

A Study on Determinants of Performance in the Banking Sector: Panel Data Analysis

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ABSTRACT:

The banking sector faced a lot of challenges due to monetary regulation changes, BASEL III implementation, and the credit crunch during the pandemic. The decade of 2014-2024 was a period of shock to the banking industry globally. Hence, this study determines the various determinants of the performance of banks for the period of 2014-2024. The panel data comprises public and private-sector banks in India, with a sample size of 306. The various bank-specific and macroeconomic determinants have been considered in the study. The various tools employed are the unit root test, the multicollinearity test, and the panel regression. From the results, it is found that all determinants considered for the study are stationary in nature. The multicollinearity test of the variance inflation factor revealed that the determinants had a p-value less than five and indicated no serious multicollinearity among the determinants, thereby establishing a foundation for panel regression. The results of panel regression revealed that leverage ratio, capital adequacy ratio, and non-performing loans influenced the performance of the banks in India during the period of the study.

Keywords: Banks, Performance, Bank-specific, Macroeconomic, Leverage Ratio, Capital Adequacy ratio, Non-performing Loans

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1. Introduction

In recent years, the Indian banking sector has been undergoing significant changes in response to both domestic needs and international trends (Nigadi, and Kulkarni, 2020). One of the most notable developments has been the consolidation of Public Sector Banks (PSBs). From 2019 to 2020, the Government of India executed large-scale mergers among several state-owned banks, resulting in fewer but more robust entities aimed at improving stability, efficiency, and competitiveness on a global scale (Kundu, and Banerjee, 2022). The decade from 2014 to 2024 illustrates the dynamic environment focusing on profitability in the banking sector. Globally, banks

experienced three distinct regimes: a low-rate environment, a systemic shock (Gulati et al., 2023), and a high-rate environment. Indian banks faced distinct challenges like the NPA crisis, pandemic disruptions, and a period of restored profitability with competitive and operational risks. Every phase revealed various determinants of profitability and emphasized the need for adaptive risk management(IMF, 2024).

The period considered for the study faced many challenges and changes in the financial services sector in India. So, this decade was marked by a crisis originating from NPAs, which particularly impacted public sector banks. This gave rise to

providing aggressive credit to infrastructure projects, power generation, and large corporate entities during the preceding credit expansion (Sharma and Dhiman, 2023). By the fiscal years 2016 and 2017, it was noted that gross Non-performing Asset ratios for these public sector banks had increased beyond ten percent, which resulted in a considerable drop in performance, thereby raising urgent concerns about their capital adequacy. Unlike many international counterparts that were mainly facing margin compression, Indian banks found themselves deeply entrenched in a severe asset quality crisis, which required immediate and effective intervention (Das and Uppal, 2021).

Due to this increasing crisis, the Reserve Bank of India provided a series of strategic measures that aimed at stabilizing the banking sector. One among these initiatives was the Asset Quality Review, which aimed to evaluate the true extent of asset quality issues within banks. The introduction of the Insolvency and Bankruptcy Code (IBC) in 2016 was one of the crucial initiatives of this time for the resolution of distressed assets. This regulatory reform highlighted the critical significance of managing credit risk, which emerged as a key factor influencing profitability for banks operating in India (Kulkarni et al., 2024).

From the previous studies in empirical literature, it is found that bank performance is influenced by various factors specific to the bank, and a few of the studies have focused on macroeconomic conditions (Osama Hamad Alowaimier, 2026). The interrelationship of these dimensions remains underexplored in the Indian context. Although individual factors such as capital adequacy, leverage, and GDP growth have been examined independently in the literature, few studies have investigated how these bank-specific and macroeconomic determinants collectively influence bank performance. Despite regulatory advances and improved Reserve Bank of India (RBI) supervision, persistent disparities in performance between public and private sector banks suggest structural and managerial differences that warrant systematic examination.

Hence, this research addresses the gap by developing a robust model to evaluate bank-specific determinants, namely capital adequacy, leverage, deposits, market capitalization, bank size, Non-performing Loans (NPL), and efficiency, alongside macroeconomic determinants (GDP and inflation). This explains performance variations among Indian commercial banks. The conceptual framework, illustrated in Figure 2.1, captures this relationship by depicting how the interaction of bank-specific and macroeconomic determinants determines profitability outcomes.

2. Literature Review

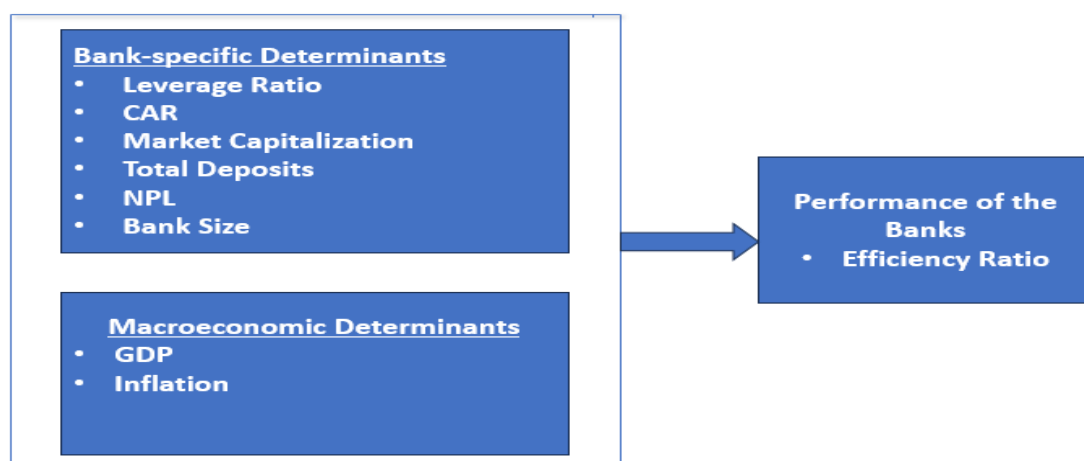


Figure 2.1: Conceptual Framework

So, this study focuses on identifying the determinants affecting the profitability of Indian commercial banks by examining the bank-specific

and macroeconomic variables and analysing the impact of bank-specific and macroeconomic determinants on the performance of Indian commercial banks.

3. Hypotheses of Study

The requirement of stationarity of the data set is a fundamental assumption in panel econometrics; otherwise, it yields spurious regression. Accordingly, unit root testing is conducted prior to any impact or relationship analysis. The hypotheses guiding the study are as follows:

H₀₁: The bank-specific and macroeconomic determinants do not exhibit significant variation across Indian commercial banks, and the

underlying data series contain unit roots.

H₀₂: The bank-specific and macroeconomic determinants do have significant influence on the performance of Indian commercial banks

The following Table 3.1 provides the research framework of the study by addressing the research gap and research questions to identify the objectives and to state the hypotheses for the same.

Table 3.1 Research Framework

Sl.No	Research Gap	Research Questions	Research Objective	Hypothesis
1. Characteristics of Determinants	Limited empirical attention has been paid to the characteristics of bank-specific and macroeconomic determinants across Indian commercial banks over time	How do bank-specific and macroeconomic determinants differ across Indian commercial banks?	To identify the determinants affecting the profitability of Indian commercial banks	The bank-specific and macroeconomic determinants do not exhibit significant variation across Indian commercial banks, and the underlying data series contain unit roots
2. Influence on performance	In previous studies, bank-specific and macroeconomic determinants are analyzed in isolation, and consideration of structural differences of public and private sector banks is limited	Do bank-specific and macroeconomic determinants influence the performance?	To analyze the impact of determinants on the performance of Indian commercial banks	The bank-specific and macroeconomic determinants do have significant influence on the performance of Indian commercial banks

. Research Methodology

Sample Selection, Data Collection, Tools Employed

The sampling method employed is the purposive method of sampling. It comprises 33 Indian commercial banks (12 public sector banks and 21 private sector banks) over the period of 2014 to 2024, yielding an unbalanced panel of 306 observations. Data were collected from the annual

reports of RBI and from the Capitaline database, covering the ten years 2014–2024. This is a quantitative panel data analysis. The unit root tests, descriptive statistics, multicollinearity tests, and regression analysis are employed in the study. These tools provide a static analysis of the relationships among the identified determinants and bank performance over the study period. The following Table 4.1 represents the definition of determinants considered for the study.

Table 4.1: Definitions of Determinants

Sl. No.	Determinant	Key References	Measurement / Particulars
1	Efficiency Ratio	Brahmaiah (2018); Dsouza et al., (2022); Athanasoglou, et al., 2008 ; Intrisano & Micheli (2014)	Efficiency Ratio = (Operating Expenses / Operating Income) × 100. Lower values indicate better efficiency.
2	Leverage Ratio	Beltratti & Paladino (2015); Gupta &	Leverage Ratio = 'Total Debt / Shareholders'

Sl. No.	Determinant	Key References	Measurement / Particulars
		Sikarwar (2020)	Equity. Measures financial risk and capital structure.
3	Capital Adequacy Ratio (CAR)	Chen et al. (2020); Athanasoglou, et al., 2008; Puspita & Mustanda (2019)	$CAR = (\text{Tier 1 Capital} + \text{Tier 2 Capital}) / \text{Risk-Weighted Assets} \times 100$. Regulated under Basel norms ($\geq 8\%$).
4	Market Capitalisation	Qurashi & Zahoor (2016)	$\text{Market Cap} = \text{Current Share Price} \times \text{Total Outstanding Shares}$. Indicates public valuation of the bank.
5	Total Deposits	Menicucci and Paolucci (2016)	Sum of all customer deposits (savings, current, term) reported on the balance sheet.
6	Non-Performing Loans (NPLs)	Abbas et al., (2019); Thiagarajan et al. (2011); Puspita & Mustanda (2019)	$NPL \text{ Ratio} = (\text{Non-Performing Loans} / \text{Total Loans}) \times 100$. Higher NPLs imply greater credit risk.
7	Bank Size	Lew & Lau (2022); Sharifi & Haldar (2021); Suresh et al. (2010)	$\text{Bank Size} = \log (\text{Total Assets})$. Captures economies of scale and operational breadth.
8	Gross Domestic Product (GDP)	Köhler (2015); Amador et al. (2013); Thiagarajan et al. (2011);	$GDP = \Sigma (\text{Consumption} + \text{Investment} + \text{Government Spending} + \text{Net Exports})$. Exogenous macroeconomic indicator.
9	Inflation	Ashraf & Shen (2019); Thiagarajan et al. (2011)	$\text{Inflation Rate} = [(CPI_t - CPI_{t-1}) / CPI_{t-1}] \times 100$. Reflects price-level changes that affect lending rates and borrower behaviour.

5. Results

5.1 Descriptive Statistics

The descriptive statistics illustrated in Table 5.1 depict the distributional characteristics of the determinants employed in the study.

Table 5.1 Descriptive Statistics

Determinant	LDER	LLEV	LCAR	LMCAP	LTDEP	LDNPL	LBSIZE	LDGDP	LDINF
Mean	52.740	9.425	16.009	4.225	4.853	2.561	4.853	0.045	6.316
Median	52.945	9.351	15.973	4.233	4.855	2.537	4.855	0.045	5.660
Maximum	65.924	13.010	22.046	4.603	5.138	4.382	5.138	0.077	10.910
Minimum	40.413	6.613	10.617	3.651	4.452	0.886	4.452	-0.005	2.460
Std.Dev.	4.844	1.218	2.118	0.174	0.139	0.652	0.140	0.019	2.266

Skewness	0.013	0.197	0.076	-0.199	-0.141	0.145	-0.137	-1.160	0.496
Kurtosis	2.595	2.826	2.779	2.708	2.653	2.898	2.634	4.668	2.853
Jarque-Bera	2.092	2.359	0.917	3.106	2.551	1.211	2.653	103.819	12.803
Probability	0.351	0.307	0.631	0.211	0.279	0.545	0.265	0.000	0.001
Observations	306	306	306	306	306	306	306	306	306

Source: Software output, EViews 12

The descriptive statistics is presented in Table 5.1, depicting the central tendency, dispersion, and distributional properties of all determinants for 306 observations. It is found that the mean and median values are fairly symmetrically distributed. The efficiency ratio, leverage ratio, CAR, market capitalization, total deposits, and bank size mean and median values lie very close to one another, indicating broadly symmetric distributions with minimal skew. The GDP shows

an identical mean and median (0.045), reflecting a tightly centred distribution. LDINF, however, shows a mean (6.316) noticeably higher than its median (5.660), indicating a right-skewed distribution consistent with its positive skewness value (0.496), with a subset of higher-inflation periods pulling the average upward. Figure 5.1 presents the mean and median comparison for the various determinants.

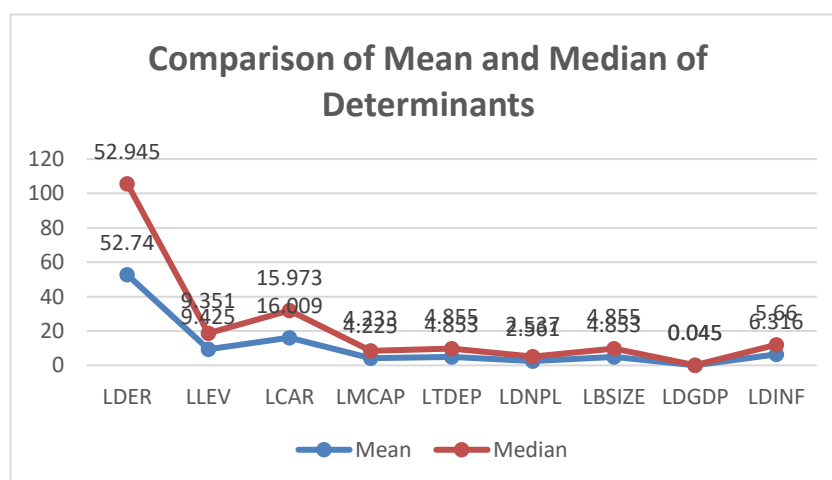


Figure 5.1 Comparison of Mean and Median of Determinants

Most of the determinants report skewness values close to zero (LDER: 0.013; LCAR: 0.076; LMCAP: -0.199; LTDEP: -0.141; LBSIZE: -0.137), indicating near-symmetric distributions, while LDINF (0.496) and LDGDP (-1.160) show more pronounced skewness, positive and negative respectively. Kurtosis values for most determinants cluster around 2.6–2.9, close to the mesokurtic benchmark of 3, except LDGDP (4.668), which indicates a more leptokurtic,

peaked distribution with fatter tails. The Jarque-Bera test provides formal confirmation of normality (Jarque & Bera, 1980). LDER, LLEV, LCAR, LMCAP, LTDEP, LDNPL, and LBSIZE all return probability values well above the 0.05 threshold (ranging from 0.211 to 0.631), confirming that these determinants are approximately normally distributed (Athanasoglou, Brissimis & Delis, 2008; Dietrich & Wanzenried, 2011). Figure



Figure 5.2 Descriptive Statistics Stack Cross-section Graph

Figure 5.2 plots the raw log-transformed values of all study variables across the pooled panel of 306 bank-year observations, with each bar representing one bank-year data point arranged sequentially by bank and year.

5.2 Unit Root Test

The Levin, Lin, and Chu (LLC) test is a unit root test designed specifically for panel data, which consists of multiple time series (cross-sectional

units) observed over time. The LLC test checks for the presence of a unit root across the panel, allowing us to determine if the panel data series are stationary or non-stationary. The test assumes a common unit root process across all cross-sectional units in the panel. Table 5.2 represents the results of the unit root test employing the Levin-Lin-Chu test, which is one of the widely employed tests in panel data.

Table 5.2 Unit Root Test

Unit Root test		
Method : Levin Lin-Chu		
Sample 306		
Determinant	Statistics	Prob.**
LDER	-9.665	0.000
LLEV	-2.570	0.000
LCAR	-10.433	0.000
LMCAP	-13.629	0.000
LTDEP	-4.456	0.000
LDNPL	-6.746	0.000
LBSIZE	13.266	0.000
LDGDP	-1.960	0.000
LDINF	2.400	0.000

Source: Software output E-views 12

From Table 5.2, the p-values of all the determinants considered for the study are found

to be less than 0.05 (Levin 2021), thereby rejecting the null hypothesis, meaning that the determinants are stationary in nature at different levels of integration.

5.3 Multicollinearity Results

The multicollinearity test was performed using the Variance Inflation Factor to assess the degree of

multicollinearity among the explanatory variables representing bank-specific and macroeconomic characteristics. Excessive multicollinearity can distort coefficient estimates, inflate standard errors, and weaken statistical inference. Table 5.3 represents the results of the multicollinearity analysis employing the Variance Inflation Factor.

Table 5.3: Variance Inflation Factor

Determinant	VIF
LLEV	2.320
LCAR	1.380
LMCAP	1.010
LTDEP	1.000
LDNPL	2.270
LBSIZE	1.880
LDGDP	1.280
LDINF	1.510

Source: Software output E-views 12

From the Table 5.3, it is found that the VIF values for bank size (1.880), capital adequacy ratio (1.380), non-performing loans (2.270), leverage ratio (2.320), market capitalization (1.010), and total deposits (1.000) are all below the threshold value of 5 (Hair et al., 2019; O'Brien, 2007; Chatterjee and Simonoff, 2013). This indicates that these bank-specific determinants do not exhibit multicollinearity with one another, thereby rejecting the null hypothesis that bank-specific and macroeconomic determinants do not exhibit significant variation across Indian commercial banks. Similarly, the VIF values for the macroeconomic variables, Gross Domestic Product (1.280) and inflation (1.510), also fall within acceptable limits, suggesting that these variables provide independent explanatory

information within the model. The results collectively indicate the absence of serious multicollinearity among the explanatory variables.

This diagnostic step was necessary to ensure that the independent variables included in the panel regression model would not excessively correlate, which could otherwise bias coefficient estimates and reduce the precision of statistical inference.

5.4 Panel Regression

The estimation of a Panel regression, which serves as the baseline model by examining the average relationships between the selected determinants and bank performance across all banks and time periods, without accounting for individual bank-specific heterogeneity.

Table 5.4 Panel Regression

Dependent Variable: LDER				
Method: Panel Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LLEV	-0.452	0.150	-2.993	0.003
LCAR	-0.648	0.121	-5.445	0.000
LMCAP	0.652	0.253	2.598	0.010

LTDEP	0.011	0.005	2.200	0.046
LDNPL	-0.031	0.010	-3.100	0.003
LBSIZE	0.801	0.280	2.861	0.005
LDGDP	0.071	0.042	2.50	0.013
LDINF	0.038	0.011	3.978	0.000
C (Constant)	1.123	0.301	3.732	0.000
R-Squared	0.715	Mean dependent var		52.71783
Adj R-squared	0.708	S.D dependent var		4.852445
S.E. of regression	0.43	Akaike info criterion		4.275492
Sum squared resid	55.76	Schwarz criterion		4.385010
Log likelihood	-120.30	Hannan-Quinn criterion		4.319292
F-statistic	85.24	Durbin-Watson stat.		2.167519
Prob(F-statistic)	0.000			

Source: Software Output using E-views 12

Table 5.5 Hypotheses Testing

Sl No.	Hypothesis variable	H ₀	H _a	P Value	Accept/Reject
1.	Leverage Ratio	$\beta_1 = 0$	$\beta_1 \neq 0$	0.003**	Reject
2.	CAR	$\beta_2 = 0$	$\beta_1 \neq 0$	0.000**	Reject
3	Market Capitalization	$\beta_3 = 0$	$\beta_1 \neq 0$	0.010**	Reject
4.	Total Deposits	$\beta_4 = 0$	$\beta_1 \neq 0$	0.046**	Reject
5.	NPL	$\beta_5 = 0$	$\beta_1 \neq 0$	0.003**	Reject
6.	Bank Size	$\beta_6 = 0$	$\beta_1 \neq 0$	0.005**	Reject
7.	GDP	$\beta_7 = 0$	$\beta_1 \neq 0$	0.013**	Reject
8.	Inflation	$\beta_8 = 0$	$\beta_1 \neq 0$	0.000**	Reject

Source: Software Output using E-Views 12

From Table 5.4, among the bank specific and macroeconomic determinants examined, the coefficients, leverage ratio (-0.452), Capital Adequacy Ratio (-0.648), market capitalization (0.652), total deposits (0.011), Non-Performing Loans (-0.031), and bank size (0.801), , GDP growth (0.013) and inflation (0.000), are found to be significant determinants, and each with a p-value of less than 0.05 ($p < 0.05$). This indicates that there exists a strong statistical significance, implying that these determinants play a crucial role in shaping the performance of banks. The results highlight the importance of these determinants in the banking sector, as they are vital for understanding the financial stability and operational efficiency of financial institutions. As evidenced in Table 5.5, the null hypotheses for all

six internal determinants are rejected, confirming their statistically significant influence on bank performance.

6. Discussions

The findings of this study contribute to the existing literature on banking and financial institutions by both reinforcing and expanding current theoretical frameworks regarding the determinants of bank performance in emerging markets. The insights derived from the descriptive statistics and unit root analysis add meaningful depth to the literature on banking and financial intermediation. The considerable heterogeneity observed across bank-specific determinants empirically reinforces theoretical perspectives that attribute differences in bank performance to

structural variation in institutional size, deposit mobilization capacity, and market valuation. Also the multicollinearity diagnostics confirm that all VIF values fall below the threshold of 5 (Hair et al., 2019; O'Brien, 2007), validating the theoretical assumption that the selected bank-specific and macroeconomic determinants represent distinct dimensions of bank performance. The panel regression indicates that leverage ratio, CAR, and NPL are determinants that influence the performance of the banks in the short run. This suggests that during periods of stronger growth, banks may expand credit, staffing, or operational activity ahead of the corresponding income gains.

7. Conclusion

The results indicate that the leverage ratio, CAR, and NPL are important measures of performance. The banks are required to establish control over these determinants to enhance performance. This is a finding with direct relevance for bank

management, regulators, and policymakers focused on strengthening governance and long-term sustainability in Indian commercial banking.

8. Scope for Further Research

The most immediate extension can be to incorporate digital banking and fintech adoption variables like UPI transaction volume, digital deposit share, and AI-based credit scoring adoption into the efficiency framework, given their theoretical connection to the determinants examined here (NPCI, 2021; Shashidhar, et. al, 2025, Zhu and Jin, 2023; Nobanee et al., 2024; BV, R., & Kulkarni, 2024). Also, another extension would apply the same methodological framework, extending Fixed Effects regression, co-integration, and VECM to the same sample of emerging-market banking systems. This would add more effectiveness and relevance to the Indian economy.

References

- Abbas, F., Iqbal, S., & Aziz, B. (2019). The impact of bank capital, bank liquidity and credit risk on profitability in postcrisis period: A comparative study of US and Asia. *Cogent Economics & Finance*, 7(1), 1605683.
- Alowaimier, O. (2025). Determinants of profitability and financial performance: A study of listed Saudi banks. *Access Journal*, 6(2), 287–302.
- Amnas, M., Raja, M., & Velmurugan, J. M. (2025). Exploring key drivers of InsurTech adoption: Insights from India's digital insurance revolution. *Smart Journal of Business Management Studies*, 21(1), 105–119.
- Ashraf, B. N., & Shen, Y. (2019). Economic policy uncertainty and banks' loan pricing. *Journal of Financial Stability*, 44, 100695.
- Athanasoglou, P.P., Brissimis, S.N. and Delis, M.D. (2008) 'Bank-specific, industry-specific and macroeconomic determinants of bank profitability', *Journal of International Financial Markets, Institutions and Money*, 18(2), pp. 121–136.
- Beltratti, A., & Paladino, G. (2015). Bank leverage and profitability: Evidence from a sample of international banks. *Review of Financial Economics*, 27, 46-57.
- BV, R. R., & Kulkarni, S. (2024). Chatbots of Indian banks—utility for prospective customers—a perceptive study. In *ITM Web of Conferences* (Vol. 68, p. 01013). EDP Sciences.
- Chatterjee, S., & Simonoff, J. S. (2013). *Handbook of regression analysis*. John Wiley & Sons.
- Chen, Z., Li, H., Wang, T., & Wu, J. (2023). How digital transformation affects bank risk: Evidence from listed Chinese banks. *Finance Research Letters*, 58, 104319.
- Das, S. K., & Uppal, K. (2021). NPAs and profitability in Indian banks: An empirical analysis. *Future Business Journal*, 7(1), 53.
- Disusa, S., Rabbani, M. R., Hawaldar, I. T., & Jain, A. K. (2022). Impact of bank efficiency on the profitability of the banks in India: An empirical analysis using panel data approach. *International Journal of Financial Studies*, 10(4), 93.
- Gulati, R., Charles, V., Hassan, M. K., & Kumar, S. (2023). COVID-19 crisis and the efficiency of Indian banks: Have they weathered the storm? *Socio-Economic Planning Sciences*, 88, 101661.
- Gupta, M., & Sikarwar, T. S. (2020). Modelling credit risk management and bank's profitability. *International Journal of*

Electronic Banking, 2(2), 170-183.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24.

International Monetary Fund. (2024). India: Review and evaluation of the Reserve Bank of India's stress-test model framework. International Monetary Fund.

Köhler, M. (2015). Which banks are more risky? The impact of business models on bank stability. *Journal of Financial Stability*, 16, 195–212.

Kulkarni, S., Suresh, N., & Triveni, P. (2024). A study on factors influencing credit risk management in Indian financial institutions. *Cahiers Magellanes-NS*, 6(2), 2276–2290.

Kundu, S., & Banerjee, A. (2022). Operational and policy efficiency: A comparison between public and private Indian banks. *International Journal of Productivity and Performance Management*, 71(4), 1537–1558.

Levine, R. (2021). Finance, growth, and inequality (IMF Working Paper No. 2021/164). International Monetary Fund.

Menicucci, E., & Paolucci, G. (2016). The determinants of bank profitability: Empirical evidence from European banking sector. *Journal of Financial Reporting and Accounting*, 14(1), 86–115.

Nigadi, S., & Kulkarni, S. (2020). A study on vulnerabilities in Indian banking sector: With reference to blockchain technology. *International Journal of Financial Services Management*, 10(4), 322–341.

Nobanee, H., Ellili, N. O. D., Chakraborty, D., & Shanti, H. Z. (2024). Mapping the fintech revolution: How technology is transforming credit risk management. *Global Knowledge, Memory and Communication*.

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, 41(5), 673–690.

Qureshi, M., & Zahoor, M. (2016). Impact of profitability, bank and macroeconomic factors on the market capitalization of the Middle Eastern banks. *International Journal of Business and Management Invention*, 5(11), 56-62.

Sharma, P. K., & Dhiman, B. (2023). Impact of non-performing assets on financial performance of selected merged Indian public sector banks. *Indian Journal of Finance*, 54–69.

Sharifi, S., Halder, A., & Rao, S. N. (2016). Relationship between operational risk management, size, and ownership of Indian banks. *Managerial Finance*, 42(10), 930–942.

Shashidhar, S., Kulkarni, S., & Srivatsa, H. S. (2025). Serving Small Finance Bank Customers better using Psychographics in Karnataka and Tamil Nadu. *Finance India*, 39(2), 365.

Suresh, N., Kumar, S. A., & Gowda, D. M. (2010). Credit Risk Management in Commercial Banks. *CURIE Journal*, 2(4).

Thiagarajan, S., Ayyappan, S., & Ramachandran, A. (2011). Credit risk determinants of public and private sector banks in India. *European Journal of Economics, Finance and Administrative Sciences*, 34(34), 147-153.

Vidyarthi, H. (2020). Dynamics of income diversification and bank performance in India. *Journal of Financial Economic Policy*, 12(3), 383-407.

Zhu, Y., & Jin, S. (2023). COVID-19, digital transformation of banks, and operational capabilities of commercial banks. *Sustainability*, 15(11), 8783.