Werker BJ. Banks and bonds: The impact of bank loan announcements on bond and equity prices. EFA 2007 Ljubljana Meetings Paper. 2007.
5. Malenkovic N. Effects of the NPL on the banks' profitability during the COVID-19 pandemic: The case of the Republic of Serbia. Anali Ekonomskog Fakulteta U Subotici. 2023; 00, 18-18.
6. Alnabulsi K, Kozarevic E, Hakimi A. Non-performing loans as a driver of banking distress: A systematic literature review. Commodities. 2023; 2: 111-130.
7. Radivojevic N, Cvijanovic D, Sekulic D, Pavlovic D, Jovic S, Maksimovic G. Econometric model of non-performing loans determinants. Phy: Sta Mech Appl. 2019; 520: 481-488.
8. Giammanco MD, Gitto L, Ofria F. Government failures and nonperforming loans in Asian countries. J Econ Stu. 2022; 50: 1158-1170.
9. Kryzanowski L, Liu J, Zhang J. Effect of COVID-19 on non-performing loans in China. Fin Res Letters. 2023; 52: 103372.
10. Arhinful R, Gyamfi BA, Mensah L, Obeng HA. Non-performing loans and their impact on investor confidence: A signaling theory perspective—Evidence from U.S. banks. J Risk Fina Manag. 2025; 18: 383.
11. Arhinful R, Gyamfi BA, Mensah L, Obeng HA. The impact of non-performing loans on bank growth: The moderating roles of bank size and capital adequacy ratio – Evidence from U.S. banks. Inter J Fin Stu. 2025; 13: 165.
12. Gyamfi GD. Assessing the effectiveness of credit risk management techniques of microfinance firms in Accra. J Sci Technol. 2012; 32: 96-103.
13. Boahene S, Dasah J, Agyei S. Credit risk and profitability of selected banks in Ghana. Res J Fin Acco. 2012; 3: 6-15.
14. Addae-Korankye A. Causes and control of loan default/delinquency in microfinance institutions in Ghana. American Inter J Contemporary Res. 2014; 4: 36-45.
15. Osei-Assibey E. Microfinance in Ghana: A comparative study of the performance of formal vs informal rural financial institutions. Forum for Inter Devel Stu. 2011; 40: 151-194.
16. Asantey JO, Tengey S. An empirical study on the effect of bad loans on banks' lending potential and financial performance: The case of SMEs lending. Officer CM, Bank SC, Staff M. 2014; 2: 1-12.
17. Xu Q. Factors influencing loan default: An empirical analysis based on microscopic evidence. J Econ, Bus Manag. 2025; 13: 841-846.
18. Paragas M, Capito J. Factors affecting loan default rate of members of institutional cooperatives. ResearchGate Publication No. 392136920. 2025.
19. Pollio P, Obuobie J. Microfinance default rates in Ghana: Evidence from individual liability credit contracts. Microbanking Bulletin. 2010; 20: 8-14.

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20. Maina E. Influence of credit risk management practices on loan recovery performance of the registered digital credit providers in Kenya. Master's project, Jomo Kenyatta University Agri Technol. 2023
21. Oluwafemi AS, Ogunleye EO, Afolabi JA. Non-performing loans and financial performance of listed deposit money banks (DMBs) in Nigeria. Adeleke University J Bus Soc Sci. 2024.
22. Gautam V, Sharma V. Effect of loan defaults on the profitability of Nepalese commercial banks. Nepal J Fin. 2024.
23. Joel NN, Tibbs CY, Muli WM. Effect of probability of default and financial performance of commercial banks in Kenya. J Bus Soc Rev Emer Econ. 2024; 10: 289-298.
24. Maulana P, Dwita S, Helmayunita N. Pengaruh CAR, NPL, LDR dan BOPO terhadap return on assets (ROA) pada bank yang terdaftar di Bursa Efek Indonesia tahun 2017–2019. Jurnal Eksplorashi Akuntansi. 2021; 3: 316-328.
25. Nkusu M. Nonperforming loans and macro financial vulnerabilities in advanced economies. IMF Working Paper No. 11/161. 2011.
26. Louzis D, Vouldis AT, Metaxas VT. Macroeconomic and bank-specific determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer loan portfolios. J Ban Fin. 2012; 36: 1012-1027.
27. Babalola TS. Effect of bank characteristics on loan default in selected microfinance banks in Southwest Nigeria. Inter J Res Inno Soc Sci. 2025; 13: 4445-4457.
28. Regassa Y. The effect of loan default on financial performance of commercial banks in Ethiopia. Master's thesis, Addis Ababa University. 2022.
29. Athanasoglou PP, Brissimis SN, Delis MD. Bank-specific, industry-specific and macroeconomic determinants of bank profitability. Bank of Greece Working Paper No. 25. 2005.
30. Sufian F, Parman S. Specialization and other determinants of non-commercial bank financial institutions' profitability: Empirical evidence from Malaysia. Emerald Insight. 2009.
31. Moscatelli M, Parlapiano F, Narizzano S, Viggiano G. Forecasting loan default in Europe with machine learning. J Fin Econ. 2023; 21: 569-596.
32. Alvi J, Arif I, Nizam K. Advancing financial resilience: A systematic review of default prediction models and future directions in credit risk management. Heliyon. 2024; 10: e39770.
33. Zhang X, Zhang T, Hou L, Liu X, Guo Z, Tian Y. Data-driven loan default prediction: A machine learning approach for enhancing business process management. Systems. 2025; 13: 581.
34. Wang H, Ma S, Jiang Y, Xiao Y, Wang H. Profit-oriented loan default prediction for the financial industry: A fusion framework with interpretability. Decision Analytics J, 9, Article 1007. 2025.
35. Athanasoglou PP, Brissimis SN, Delis MD. Bank-specific, industry-specific and macroeconomic determinants of bank profitability. Inter Fin Mark, Inst Money. 2018; 18: 121-136.
36. Bikker JA, Hu H. Cyclical patterns in profits, provisioning and lending of banks and pro-cyclicality of the new Basel capital requirements. BNL Qua Rev. 2002; 221: 143-175.
37. Demirguc-Kunt A, Huizinga H. Determinants of commercial bank interest margins and profitability: Some international evidence. World Bank Econ Rev. 2018; 13: 379-408.
38. Abreu M, Mendes V. Commercial bank interest margins and profitability: Evidence from E.U. countries. Porto Working Paper Series. 2014.
39. Navneet S, Boopen S, Sawkut R. Interest rate spread determination in an error correction model. 2009.
40. Fernandez Lafuerza L, Galan JE. Credit standards and corporate loan default: Insights for macroprudential policy. J Ban Fin. 2025; 181: 107566.
41. Hussain M, Ershad A, Hassan MK. Basel capital requirements and bank credit risk taking in developing countries. University of New Orleans, Department of Economics and Finance, Working Paper 2005-01. 2005.
42. Tan Y, Floros C. Bank profitability and inflation: The case of China. J Econ Stu. 2012; 39: 675-696.
43. Chaibi H, Ftiti Z. Credit risk determinants: Evidence from a cross-country study. Res Inter Bus Fin. 2015; 33: 1-16.
44. Wooldridge JM. Introductory econometrics: A modern approach (3rd ed.). Thomson/South-Western. 2006.
45. Naeem M, Baloch QB, Khan AW. Factors affecting banks' profitability in Pakistan. Inter J Bus Stu Rev. 2017; 2: 33-49.
46. Tabash MI, Dhankar R. The flow of Islamic finance and economic growth: Empirical evidence of the Middle East. J Fin Acco. 2014; 2: 11-19.
47. Esther OO, Vivian OOOV, Monica IU, Mishau A. Influence of loan defaults on financial performance of university worker cooperative in Anambra State, Nigeria. Inter J Allied Res Econ (IJARE). 2024; 15: 16-31.
48. Anvarova M, Isakov O. Impact of government ownership on banks' profitability: Empirical evidence from commercial banks in Uzbekistan. J Econ Fina Analysis. 2022; 6: 37-53.
49. Agrawal S, Kashyap N, Mahapatro S, Tantri P. Does systemically important bank status affect loan performance? FDIC Center Fin Res. 2025.
50. Olu A. Examining the impact of loan defaults on commercial banks: Challenges, recovery strategies and effectiveness of mitigation measures. MSW Manag J. 2024.
51. Afolabi JA. The effect of loan default on the growth of cooperative societies in Nigeria. J Ban Fina Issues. 2023.
52. Bashir A. Determinants of profitability and rates of return margins in Islamic banks: Some evidence from the Middle East. Grambling State University. 2016.