EVALUATION OF THE FINANCIAL PERFORMANCE OF PUBLIC AND PRIVATE SECTOR BANKS: CAMELS PRINCIPLES*

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Abstract:

The CAMELS model is highly effective, efficient, and accurate as a tool for evaluating performance and anticipating future risks in the banking industry. It focuses on key financial performance indicators, including Capital adequacy, Asset quality, Management, Earnings, Liquidity, and Sensitivity. The main objective of this study is to compare the performance of private and public sector banks based on CAMELS parameters. The research examines the financial performance of Indian banks from 2019 to 2023, focusing on two private sector banks (HDFC Bank and ICICI Bank) and two public sector banks (State Bank of India and Union Bank). The study's CAMELS rating results show that HDFC Bank, a private sector bank, ranked first overall, followed by ICICI Bank and SBI in second and third place, respectively, with Union Bank ranking last. Hypothesis testing indicates that there is no significant difference between the performance of public and private sector banks in the Indian banking sector. The study's outcomes are expected to provide valuable insights for regulatory authorities in designing appropriate policies for the banking industry.

Today, the CAMELS model is an integral part of the RBI's supervisory framework, providing a comprehensive and systematic approach to evaluating banks' overall health and performance. Its evolution in India underscores the RBI's commitment to enhancing the resilience and stability of the banking sector, aligning with global best practices in banking supervision.

Regulatory bodies evaluate the general health and soundness of banks using a supervisory rating system called the CAMELS model. It assesses banks using six main criteria: sensitivity to market risk, earnings, asset quality, management quality, liquidity, and capital sufficiency.

From 1 (strong) to 5 (weak), each component is given a rating.

Key words: Banking, SBI, Union Bank, HDFC Bank, ICICI Bank, CAMEL Model, Financial Performance Analysis

Introduction:

Capital Adequacy (C): The bank's capital is evaluated in relation to the risk it faces in this component. It assesses the capital of the bank in terms of its assets, including its capacity to withstand losses, as well as its quantity and quality. The capital adequacy ratio (CAR) and the quality of capital are two factors taken into account.

Asset quality (A) looks at the amount of non-performing assets (NPAs) and the makeup of the bank's loan portfolio. It assesses loan diversification, the sufficiency of loan loss reserves, and the bank's underwriting guidelines. Adequacy of loan loss reserves, net charge-offs to average loans, and the ratio of non-performing assets to total loans are among the factors taken into account.
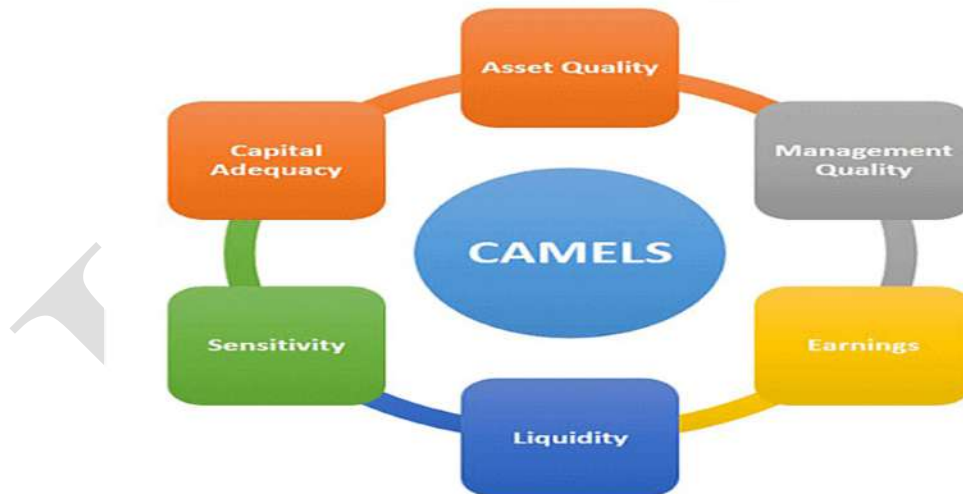

Figure 6.1 CAMEL Model

Management Quality (M): The efficacy and procedures of the bank's management are assessed in this component. It evaluates the effectiveness of the bank's strategic planning procedure, internal controls, risk management techniques, and board of directors and senior management. The credentials and background of important management staff members are among the factors taken into account.

Earnings (E): Earnings evaluate the bank's capacity to produce long-term gains. It assesses the non- interest income, operating costs, efficiency ratio, and net interest margin of the bank. The bank's return on equity (ROE), return on assets (ROA), and earnings stability and consistency are among the factors taken into account.

Liquidity (L): This metric assesses the bank's capacity to fulfill its immediate obligations. It evaluates the bank's methods for managing liquidity risk, the make-up of its funding sources, and the sufficiency of its liquid assets. The bank's net stable funding ratio (NSFR), liquidity coverage ratio (LCR), and the availability of funding sources during difficult times are among the factors taken into account.

Sensitivity to Market Risk (S): The bank's exposure to market risk, such as interest rate, foreign exchange, and commodity price risk, is evaluated in this component. It assesses the efficacy of the bank's hedging strategies as well as its risk management procedures. The bank's susceptibility to fluctuations in interest rates, foreign exchange rates, and commodity prices is one of the factors taken into account, along with the suitability of its risk management policies and processes.

An extensive framework for assessing the general soundness and health of banks' finances is offered by the CAMELS model. It facilitates the identification of possible risks and weaknesses in the banking system by regulatory bodies, allowing them to implement corrective measures in order to preserve stability.

Objectives of the study:

1. To analyze the Financial Performance of selected public and Private sector banks SBI, Union Bank and HDFC and ICICI Bank through CAMEL Principles

2. To offer suggestions for the improvement of efficiency in selected public and Private sector banks through CAMEL Principles

Research Methodology: In the present study, an attempt has been made to measure, evaluate and compare the financial performance of Financial Performance of selected public and Private sector banks SBI, Union Bank and HDFC and ICICI Bank. The study is based on secondary data that has been collected from annual reports of the respective banks, magazines, journals, documents and other published information.

Source/s of Data: The study is based on secondary data: To assess the comparative financial performance of select banks, the study adopted the world - renowned CAMEL model

Data Collection Method: The sample of the study only includes Financial Performance of selected public and Private sector banks SBI, Union Bank and HDFC and ICICI Bank. Simple random sampling was used to select the sample from this banks which are working in the stock market based on the current situation. The study works on largely on secondary data that was taken from the annual reports of the selected banks. Secondary data is collected from the IBA Bulletins, RBI publications, different publication, Bank Quest and journals, various books, periodicals, journals and relating banking industry etc. have also been used for better reliability.

Steps in Applying CAMELS rating system:

To implement the CAMELS rating system effectively, following steps to be followed:

Calculation of Financial Ratios: Compute various financial ratios for each bank, including earning capacity, liquidity position, asset quality, capital adequacy, and management efficiency, as required by the CAMELS rating system.

Bank Ranking: Utilize the calculated ratios to rank the banks based on each parameter of the CAMELS rating system. Assign scores to each bank for every parameter, with higher scores indicating better performance.

Overall Ranking and Interpretation: Aggregate the scores for each parameter to determine the overall ranking of each bank. Analyze the rankings to identify the top-performing banks and areas where improvement may be needed.

The CAMELS rating system assesses the strength of a bank through six categories. CAMELS is an acronym for capital adequacy, assets, management capability, earnings, liquidity, sensitivity. The rating system is on a scale of one to five, with one being the best rating and five being the worst rating.

Ho4: There is no significant difference between CAMEL performance factors on public and private sector banks.

CAMELS enabling better evaluation of their financial performance of public and private banks:

By following these steps, we can effectively assess and rank banks using the CAMELS rating system, enabling better evaluation of their financial performance and other critical metrics.

Table 6.1: Ranking of Banks under Capital Adequacy parameter

CAMEL Ratings (2019 to 2023): Capital Adequacy of Selected Banks					
Ratio	Parameter	SBI	Union Bank	HDFC Bank	ICICI Bank
Capital Adequacy Ratio (CAR)	Mean	12.96%	12.32%	17.85%	17.66%
	Standard Deviation	0.0060	0.0122	0.0176	0.0101
	Rank	3	4	1	2
Debt Equity Ratio	Mean	1.5409	0.9140	1.446	1.959
	Standard Deviation	0.1495	0.1558	0.5465	0.5093
	Rank	3	1	2	4
Total Advances to Assets Ratio	Mean	61.11%	59.81%	57.02%	58.26%
	Standard Deviation	0.0457	0.0206	0.0576	0.0260
	Rank	1	2	4	3
Share-Holder's Fund to Total advances	Mean	10.24%	9.52%	25.42%	20.85%
	Standard Deviation	0.0080	0.0051	0.0322	0.0178
	Rank	3	4	1	2
Share Holder's Fund to Total assets	Mean	6.24%	5.69%	14.47%	12.11%
	Standard Deviation	0.0038	0.0034	0.0199	0.0071
	Rank	3	4	1	2
Return on Net worth ratio	Mean	7.40%	3.35%	12.01%	10.05%
	Standard Deviation	0.0547	0.0988	0.0160	0.0342
	Rank	3	4	1	2
Composite	Average	2.67	3.17	1.67	2.50
	Rank	3	4	1	2

Source: Data compiled from banks reports

Table 6.1 The Capital Adequacy Ratio (CAR) of HDFC Bank is ranked number one, followed by ICICI Bank with an average percentage of 17.66%. State Bank of India follows with 12.96%, and Union Bank ranks lowest with an average percentage of 12.32%, primarily due to its poor performance in Tier I Capital. This is also evident in the Shareholders Fund to total Advances ratio. In contrast, Union Bank and State Bank of India rank first in the Debt Equity Ratio and Total Advances to Assets Ratio, respectively, compared to the other two private banks, which rank fourth. CAR is a critical parameter for measuring a bank's strength in terms of meeting unforeseen losses.

Private banks maintain an average CAR of 17.85% and 17.66%, respectively, securing the top ranks compared to public sector banks. Overall, after considering the averages of the Capital Adequacy Ratio, Debt Equity Ratio, Total Advances to Assets ratio, Shareholders funds to Total assets, and Return on Net worth ratio, private banks only occupy the top position compared to public sector banks. Under BASEL III guidelines, banks are required to maintain a minimum Capital Adequacy Ratio (CAR) of 9%. However, in India, Public Sector Banks (PSBs) are required by the Reserve Bank of India (RBI) to maintain a higher minimum CAR of 12% or above. This requirement is crucial for PSBs as it safeguards the interests of shareholders and helps prevent banks from facing bankruptcy.
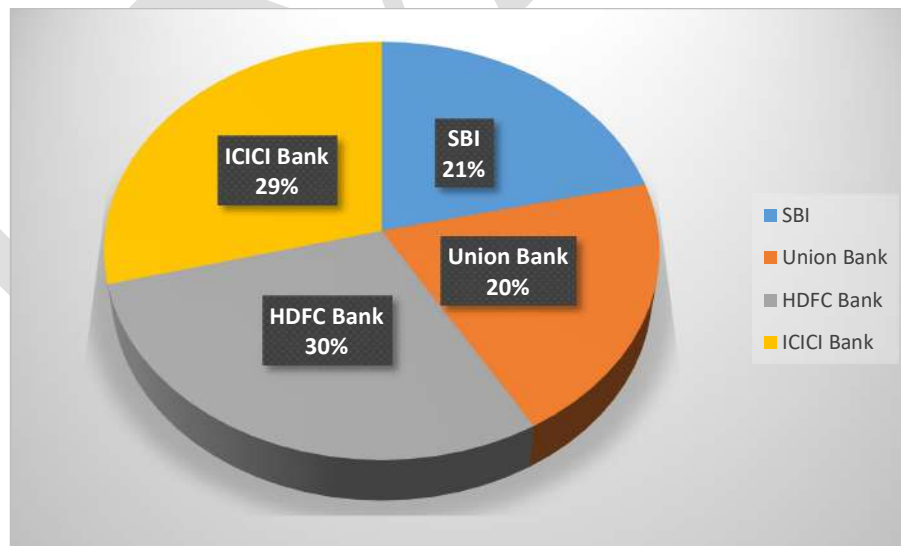

Figure: 6.2 Capital Adequacy Ratio (CAR): Mean values

Asset Quality: evaluates the quality of a bank's loan portfolio:

This aspect of the rating system evaluates the quality of a bank's loan portfolio and the

adequacy of its provisions for loan losses. It considers factors such as the percentage of non-performing loans, the level of delinquent loans, and the overall risk management practices related to asset quality. The specific ratios used to assess asset quality can vary, but common ones include the ratio of non-performing loans to total loans, the ratio of loan loss reserves to total loans, and the ratio of net charge-offs to average loans. These ratios help regulators and analysts measure how well a bank is managing its credit risk and the potential impact of loan losses on its financial stability. As for the ratios prescribed by the Reserve Bank of India (RBI) for assessing asset quality, they may include specific guidelines and thresholds for various indicators related to non-performing assets (NPAs), restructured assets, and provisioning requirements. These ratios help the RBI monitor the health of banks and take appropriate regulatory actions when necessary.

Table 6.2: Ranking of Banks under Asset Quality parameter.

CAMEL Ratings (2011-12 to 2020-21): Asset Quality of Selected Banks					
Ratio	Parameter	SBI	Union Bank	HDFC Bank	ICICI Bank
Gross NPA to Total Assets	Mean	3.85%	4.18%	1.03%	3.50%
	Standard Deviation	0.0112	0.0232	0.0031	0.0155
	Rank	3	4	1	2
Net NPA to Total Assets	Mean	1.73%	2.50%	0.43%	1.36%
	Standard Deviation	0.0070	0.0129	0.0013	0.0107
	Rank	3	4	1	2
Gross NPA to Total Advances	Mean	6.38%	7.01%	1.80%	5.94%
	Standard Deviation	0.022	0.039	0.005	0.025
	Rank	3	4	1	2
Net NPA to Total Advances	Mean	3.00	4.00	0.75	2.30
	Standard Deviation	1.333	2.000	0.211	1.788
	Rank	3	4	1	2
	Mean	25.756	25.283	31.405	25.767

Total Investment to Total Assets Ratio (%)	Standard Deviation	3.0603	2.2376	3.0256	4.7719
	Rank	2	1	4	3
Credit Deposit Ratio	Mean	79.501	70.49	91.047	96.716
	Standard Deviation	5.7658	1.3385	4.8188	6.1550
	Rank	2	1	3	4
Composite	Average	2.67	3.00	1.83	2.50
	Rank	3	4	1	2

Source: Data compiled from banks reports

Table 6.2 Measuring the Asset Quality of banks primarily aims to assess the extent of Non-Performing Assets (NPAs) within their portfolios. The Gross NPA to Total Advances percentage reflects the proportion of bad assets without adjusting for provisions from gross NPAs against total advances. A higher percentage indicates a larger portion of total assets as non-performing, while a lower average percentage indicates higher asset quality. HDFC Bank secured the first rank with an average percentage of 1.80%, followed by ICICI Bank and State Bank of India. Union Bank occupies the lowest rank with an average score of 7.01%. The Net NPA reflects the actual burden on the banks. Here, a lower average percentage indicates higher asset quality. When it comes to the Total Investments to Total Assets ratio and Credit Deposit ratio, public sector banks hold better rankings compared to private sector banks. This implies that the total investments and credit deposit ratios are favourable for State Bank of India and Union Bank compared to HDFC Bank and ICICI Bank. When we consider the average of all asset quality ratios, HDFC Bank ranks first, followed closely by ICICI Bank and State Bank of India, with Union Bank at the lowest position.

Management Efficiency: effectively and efficiently a bank's management

This component assesses how effectively and efficiently a bank's management team operates the institution and makes strategic decisions. It includes evaluating the quality of management, the bank's organizational structure, risk management practices, and overall corporate governance. The Reserve Bank of India (RBI) also uses a similar framework for

supervising banks, which includes assessing management quality and efficiency. However, the specific ratios or metrics used by RBI may vary and are not always publicly disclosed. These ratios are likely part of the internal supervisory framework used by RBI to evaluate banks' management practices.

Table 6.3: Ranking of Banks under Management Efficiency parameter.

CAMEL Ratings (2019 to 2023): Management Efficiency of Selected Banks					
Ratio	Parameter	SBI	Union Bank	HDFC Bank	ICICI Bank
Business per Employee	Mean	16.119	15.659	8.051	12.074
	Standard Deviation	5.2974	1.8154	1.3869	2.5900
	Rank	1	2	4	3
Diversification ratio (%)	Mean	13.86%	11.96%	15.42%	20.35%
	Standard Deviation	1.9263	3.3482	1.7534	3.0041
	Rank	3	4	2	1
Total Assets turnover ratio (%)	Mean	8.05%	8.36%	9.99%	8.79%
	Standard Deviation	0.6773	0.6376	1.1010	0.6162
	Rank	4	3	1	2
Profit per Employee	Mean	4.38%	1.38%	9.85%	11.69%
	Standard Deviation	0.03239	0.05191	0.02085	0.04028
	Rank	3	4	2	1
Total Expenditure to Total Income ratio	Mean	94.66%	98.38%	83.81%	86.44%
	Standard Deviation	4.0311	6.0629	2.7392	4.6592
	Rank	3	4	1	2
Total Advances to Total deposits ratio	Mean	78.55%	69.36%	88.92%	94.93%
	Standard Deviation	7.1934	2.7059	6.0230	9.0471

	Rank	3	4	2	1
Composite	Average	2.83	3.50	2.00	1.67
	Rank	3	4	2	1

Source: Data compiled from banks reports

Table 6.3 The data provided represents the average contribution per employee to profit/loss and revenue generation. In terms of Business per Employee, State Bank of India secured the top position with an average business per employee of 16.119%, followed by Union Bank with an average percentage of 15.659%. In contrast, HDFC Bank holds the last position in this metric.

However, the scenario is reversed when considering Profit per Employee, Diversification Ratio, and Total Advances to Total Deposits Ratio. ICICI Bank holds the first rank in Profit per Employee, Diversification Ratio, and Total Advances to Total Deposits Ratio, followed by HDFC Bank and State Bank of India. Union Bank is at the lowest position in these metrics. When we consider the overall average ranking of the Management Efficiency parameter, private sector banks' average stands in the first two positions compared to the public sector banks, which share the third and fourth places, respectively.

Earnings Quality: evaluates a bank's earnings performance, profitability, and the quality of its earnings

It evaluates a bank's earnings performance, profitability, and the quality of its earnings. This includes analyzing the bank's net interest margin, return on assets, and overall profitability. As for the specific ratios used by the Reserve Bank of India (RBI) to assess the earnings of banks, they may vary.

Table 6.4: Ranking of Banks under Earnings Quality parameter

CAMEL Ratings (2011-12 to 2020-21): Earnings Quality of Selected Banks					
Ratio	Parameter	SBI	Union Bank	HDFC Bank	ICICI Bank
	Mean	8.05%	8.36%	9.99%	8.79%

Return on Assets ratio.	Standard Deviation	0.007	0.006	0.011	0.006
	Rank	4	3	1	2
Dividend pay-out ratio	Mean	10.04%	0.75%	0.54%	6.13%
	Standard Deviation	0.098	0.010	0.004	0.063
	Rank	1	3	4	2
Net Profit Margin	Mean	6.208	2.02	19.182	17.022
	Standard Deviation	4.518	6.717	3.512	5.720
	Rank	3	4	1	2
Net profit to Total Assets ratio	Mean	0.44%	0.15%	1.60%	1.21%
	Standard Deviation	0.003	0.005	0.002	0.004
	Rank	3	4	1	2
Interest Income to Total Income ratio	Mean	60.75%	63.92%	64.17%	57.65%
	Standard Deviation	0.050	0.031	0.029	0.029
	Rank	3	2	1	4
Composite	Average	2.8	3.2	1.6	2.4
	Rank	3	4	1	2

Source: Data compiled from banks reports

Table 6.4 The earning ability of banks is evaluated using various profitability ratios, including the interest income ratio, net profit ratio, and return on asset ratio. Banks need to generate sufficient earnings to cover all operating expenses, and a higher earnings ratio is generally considered favourable, indicating greater profitability. Based on the Return on Assets (ROA), HDFC Bank leads with an average percentage of 9.99%, followed by ICICI Bank with 8.79%. Union Bank ranks third, while State Bank of India (SBI) ranks last with 8.05%. When considering other ratios like Net Profit Margin Ratio, Net Profit to Total Assets Ratio, and Interest Income Ratio, private banks outperform Union Bank and SBI. However, in terms of Dividend Payout Ratio, SBI ranks highest with 10.04%, nearly twice

as high as any other bank, while HDFC Bank ranks last. In terms of the overall average ranking of the Earnings Quality parameter, private sector banks rank in the top two positions compared to public sector banks, which rank third and fourth, respectively. This indicates that private sector banks generally exhibit better earnings quality than public sector banks.

Liquidity Position: bank's ability to meet its short-term obligations

"Liquidity," which assesses a bank's ability to meet its short-term obligations. Liquidity is crucial for a bank to maintain the confidence of depositors and creditors. The Reserve Bank of India (RBI) uses various liquidity ratios to assess a bank's liquidity position, including the Cash Reserve Ratio (CRR) and the Statutory Liquidity Ratio (SLR). These ratios determine the proportion of a bank's deposits that must be kept in cash or invested in specified low-risk securities, ensuring that banks have enough liquid assets to cover withdrawals and other short-term obligations.

Table6.5: Ranking of Banks under Liquidity Position parameter

CAMEL Ratings (2011-12 to 2020-21): Liquidity Position of Selected Banks					
Ratio	Parameter	SBI	Union Bank	HDF	ICICI Bank
Liquid Assets to Total Assets ratio	Mean	14.268	25.573	18.443	16.082
	Standard Deviation	3.4268	2.1800	2.3160	3.3927
	Rank	4	1	2	3
Liquid Assets to Total Deposit ratio	Mean	34.91%	37.39%	44.78%	49.07%
	Standard Deviation	0.0384	0.0243	0.0752	0.1077
	Rank	4	3	2	1
Current Ratio	Mean	0.067	0.045	0.045	0.105
	Standard Deviation	0.0216	0.0143	0.0143	0.0255
	Rank	2	3.5	3.5	1
Credit Deposit Ratio	Mean	79.501	70.49	91.047	96.716
	Standard Deviation	5.7658	1.3385	4.8188	6.1550

	Rank	3	4	2	1
Total Investment to Total Deposit ratio	Mean	33.104	29.079	29.239	44.227
	Standard Deviation	3.3568	2.6664	2.3960	4.1019
	Rank	2	4	3	1
Composite	Average	3	3.25	2.25	1.5
	Rank	3	4	2	1

Source: Data compiled from banks reports

Table 6.5 displays the liquidity position ratios of selected banks over the last ten years, where a higher percentage indicates better performance. Union Bank secured the top rank with an average percentage of 25.57% in the Liquid Assets to Total Assets ratio, followed by HDFC Bank and ICICI Bank with average percentages of 18.44% and 16.082%, respectively. In terms of the Liquid Assets to Total Deposits ratio, private banks occupy the top two positions compared to public sector banks. This trend is also observed in the Interest Expended to Interest Earned ratio. On the other hand, ICICI Bank ranks first in the Current Ratio and Total Investment to Total Deposits ratio, followed by SBI. Notably, Union Bank and HDFC Bank share the third position in these ratios. In terms of the overall average ranking of the Liquidity Position parameter, private sector banks rank in the top two positions compared to public sector banks, which rank third and fourth, respectively. This indicates that private sector banks generally exhibit better liquidity positions than public sector banks.

Sensitivity to market Risk: It is used to assess a bank's vulnerability to changes in market conditions, including interest rates, exchange rates, and commodity prices. The "S" component evaluates a bank's ability to manage and mitigate risks related to market fluctuations.

Table 6.6: Ranking of Banks under Sensitivity to Market Risk parameter

CAMEL Ratings (2019 to 2023): Sensitivity to Market Risk of Selected Banks					
Ratio	Parameter	SBI	Union Bank	HDF	ICICI Bank

	Mean	111.44%	129.33%	64.06%	57.86%
Interest Income to Total Funds	Standard Deviation	0.100	0.086	0.128	0.038
	Rank	2	1	3	4
Interest Expended to Interest Earned ratio (%)	Mean	63.856	73.819	55.665	60.655
	Standard Deviation	1.9796	4.0535	2.9899	3.7354
	Rank	3	4	1	2
Composite	Average	2.5	2.5	2	3
	Rank	2.5	2.5	1	4

Source: Data compiled from banks reports

Table 6.6 The effectiveness of a bank's system and control mechanism in managing market risk is measured by several ratios, including the sensitivity of interest income to total funds and the interest expended to interest earned ratio. A lower ratio is preferred, as it indicates less vulnerability to market interest rate fluctuations, which can lead to earnings volatility. Public sector banks occupy the first two positions in terms of the interest income to total funds ratio when compared to private sector banks. However, the scenario is reversed for the interest expended to interest earned ratio, where private sector banks outperform public sector banks. In the overall average ranking for the Sensitivity to Market Risk parameter, HDFC Bank ranks highly, followed by State Bank of India. Union Bank shares the second position among public sector banks, while ICICI Bank ranks lowest.

6.9 Overall Performance of Banks under CAMELS Model:

To evaluate the overall performance of the selected banks in India, a composite ranking has been calculated based on the group ranking of the selected Public and Private Sector banks for the period 2011 to 2021. The bank with the lowest average ranking is positioned at the top of the list.

Table 6.7 Composite Ranking

Name of the Bank	C	A	M	E	L	S	Average	Rank
State Bank of India	2.67	2.67	2.83	2.80	3.00	2.50	2.74	3

Union Bank	3.17	3.00	3.50	3.20	3.25	2.50	3.10	4
HDFC Bank	1.67	1.83	2.00	1.60	2.25	2.00	1.89	1
ICICI Bank	2.50	2.50	1.67	2.40	1.50	3.00	2.26	2

Source: Data compiled from banks reports

CAMELS system rates six factors: capital adequacy, asset quality, management, earnings, liquidity, and sensitivity.

Table 6.7 Based on the rankings assigned to the banks on different parameters of the CAMELS rating system, a final standing score was calculated for the banks under study. The rankings for each bank on all parameters were summed up to calculate the mean overall rank. HDFC Bank, a private sector bank with a score of 1.87, was ranked first. ICICI Bank followed closely with a mean overall rank score of 2.11, earning it the alternate position. State Bank of India secured third place with an average score of 2.79, while Union Bank, with a mean overall rank score of 3.22, was assigned the fourth rank. Thus, the final effective ranking places HDFC Bank first, followed by ICICI Bank and State Bank of India in second and third place, respectively, with Union Bank ranked last.

This overall CAMELS ranking highlights that the top two positions are occupied by private sector banks when compared to public sector banks.

Table 6.8 Test of Significance of Performance of Selected Public and Private Sector Bank

One-Sample Test						
	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
State Bank of India	2.859	30	0.008	12.677	3.62	21.73
Union Bank	2.894	30	0.007	12.774	3.76	21.79
HDFC Bank	2.819	30	0.008	13.097	3.61	22.59
ICICI Bank	2.834	30	0.008	14.194	3.96	24.42

Source: Data compiled from banks reports

Table 6.8 The t-test conducted on the mean performance of selected banks indicates minor differences among them, with similar t-test values observed. However, there is a noticeable

distinction in the mean difference between private sector banks compared to public sector banks. Notably, the p-values for State Bank of India, Union Bank, HDFC Bank, and ICICI Bank are 0.008, 0.007, 0.008, and 0.008, respectively, all of which are less than the conventional onset of 0.05. As a result, the null hypothesis is rejected, suggesting a significant difference in financial performance among all the selected banks.

Table 6.9 Relationship between Selected Public Sector and Private Sector Bank

Correlations					
		State Bank of India	Union Bank	HDFC Bank	ICICI Bank
State Bank of India	Pearson Correlation	1	.984**	.984**	.988**
	Sig. (2-tailed)		.000	.000	.000
	N	400	400	400	400
Union Bank	Pearson Correlation	.984**	1	.949**	.952**
	Sig. (2-tailed)	.000		.000	.000
	N	400	400	400	400
HDFC Bank	Pearson Correlation	.984**	.949**	1	.994**
	Sig. (2-tailed)	.000	.000		.000
	N	400	400	400	400
ICICI Bank	Pearson Correlation	.988**	.952**	.994**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	400	400	400	400
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Data compiled from banks reports

Hypothesis:

H0: There is no significant relationship in financial performance of Public Sector and Private Sector Bank.

H1: There is significant relationship in financial performance of Public Sector and Private Sector Bank.

Table 6.9 The correlation coefficients among the four selected banks, namely State Bank of India, Union Bank, HDFC Bank, and ICICI Bank, suggest a positive correlation. The significance level tested at 5% (0.05) indicates that the p-value is less than 0.05. Consequently, the null hypothesis is rejected, indicating a significant correlation among the banks. This implies that the performance of these banks is linked, and movements in one bank's performance are likely to be reflected in the others. This finding underscores the interconnectedness of these banks within the financial system, highlighting the importance of considering their performance collectively when assessing the banking sector's health.

This study is a longitudinal analysis of selected public and private sector banks' performance using the CAMELS model. The research found that private sector banks outperformed public sector banks significantly in capital adequacy, asset quality, managerial efficiency, and earnings. However, public sector banks surpassed private sector banks in terms of liquidity and sensitivity analysis. The study ranked HDFC Bank as the most efficient among the selected banks, followed by ICICI Bank and State Bank of India, while Union Bank ranked last. The evaluation of financial performance on different CAMELS parameters indicated that all selected banks performed well across all categories. The hypothesis testing revealed no significant difference between the performance of public sector banks and private sector banks in the study. The research relied solely on secondary data and selected a limited number of banks and ratios to represent the CAMELS model. It covered a period of ten years. The study highlights the significant contribution of the banking sector to economic growth in India. It notes the dynamic structural changes in the Indian banking sector due to recent mergers.

Capital adequacy of Banks:

Capital adequacy is assumed to be a crucial reflector of the financial soundness of a bank. It reflects whether the bank has sufficient capital to bear unexpected losses in the future and bank leverages.

Table 6.10: Capital adequacy and group ranking of selected banks for 2019-2023

Banks	CAR		Debt-Equity Ratio		Advance to Total Assets	
	Average	Rank	Average	Rank	Average	Rank
Punjab National Bank	12.13	10	15.9665	6	0.6011826	5
Bank of Baroda	13.18	6	16.83	8	0.60	6
State Bank Of India	13.08	7	16.088330	7	0.6110820	4
Union Bank	12.29	9	17.915528	10	0.59278	8
Canara Bank	12.41	8	17.623773	9	0.598166	7
HDFC Bank	16.77	3	9.85	4	0.63	1
Axis Bank	16.16	4	10.73329	5	0.61507	2
ICICI Bank	17.71	2	8.28	2	0.58	9
Kotak Mahindra Bank	17.82	1	7.520122	1	0.614793	3
Induslnd Bank	14.75	5	9.51	3	0.63	1

Source: Data compiled from banks reports

Table 6.10 show that Kotak Mahindra Bank secured top position with the group average of 1.66 and the group rank is 1 followed by HDFC Bank. It depicts Kotak Mahindra Bankhas sufficient capital to bear unexpected losses or any uncertainty in the future. Whereas, Canara Bank and Bank of India holds the lowest rank in the group rank, i.e., 9th and 10threspectively. Here for CAR and Advance to Total assets ratios, the bank having the highest average value, allotted rank 1. As a bank with higher CAR withstand a financial downturn or other foreseen losses. Advance to Total assets ratios indicates a bank's aggressiveness in lending, which ultimately produces better profitability, total advances also includes receivables.

Table 6.44: ANOVA based on overall CAMEL of public and private banks

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	11.82004	1	11.82004	8.65444	0.01865	5.31765

Within Groups	10.92622	8	1.365777			
Total	22.74626	9				

Source: Data compiled from banks reports

It is observed that the p-value (0.018657) is less than 0.05. Therefore, it can be stated that null hypotheses are rejected and alternative hypothesis is accepted. As the F value (8.654441) is greater than the critical value (5.317655), it also states null hypothesis is rejected. Hence there is a significant difference between the financial performance of the selected public and private sector banks based assessed by CAMEL framework.

Table 6.45: ANOVA based on CAMEL parameters of selected public banks

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24231419268.687	4	6057854817.172	.808	.527
Within Groups	337297963433.580	45	7495510298.524		
Total	361529382702.267	49			

Source: Data compiled from banks reports

Post-hoc analysis performed on CAMEL parameters of selected public banks using Least Significance Difference test reveals that there is no significant difference within the CAMEL parameters as p-value of 0.527 is more than 0.05.

Table 6.46: ANOVA based on CAMEL parameters of selected private banks

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1228173201946.203	4	307043300486.551	658.274	.000
Within Groups	20989674426.088	45	466437209.469		
Total	1249162876372.291	49			

Source: Data compiled from banks reports

Post-hoc analysis performed on CAMEL parameters of selected private banks using Least Significance Difference test reveals that there is significant difference within the CAMEL parameters as p-value which is very close to 0 is less than 0.05(refer to Table 20). Within the following pairs of CAMEL parameters as applicable for private banks, there is significant difference in means:

Findings and Suggestions

Management Efficiency and Capital Adequacy, (ii) Management Efficiency and Asset Quality, (iii) Management Efficiency and Earning Ability, (iv) Management Efficiency and Liquidity as p-value is very close to 0 in each of these cases.

The results showed that private sector banks are found to be better performer than public banks. SBI, Union Bank, Bank of Baroda, PNB, and Canara Bank were in the below average category while HDFC and AXIX bank were in the above average category The elements that have the greatest impact on the financial performance of banks during the research period are capital sufficiency and asset quality.

The financial structure of the economy has a significant impact on a country's economic development. The banking sector is an important part of the financial system. The CAMEL method is used in this paper to determine the financial performance of banks for the year 2019-2023. The capital adequacy, asset quality, management performance, earning, and liquidity levels of private banks were found to be satisfactory, but the conditions of public sector banks were found to be unfavorable. PNB, IDBI, and Union Bank are at the bottom of the list in every category, while HDFC and Kotak Bank are doing well in every category except liquidity. They should keep a healthy amount of liquidity. According to the result of hypothesis, there is a considerable difference in the performance of public and private banks. The current research has a small reach since it only looks at ten banks (2public and 2 private). This study's findings will aid policymakers and banks in improving financial efficiency by focusing on weak metrics.

The present study analyse the performance of four banks two public sector banks and two private sector banks on the basis of CAMEL model. The results show that private sector banks outperformance public sector banks and first two ranks go to the credit of all the selected private sector banks. The private sector banks have to improve performance on liquidity aspect and public sector banks have to focus on capital adequacy, asset quality, management efficiency and earning quality.

Though, Significance of performance evaluation in a Banking sector, for sustainable growth and development has been recognized since long it still requires a system that first measures all aspects of banks and then brings out the strengths and weaknesses of the banks to ensure further improvement. With the advances in computational tools, performance evaluation systems have evolved over a period of time from single aspect systems to more comprehensive systems covering all aspects of banks. CAMEL Model is one such rating system that proved to be better for performance measurement, evaluation and strategic planning for future growth and development of the Indian banks in the light of changing requirements of this sector.

It is concluded that in all of the parameters of the CAMEL Model and its sub-parameters, private sector banks are found to be better performers than the public sector banks.

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