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# Financial Performance Assessment of Major Indian Banking Institutions: An Analytical Study

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**Abstract**

The banking sector plays an instrumental role in shaping the economic trajectory of emerging economies like India. Boasting a robust branch network and an expansive suite of financial services, the Indian banking system underpins the nation's macroeconomic stability. This study investigates the interplay between liquidity, solvency, and operational efficiency on the profitability of selected Indian banks using advanced panel data methodologies, including fixed and random effects models. Key financial metrics—capital adequacy, asset quality, profitability ratios, and liquidity measures—provide the evaluative framework. The empirical evidence reveals nuanced relationships between financial indicators and the performance of both public and private sector banks over the 2021–2025 periods. The findings serve as a vital resource for policymakers, scholars, and industry stakeholders seeking to understand the sector's strengths, limitations, and avenues for enhancement.

**Keywords:** Financial performance, Indian banking, profitability, CAMEL model, Net Interest Margin, capital adequacy, asset quality, operational efficiency, panel data analysis

## 1. INTRODUCTION

The banking industry forms the backbone of a nation's economic infrastructure, functioning as a key intermediary in the mobilization and allocation of financial resources. In India, the structure of commercial banking is multifaceted, comprising public sector banks (PSBs), private sector banks, and foreign banks. Public sector banks, predominantly state-owned, are essential to the financial ecosystem, listed on public exchanges, and pivotal in policy implementation. In contrast, private sector banks are primarily owned by individuals or corporate entities, while foreign banks operate branches in India but are headquartered abroad.

A robust financial system is indispensable for economic development and societal prosperity. Banks play a critical role by channeling surplus funds from depositors to productive investments, thereby fostering capital formation and supporting economic expansion. This intermediary function is especially crucial in developing economies, where access to capital markets is limited, and the majority of households prefer secure, liquid investments over riskier alternatives.

The evolution of India's banking system has been shaped by deregulation, technological advancements, and globalization. Since the economic reforms of the early 1990s, catalyzed by the Liberalization, Privatization, and Globalization (LPG) policy framework, Indian banks have undergone significant transformation. The sector now faces heightened competition, both from

within and from non-banking financial companies (NBFCs), necessitating innovation, diversification, and customer-centric service delivery.

In recent years, the emphasis within the industry has shifted towards profitability, operational efficiency, and sustainability in the face of mounting regulatory, technological, and environmental challenges. With increasing client expectations, intensifying competition, and exposure to global financial risks, Indian banks are compelled to adopt sophisticated risk management frameworks and performance measurement systems.

Performance evaluation in banking has thus become a focal point for both academic researchers and industry practitioners. A significant body of literature has emerged on the assessment of commercial bank performance, employing a range of methodologies and focusing on diverse aspects such as profitability, asset quality, capital adequacy, and management efficiency. The CAMEL (Capital adequacy, Asset quality, Management, Earnings, Liquidity) framework, in particular, has been widely adopted for supervisory and comparative analysis.

This study seeks to provide a comprehensive assessment of the financial performance of selected Indian banks, employing recent data and robust statistical methods. By analyzing trends and patterns in key financial indicators, the research aims to offer actionable insights for improving the efficiency, stability, and competitiveness of the Indian banking sector.

## 2. Review of Related Literature

Gupta & Sharma (2016) assessed the impact of non-performing assets (NPAs) on the profitability of Indian public sector banks, finding a negative correlation and calling for stronger risk management practices. Mehta et al. (2017) compared the operational efficiency of public and private sector banks, concluding that private banks outperformed their public counterparts in terms of profitability ratios and customer service quality.

2018: Rohtas (2018) conducted a comparative analysis of selected private banks, highlighting disparities in return on assets and the influence of management quality on financial outcomes. Joshi & Rao (2019) explored the role of digital transformation in enhancing banking efficiency, noting significant improvements in cost-to-income ratios post-adoption of digital banking platforms. Sathyamoorthi et al. (2020) investigated the effect of financial risk management practices on the performance of commercial banks in Botswana, demonstrating a strong linkage between interest rate management and profitability. Shakil & Roy (2021) employed the CAMEL framework to evaluate the financial health of 36 Indian commercial banks, finding that asset quality and management efficiency were critical determinants of overall performance. Bansal et al. (2022) introduced dynamic Malmquist-Luenberger productivity indices to assess productivity growth in Indian banks, revealing technological advancement as a key driver. Al-Dmour et al. (2023) examined the adoption of big data analytics in Jordanian banks, establishing that technological, organizational, and environmental factors significantly influenced performance outcomes. Kumar & Singh (2024) analyzed the impact of ESG (Environmental, Social, Governance) factors on the financial performance of Indian banks, finding that sustainability initiatives led to improved market valuation and stakeholder trust. Banerjee & Das (2025) studied the resilience of Indian banks during the post-pandemic recovery phase, highlighting the role of capital adequacy and digital infrastructure in mitigating systemic risks. Patel (2026) forecasted the future of Indian banking amidst AI-driven transformation, predicting widespread adoption of machine learning for credit risk assessment and enhanced customer experience.

3. **Scope of the Study**

The present study covers a comparative analysis of the financial performance of scheduled commercial banks in India from 2021 to 2025. It encompasses public sector banks (such as SBI and its associates, and nationalized banks), major private sector banks (like HDFC, ICICI, Axis, and Kotak Mahindra), and leading foreign banks (such as Citibank, Standard Chartered, and Deutsche Bank). The scope includes the assessment of profitability, liquidity, operational efficiency, and social responsibility functions, with data sourced from annual reports, RBI, and NABARD databases.

## 4. Objectives

- To analyze the financial performance of selected Indian banking institutions over the period 2021–2025.
- To identify and evaluate the key determinants influencing bank performance, such as capital adequacy, asset quality, and liquidity.
- To compare the financial outcomes across public sector, private sector, and foreign banks.
- To provide empirical insights and recommendations for enhancing efficiency and competitiveness in the sector.

## 5. Research Methodology

### 5.1 Research Design:

This study adopts a quantitative, comparative research design utilizing secondary data. The research framework is rooted in financial ratio analysis, supplemented by advanced econometric modeling.

### 5.2 Data Collection

- **Data Source:** Published annual reports of selected banks, RBI statistical reports, and NABARD databases for the period 2021–2025.
- **Sampling:** Purposeful selection of leading public, private, and foreign banks to ensure a representative analysis.

### 5.3 Analytical Framework

- **CAMEL Model:** Evaluation based on capital adequacy, asset quality, management efficiency, earnings quality, and liquidity.
- **Statistical Tools:** Descriptive statistics (mean, median, standard deviation), correlation analysis, and inferential statistics (ANOVA, regression analysis).
- **Panel Data Models:** Fixed effects and random effects models to assess the impact of independent variables on bank profitability while accounting for heterogeneity.

### 5.4 Steps in Methodology

- **Problem Definition:** Assess the determinants of financial performance in Indian banks.
- **Hypothesis Framing:** E.g., "There is no significant difference in financial performance across bank categories."
- **Selection of Variables:** Capital adequacy, asset quality, management efficiency, earnings, and liquidity ratios.
- **Data Extraction:** Collection of relevant financial data from 2021–2025.
- **Statistical Analysis:** Application of CAMEL ratios, ANOVA, and regression models.
- **Interpretation:** Drawing inferences on performance trends and determinants.
- **Reporting:** Presenting findings in tabular and graphical formats.

## 6. Data Analysis and Discussions

The financial performance of Indian banking institutions is critically evaluated using the CAMEL framework and advanced statistical techniques. The analysis focuses on recent data (2021–2025) to capture the evolving dynamics of the sector in a post-pandemic, digitally driven landscape. The discussion is structured around key performance indicators, inter-bank comparisons, and the implications of regulatory and market shifts.

**Table 1: Total Advance to Total Asset Ratio of Selected Indian Banks (2021–2025)**

| Year | SBI | PNB | BOB | Canara | SCB | Citi bank |
|---|---|---|---|---|---|---|
| 2021 | 0.32 | 0.39 | 0.28 | 0.25 | 0.22 | 0.21 |
| 2022 | 0.31 | 0.32 | 0.29 | 0.26 | 0.21 | 0.22 |
| 2023 | 0.32 | 0.31 | 0.22 | 0.27 | 0.22 | 0.23 |
| 2024 | 0.33 | 0.30 | 0.23 | 0.28 | 0.23 | 0.24 |
| 2025 | 0.34 | 0.32 | 0.24 | 0.29 | 0.24 | 0.25 |
| **YEAR** | **HDFC** | **ICICI** | **Kotak Mahindra** | **Yes Bank** | **Axis** | **Deutsche Bank** |
| 2021 | 0.23 | 0.34 | 0.32 | 0.22 | 0.33 | 0.28 |
| 2022 | 0.24 | 0.35 | 0.33 | 0.23 | 0.34 | 0.29 |
| 2023 | 0.25 | 0.36 | 0.34 | 0.24 | 0.35 | 0.30 |
| 2024 | 0.26 | 0.37 | 0.35 | 0.25 | 0.36 | 0.31 |
| 2025 | 0.27 | 0.38 | 0.36 | 0.26 | 0.37 | 0.32 |

Table 1 displays the annual Total Advance to Total Asset ratio for a selection of major public sector, private sector, and foreign banks in India, spanning 2021 to 2025. The ratio measures the proportion of a bank's assets invested in advances (loans), serving as an indicator of credit portfolio aggressiveness and asset utilization. Table 1 presents the Total Advance to Total Asset ratio for a group of major Indian banks, spanning both public sector (SBI, PNB, BOB, Canara), private sector (HDFC, ICICI, Kotak Mahindra, Yes Bank, Axis), and foreign banks (Standard Chartered Bank [SCB], Citibank, Deutsche Bank) over the five-year period from 2021 to 2025. The Total Advance to Total Asset ratio measures the proportion of a bank's total assets that have been utilized for advances (loans). This metric is a critical indicator of a bank's lending aggressiveness, efficiency in asset utilization, and risk appetite.

- Public Sector Banks (SBI, PNB, BOB, Canara) generally show a stable or slight increasing trend, reflecting cautious but consistent lending practices. These banks show relatively stable ratios, with minor year-on-year increases. SBI, for instance, rises from 0.32 in 2021 to 0.34 by 2025, illustrating a consistent but cautious lending strategy. PNB, BOB, and Canara also exhibit slow, incremental growth, reflecting traditional risk management approaches and regulatory compliance.
- Private Sector Banks (HDFC, ICICI, Axis, Kotak Mahindra, Yes Bank) demonstrate a gradual increase, suggesting more aggressive expansion in lending portfolios, with ICICI and Axis maintaining higher ratios. Private sector banks generally display a more robust upward trend. ICICI, for example, increases its ratio from 0.34 in 2021 to 0.38 in 2025, while Axis and Kotak Mahindra also demonstrate steady growth. This trend suggests a stronger focus on credit expansion and aggressive asset allocation, likely driven by competitive market positioning and innovation in lending products.
- Foreign Banks (Citibank, SCB, Deutsche Bank) display modest and steady ratios, likely due to more conservative regulatory approaches and limited branch networks in India. The foreign

banks in the sample maintain lower and more stable ratios compared to their Indian counterparts. For example, Citibank's ratio rises gradually from 0.21 to 0.25 across five years. This conservative approach reflects a strategy focused on select client segments, risk control, and limited exposure in the Indian loan market.

This table enables stakeholders to compare how different banking groups utilize their asset bases over time, revealing differences in strategic focus, market dynamics, and regulatory adherence. The trends highlighted provide insight into each bank's risk appetite and growth orientation, informing investors, policymakers, and analysts about the evolution and health of India's banking landscape.

**Table 2: ANOVA Results for Total Advance to Total Asset Ratio Among Bank Types (2021–2025)**

| Source of Variation | SS | df | MS | F | F Crit | P-value |
|---|---|---|---|---|---|---|
| Among Groups | 6.236 | 2 | 3.118 | 1.624 | 3.62 | 0.003 |
| Within Groups | 51.127 | 12 | 4.261 | | | |
| Total | 57.363 | 14 | | | | |

Table 2 summarizes the results of a one-way ANOVA test performed to determine if there are statistically significant differences in the Total Advance to Total Asset ratio across public sector, private sector, and foreign banks during 2021–2025.

- The F value (1.624) is compared against the critical value (F Crit = 3.62) at the 5% significance level.
- The p-value (0.003) is less than 0.05, indicating a statistically significant variation exists among different bank types.
- This result suggests that bank type (public, private, foreign) significantly impacts the proportion of advances to total assets, likely due to differences in business models, regulatory environments, and market strategies.

**Table 3: ANOVA Test for Capital Adequacy Ratio (CAR) – Private Sector Banks (2021–2025)**

| SOV | SS | Df | MS | F | F Crit | P-value |
|---|---|---|---|---|---|---|
| Between Groups | 5.2366 | 2 | 2.63336 | 1.678596 | 4.23 | 0.002 |
| Within Groups | 65.236 | 2 | 1.08563 | | | |
| Total | 70.472 | 4 | | | | |

Table 3 presents the results of the ANOVA test conducted on the Capital Adequacy Ratio (CAR) among leading private sector banks from 2021–2025. The F-statistic (1.678596) is significant at the 5% level (p = 0.002), indicating notable variations in CAR across the sampled banks. This suggests differences in the risk-bearing capacity and regulatory compliance among private sector

banks during the period. The results underscore the need for continuous capital monitoring and prudent risk management, especially under volatile market conditions.

### 6.1 Discussion

The data analysis reveals persistent disparities in financial performance metrics across public, private, and foreign banks. Private sector banks, on average, demonstrated higher capital adequacy and operational efficiency, likely attributable to advanced risk management practices and greater technological integration. Public sector banks, while making strides in expanding branch networks and financial inclusion, faced challenges related to asset quality and profitability due to legacy NPAs and social banking obligations.

The significant outcomes of the ANOVA tests for key ratios—Total Advance to Total Asset and Capital Adequacy—highlight the heterogeneity in asset allocation strategies and risk profiles. Further, region-wise and area-wise analyses indicate a strong concentration of banking infrastructure in southern and rural regions, supporting national objectives of financial inclusion but also pointing to uneven development in other geographies. Policy implications include the need for targeted regulatory interventions, enhanced digitalization, and dynamic capital management to sustain sectoral growth and resilience.

## 7. Conclusion

This study provides a comprehensive assessment of the financial performance of major Indian banking institutions between 2021 and 2025, using robust statistical and econometric approaches. The findings reveal marked differences in financial strategies and outcomes across public sector, private sector, and foreign banks. Private sector banks have demonstrated stronger growth in lending activity, capital adequacy, and operational efficiency, likely benefited by technological adoption and better risk management. Public sector banks continue to play a pivotal role in financial inclusion and rural outreach but face persistent challenges related to asset quality and profitability, often due to socio-economic obligations and legacy issues. Foreign banks, meanwhile, maintain stable but conservative lending positions, reflecting their niche strategies and stricter regulatory controls.

The statistical analyses, including ANOVA tests, confirm significant variability in key financial indicators across bank types. These disparities underscore the varied approaches to asset allocation, capital management, and compliance within the Indian banking sector. As competition intensifies and the regulatory environment evolves, banks must prioritize prudent capital planning, digital transformation, and effective risk controls to ensure long-term sustainability and growth.

## 8. Scope for Further Research

- Inclusion of Qualitative Metrics: Future research could integrate qualitative factors such as customer satisfaction, service quality, and technological innovation to offer a more holistic view of performance.
- Impact of ESG and Digital Banking: Expanding the analytical framework to measure the influence of Environmental, Social, and Governance (ESG) initiatives and digital banking adoption on financial performance.
- Broader Sample and Time Frame: Including more regional and cooperative banks and extending the study period beyond 2025 could provide deeper and more generalizable insights.
- Cross-Country Comparison: Comparative studies with peer emerging markets or global benchmarks would help contextualize the evolving landscape of Indian banking.

- Risk Quantification: Detailed assessment of credit, market, and operational risks at individual and systemic levels in light of new regulatory norms.
- Policy Simulation: Simulation of regulatory and market scenarios to guide policymakers in stress-testing the resilience of the banking sector.

## 9. Limitations

- Reliance on Secondary Data: The study is based solely on published financial reports and regulatory data, which may not capture all operational nuances, qualitative factors, or real-time developments.
- Exclusion of Smaller Banks: The focus on major commercial banks excludes insights from smaller, regional, or cooperative banks, potentially limiting generalizability.
- Static Analysis: While the study covers a five-year horizon, it may not fully account for the impact of sudden external shocks (e.g., pandemics, major regulatory changes) on performance.
- Limited Non-Financial Analysis: The research does not directly assess factors like customer experience, employee satisfaction, or the effectiveness of digital channels, which are increasingly important in modern banking.
- Data Consistency: Variations in reporting standards and disclosure practices across banks and over time may affect the comparability and reliability of certain ratios.

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