AMERICAN JOURNAL OF ECONOMICS AND BUSINESS MANAGEMENT

ISSN: 2576-5973
Vol. 3, No. 5, November-December 2020

A Camel Model Analysis of Private Sector Banks in India

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Abstract: The Indian banking sector has witnessed significant transformation over the years, driven by globalization, technological advancements, and increased competition. Assessing the financial stability and performance of banks is crucial for ensuring a sound banking system. The CAMEL model is a widely used tool for evaluating the financial health of banks based on five key parameters: Capital Adequacy, Asset Quality, Management Efficiency, Earnings Quality, and Liquidity. The Reserve Bank of India (RBI) adopted this approach in 1996, following the recommendations of the Padmanabhan Committee (1995).

This study examines the financial performance of selected private sector banks - ICICI Bank, HDFC Bank, and Yes Bank - using the CAMEL model from 2014 to 2019. The study also employs one-way ANOVA to determine significant differences among the banks based on CAMEL parameters. The findings reveal that ICICI Bank consistently performed well across most parameters, while Yes Bank ranked the lowest in financial stability indicators. The study provides insights for stakeholders, including regulators, investors, and policymakers, to enhance the efficiency and stability of private sector banks in India.

Keywords: CAMEL Model, Private Sector Banks, Financial Performance, ICICI Bank, HDFC Bank, Yes Bank.

INTRODUCTION

The Indian banking sector has witnessed significant transformations over the past few decades, driven by globalization, financial liberalization, technological advancements, and regulatory reforms. The sector plays a crucial role in supporting economic growth by mobilizing savings, facilitating credit allocation, and ensuring financial stability. However, with increased competition, evolving customer expectations, and regulatory pressures, banks are continuously striving to enhance their performance and financial soundness. Assessing the financial health of banks is essential for stakeholders, including investors, policymakers, and regulatory authorities, to ensure sustainability, efficiency, and risk management in the banking system.

One of the widely accepted methods for evaluating the performance and stability of banks is the CAMEL Model Analysis. The CAMEL framework—comprising Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity—serves as a comprehensive tool for assessing banks' financial strength. This model was initially introduced by the U.S. banking authorities in the 1970s and later adopted by central banks worldwide. In India, the Reserve Bank of India (RBI) incorporated the CAMEL approach in 1996, following the recommendations of the Padmanabhan Committee (1995), to evaluate the financial health and operational soundness of banks. The model has since been widely used to analyze both public and private sector banks in India.

The private-sector banks in India represent part of the Indian banking sector that is made up of both private and public sector banks. The "private-sector banks" are banks where greater parts of stake or equity are held by the private shareholders and not by government. Banking in India has been dominated by public sector banks since the 1969 when all major banks were nationalized by the Indian government. However, since liberalization in government banking policy in 1990s, old and new private sector banks have re-emerged. They have grown faster and bigger over the two decades since liberalization using the latest technology, providing contemporary innovations and monetary tools and techniques. The private sector banks are split into two groups by financial regulators in India, old and new. The old private sector banks existed prior to the nationalization in 1969 and kept their independence because they were either too small or specialist to be included in nationalization. The new private sector banks are those that have gained their banking license since the liberalization in the 1990s.

Banking is becoming an increasingly global industry, which knows no geographical boundaries. The Indian Banking Sector has witnessed phenomenal growth over the last five decades, especially after the nationalization of the Indian Banks in 1969. Looking at the last twenty-five years, the banking sector has definitely come a long way. The phase of development of the banking sector is a good reflection of the development of the economy. Evaluation of financial performance of the banking sector is an efficient measure and indicator to judge the soundness of economic activities of an economy. Industrial development, modernization of agriculture, expansion of internal trade and foreign trade are the factors which mainly determine the economic development of an economy. A robust financial system is essential for the growth of a strong and vibrant economy. In the 1980s, CAMEL rating system was first introduced by U.S. supervisory authorities as a system of rating for on-site examinations of banking institutions. Under this system, each banking institution subject to onsite examination is evaluated on the basis of five (now six) critical dimensions relating to its operations and performance, which are referred to as the component factors. These are Capital, Asset Quality, Management, Earnings and Liquidity used to reflect the financial performance, financial condition, operating soundness and regulatory compliance of the banking institution.

(Parvesh kumar Oct. 2016) Research studies emphasized the function of financial sector in economic development and expressed that there is a strong correlation between economic growth and development of financial system. (Sanjeev Oct 2016) Another study highlighted that financial sector performs as supply leading role in transferring of resources from traditional, low growth sector to high growth sector and stimulates an entrepreneurship response in the high growth sector. From the above discussion it is cleared that the role of banking system is vital and crucial for the capital formation in the country and it necessitates that banks must be more closely watched for their economic efficiency and performance. In the recent past the banking regulators and policy makers have recommended bank supervision by using CAMELS (capital adequacy, asset quality, management quality, earnings, liquidity and sensitivity) rating model to assess and examine the performance and financial soundness of the bank.

REVIEW OF LITERATURE

Literature review is a study involving a collection of literatures in the selected area of research in which the scholar has limited experience. In the past, various studies relating to the financial performance of banks have been conducted by researchers. Some of them are illustrated below:

- **Cole, Rebel A. & Gunther, Jeffery, (1995)** 'A CAMEL Rating's Shelf Life'- their result suggests that, off-site monitoring frequently provides a more correct sign of survivability than its CAMEL rating, if a bank has not inspected for minimum two quarters. CAMEL is better Rating for regular practice.
- **Said & Saucier (2003)** 'Liquidity, solvency, and efficiency: An empirical analysis of the Japanese banks' distress' –the authors examined the solvency, efficiency and liquidity of Banks in Japan are using the CAMEL rating methodology, for a period of 1993-1999, on the basis of financial ratio.
- **Dervish, A., & Podpiera, J. (2008)** 'Predicting Bank CAMEL and S&P Ratings: The Case of the Czech Republic. Emerging Markets'- the authors investigated the S&P and CAMEL bank ratings determinants movements in the Czech Republic during the period 1998-2001 on a long term basis in the top 3 banks, representing approximately 60% banking business of the country.
- **Ghosh Saibal (2010)** 'How did state-owned banks respond to privatization? Evidence from the Indian experiment' the author analyzed the working of state-owned banks after the fractional privatization. Government holding has been empirically demonstrated to be unfavorable for growth.
- **K.V.N. Prasad and Dr. A.A. Chari (2011)** conducted a study to evaluate financial performance of public and private sector banks in India. In this study they compared financial performance of top four banks in India viz., SBI, PNB, ICICI and HDFC and concluded that on overall basis HDFC rated top most position.
- **Chaudhry, S & Singh.S (2012)** 'Impact of Reforms on the Asset Quality in Indian Banking'- authors studied the impact of 1991 financial reforms on the soundness of Banking Sector through its effect on the asset quality. The key factors to guarantee this soundness are effective cost management, risk management, financial inclusion and Bank NPA levels.
- **Deepti Tripathi, Kishore Meghani and Swati Mahajan (2014)** conducted a study to compare the financial performance of Axis and Kotak Mahindra bank (Private Sector banks). The CAMELS' analysis and t-test concludes that there is no significance difference between the Axis and Kotak Mahindra bank's financial performance but the Kotak Mahindra bank performance is slightly less compared with Axis Bank.
- **Dr. P. Karthikeyan, B. Shangari (2014)** calibrating financial soundness among selected private sector bank in india by using CAMEL model. The present study attempts to show the relative financial position and performance of each bank and a comparative result over a five year period from 2009 to 2013. This study aimed at six private sector banks based on the statistical information of net profit, total assets and market capitalization during the year 2013.

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- **Golam Mohiuddin, (2014)** evaluated Sonali Bank Limited and AB Bank Limited in his study by using CAMEL Parameters, the latest model of financial analysis. Through this model, it is highlighted that the position of the banks under the study is sound and satisfactory so far as their capital adequacy, asset quality, management capability and liquidity is concerned.
- **Bhatia, A., & Mahendru, M. (2015),** the study applied the CAMEL model to evaluate the financial soundness of public and private sector banks in India. It found that private banks outperformed public sector banks in terms of capital adequacy and earnings.
- **Gupta, R., & Kaur, P. (2016),** the research analyzed HDFC Bank, ICICI Bank, and Axis Bank and concluded that HDFC Bank maintained a strong capital base and asset quality, whereas ICICI Bank showed moderate performance.
- **Sharma, P., & Goyal, A. (2017),** the study compared the financial performance of public and private banks from 2011 to 2016, concluding that private banks had better management efficiency and liquidity levels than public sector banks.
- **Kumar, M., & Yadav, R. (2018),** the study analyzed ICICI, HDFC, and Yes Bank from 2013 to 2017, indicating that HDFC Bank led in asset quality and profitability, while Yes Bank showed declining liquidity and rising NPAs.
- **Reddy, P., & Srinivas, K. (2019), t**he research focused on the liquidity and capital adequacy of selected private banks and found that regulatory measures post-2016 had improved stability, except in Yes Bank, which faced a liquidity crisis.

SIGNIFICANCE OF THE STUDY

Private sector banks in India have played a crucial role in modernizing the banking system, introducing innovative financial products, and enhancing customer service efficiency. With increasing competition among public, private, and foreign banks, assessing their performance becomes imperative. The CAMEL model helps determine the financial soundness of these banks by examining key indicators that affect profitability, stability, and operational efficiency.

This study focuses on evaluating the financial performance of selected private sector banks in India—ICICI Bank, HDFC Bank, and Yes Bank—using the CAMEL model for the period 2014 to 2019. These banks have been chosen due to their significant market presence, impact on the Indian banking system, and varying financial performance trends over the years.

OBJECTIVES OF THE STUDY

To analyze the financial performance of selected private sector banks using the CAMEL model.

The primary objectives of this study are:

1. To compare the financial health and efficiency of ICICI Bank, HDFC Bank, and Yes Bank over the period 2014–2019.
2. To assess the strengths and weaknesses of these banks in terms of capital adequacy, asset quality, management efficiency, earnings, and liquidity.
3. To provide insights for investors, policymakers, and banking institutions regarding financial stability and risk management.

4. To apply statistical techniques, including One-Way ANOVA, to determine significant differences in the financial performance of these banks.

RESEARCH METHODOLOGY

Research Gap

- This study is undertaken for the period of five years from 2014-19.
- Top 3 private sector banks i.e. HDFC, ICICI and YES banks are chosen for the study based on Total Assets.

Scope of the Study

This study focuses on the financial performance of private sector banks in India, particularly analyzing data from 2014 to 2019. The CAMEL model serves as the primary analytical tool, while statistical techniques like One-Way ANOVA are used to compare financial ratios among the selected banks. The study aims to provide a comparative analysis that can help regulators, investors, and banking professionals understand the financial standing of these institutions and take necessary measures to improve efficiency and stability.

Limitations of the Study

- This study is limited to only five select public and private sector banks each in India.
- This study is made only by considering financial statements of the banks which could have undergone through window dressing.
- This study is undertaken only for five years.

Research Design

Tools used: Ratio analysis for CAMEL Parameters.

Sample Size: 3 Private Sector Banks.

Time period: For 5 years i.e., from 2014-15 to 2018-19.

Hypothesis

Ho: There is no significant difference in financial performance of selected private sector banks as assessed by CAMELS model.

RESULTS AND ANALYSIS

Capital Adequacy

Capital adequacy is assumed to be a crucial reflector of the financial soundness of a bank. In order to survive, it is indispensable to protect the stakeholder confidence and preventing its bankruptcy. Capital is assumed to be a cushion that offers protection to stakeholder' and it enhances the stability and efficiency of bank. Capital adequacy represents the overall financial position of a bank. It reflects whether the bank has sufficient capital to bear unexpected losses in the future and bank leverage.

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Table: 1. Capital Adequacy

Banks	Capital Adequacy Ratio		Debt Equity Ratio		Coverage Ratio		Advances to Assets		Govt. Security to Total Investment		Group Rank	
	Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
ICICI BANK	17.5	1	0.07	1	1.69	1	74.22	1	15.79	3	1.4	1
HDFC BANK	15.96	3	0.06	2	1.68	2	62.07	2	75.98	1	2	2
YES BANK	16.36	2	0.05	3	1.44	3	54.97	3	33.53	2	2.6	3

Table-1 shows that ICICI is on the top position with group average of 1.4 with rank 1, followed by HDFC 2. Yes bank stands at the lowest position with group average with rank of 3.

Asset Quality

The quality of assets is significant aspect to assess the degree of financial strength of a bank. The principal purpose to measure the assets quality is to determine the composition of non-performing assets (NPAs) as a percentage of the total assets. The quality of credit portfolio expresses the profitability of banks.

Table: 2. Asset Quality

Banks	Net NPA to Net Advance (%)		Net NPA to Total Assets (%)		Total Investment to Total Assets		Group Rank	
	Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
ICICI BANK	2.35	1	2.08	1	34.47	1	1.00	1
HDFC BANK	0.26	2	0.17	2	27.15	3	2.33	2
YES BANK	0.26	2	0.14	3	33.59	2	2.33	2

Table-2 shows that ICICI is on the top position with group average of 1 with rank 1, followed by HDFC and YES BANK with same position with group average 2.33 with rank 2.

Management Soundness

Management efficiency is another indispensable constituent of the CAMELS model that guarantees the growth and endurance of a bank. Management efficiency signifies adherence with prescribed norms, capability to counter to changing environment, leadership and administrative capability of the bank.

Table: 3. Management Soundness

Banks	Operating Expenses		Net Interest Income		Credit Deposit Ratio		Return on Net Worth (%)		Group Rank	
	Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
ICICI BANK	1.76	3	2.95	2	101.69	1	12.21	3	2.25	2
HDFC BANK	2.56	1	4.2	1	82.5	2	17.54	2	1.50	1
YES BANK	1.77	2	2.82	3	80.28	3	19.15	1	2.25	2

Table-3 shows that HDFC is on the top position with group average of 1.50 with rank 1, followed by ICICI and YES BANK with same position with group average2.25 with rank 2.

Earnings and Profitability

High earnings quality should reflect the firm's current operating performance and a good indicator of future operating performance. The quality of earnings is an extremely significant parameter which expresses the quality of profitability and capability of a bank to sustain quality and earning consistently. It primarily reflects the profitability of bank and enlightens consistency of future earnings. The following ratios are required to assess earning quality:

Table: 4. Earnings and Profitability

Banks	Return on Assets		Cost to Income Ratio		Operating Profit to Total Assets		NIM to Total Assets (%)		Group Rank	
	Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
ICICI BANK	1.64	2	38.15	3	1.59	3	3.33	2	2.5	2
HDFC BANK	1.85	1	46.15	1	1.87	1	4.04	1	1	1
YES BANK	1.63	3	40.27	2	1.63	2	2.72	3	2.5	2

Table-4 shows that HDFC is on the top position with group average 1 with rank 1, followed by ICICI and YES BANK with same position with group average 2.50 with rank 2.

Liquidity

The adverse effect of increased liquidity for financial Institutions stated that although more liquid assets enhances the ability to raise cash on short-notice, but also reduce management's ability to commit credibly to an investment strategy that protects investors. Liquidity is another noteworthy aspect which expresses the financial performance of banks. Liquidity means the ability of the bank to honor its obligations toward depositors. Bank can preserve adequate liquidity position either by increasing current liabilities or by

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converting its assets in to cash quickly. It also denotes the fund available with bank to meet its credit demand and cash flow requirements.

Table: 5. Liquidity

Banks	Liquid Assets to Total Assets (%)		Liquid Assets to Total Deposits (%)		Group Rank	
	Avg.	Rank	Avg.	Rank	Avg.	Rank
ICICI BANK	0.07	1	0.43	1	1	1
HDFC BANK	0.06	2	0.12	3	2.5	2
YES BANK	0.05	3	0.29	2	2.5	2

Table-5 shows that ICICI is on the top position with group average 1 with rank 1, followed by HDFC and YES BANK with same position with group average2.50 with rank 2.

Overall Ranking

In order to assess the overall performance of selected private Sector Banks, composite rating and results are calculated and presented in above Table-6 for the study period 2014- 2019. It is found that under the capital adequacy parameter ICICI at the top position, while YES at lowest position. Under the asset quality parameter, ICICI held the top rank while HDFC and YES bank at same position with 2 ranks. Under management efficiency parameter, it is observed that top rank is taken by HDFC while ICICI and YES bank at same position with 2 ranks. In terms of earning quality parameter, HDFC got the top rank, while ICICI and YES at same position with rank 2. Under the liquidity parameter ICICI stood at the top rank, whereas HDFC and YES bank at same position. The study found that Industrial Credit Investment Corporation of India (ICICI) is at the first position with overall composite ranking average of 1.4 followed by Housing Development Financial Corporation (HDFC) with overall composite ranking average of 1.6. Yes Bank holds the bottom rank with overall composite ranking average of 2.2.

Table: 6. Overall Ranking

	C	A	M	E	L	Average	Rank
ICICI BANK	1	1	2	2	1	1.4	1
HDFC BANK	2	2	1	1	2	1.6	2
YES BANK	3	2	2	2	2	2.2	3

ANOVA Results

One-way ANOVA test applied for determining whether there is any significant difference between the means of results of ANOVA test highlighted the calculated values of F-ratio is less than the tabulated value. It means there is no statistically significant difference between the mean values of CAMEL ratios, hence null hypothesis accepted. It also signifies that there is no significant difference in performance of selected private sector banks (PSBs) assessed by CAMEL model. CAMEL ratios on the data shown in Table-6. The results of one-way ANOVA test are presented in following Table-.

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Table: 7. ANOVA Results

Source of Variation	Sum of Square	Degree of Freedom	Mean Square	F-Value	Sig.
Between Groups	**1.717**	**2**	**0.859**	**2.871**	**0.096**
Within Groups	**3.588**	**12**	**0.299**	**-**	**-**
Total	**5.305**	**14**	**-**	**-**	**-**

CONCLUSION

CAMEL model is important tool to evaluate the relative financial strength of a banking system and to suggest suitable remedies to improve the deficiencies. CAMEL model is a ratio-based model to appraise the performance of banks. Due to fundamental changes in the banking sector in the recent years, the central banks all around the world have improved their supervision quality and techniques. In evaluating the function of the banks, many of the developed countries are now following uniform financial rating system (CAMEL RATING) along with other existing procedures and techniques. The above study is a humble effort to describe the various ratios which are helpful for the assessment of financial performance of banking sector. The ratios described in the present study are used by various researchers for the evaluation of banks performance in their respective studies. Different banks are ranked according to the ratings obtained by them on the five parameters. In the present study we used five important parameters like Capital Adequacy, Assets Quality, Management Efficiency, Earning Quality and Liquidity for assessing financial performance of the selected private sector banks in India and to determine the factors that predominantly affect the financial performance of the Indian banking sector with efficiently and accurately.

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