



## HEALTH CHECK OF PUBLIC SECTOR BANKS IN INDIA USING CAMEL ANALYSIS TECHNIQUE

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### ABSTRACT :

It is of great importance to evaluate the performance of banking sector in India to know the risk-return factors as well as factors affecting the performance of the banks. The basic purpose of the present study is to measure the overall performance of Indian public sector banks excluding Bharatiya Mahila Bank for the period from 2013-14 to 2016-17 in order to check the financial health of the banks. Performance of the banks is evaluated through CAMEL analysis technique. In the present study, an attempt is made to analyze the performance of the selected public sector banks and to determine the factors that predominantly affect the financial performance of the Indian banking sector with efficiently. It is found that State Bank of India is on the first position followed by Indian Bank. On the other hand, it is Indian Overseas Bank stood at the bottom-most position amongst all the selected banks. Taking Return on Assets as the dependent variable, regression analysis has been applied to find out the impact of bank-specific variables on the performance of the banks. The study found a strong positive relationship of 94.1 % of ROA with bank-specific variables. Also, the study found that CAR, ATAR, BPE, PPE, SAR and IDR are having a positive impact on ROA. On the other hand, variables such as GNNA, NNNA and CDR influencing the performance of the banks adversely. The study also concluded that both of PPE and SAR are having a positive and significant influence on ROA.

**KEYWORDS :** CAMEL analysis technique, Indian banking sector, bank-specific variables.

### INTRODUCTION

Banking sector is the most dominant segment of the financial system which efficiently deploys mobilized saving in productive sectors such as agriculture, industrial sector etc. Proper functioning of banking sector facilitates an efficient payments system, enhances savings or investments ultimately which contributes to the rapid economic growth in the country. As the sector plays the pivotal role in the functioning of the economy of India thus, the evaluation of the performance of banking sector is effective and necessary to know the risk-return factors as well as factors affecting the performance of the banks. In India, banking structure is dominated by the public sector banks as public-sector banks control more than half of the banking system assets. So, appraisal of the performance of public sector banks is an important



step to gauge the strength or weakness of public sector banks. As on April 1, 2017, public sector comprises of 21 banks viz. nationalized banks (19), SBI and IDBI Ltd. Assessment of the financial performance of the banks is very important to show the strength and weakness of the banks and on the basis of overall performance potential investors can make decisions about investment in particular banks. Besides, measurement of the performance of banking sector is essential for supervisory concern. Here, a well-known

approach known as CAMEL analysis technique is used to assess the overall performance of the banks. The approach covers main areas of operation of the banks such as operational efficiency, service quality and managerial effectiveness. In India, RBI act as banker's bank and has been following this technique since 1997 for performance evaluation of the banking sector. This rating technique comprises of five parameters such as Capital Adequacy, Assets Quality, Management Efficiency, Earning Quality and Liquidity.

## LITERATURE REVIEW

**Mouneswari et al. (2016)** used regression analysis and found that profit per employee, debt-equity ratio, total advances to total deposits ratio and net NPA to total advances ratio were the major factors affected the profitability (ROA) of the selected public and private sector banks in India for the period 2011-15. **Tan (2016)** tested the impacts of risk and competition on profitability in the Chinese banking industry over the period 2003–2011 under a one-step Generalized Method of Moments (GMM) system estimator. The robustness of the results was checked by using different risk and competition indicators which showed that there was no impact of competition and risk on bank profitability, while it was found that Chinese bank profitability was affected by taxation, overhead cost, labour productivity and inflation. **Kristianti and Yovin (2016)** observed that factors such as operational efficiency, net interest margin (NIM) and non-performing loans (NPL) influenced the performance of the government banks in Indonesia. On the other hand, capital adequacy ratio (CAR) and operational efficiency influenced the performance of the private banks in Indonesia for the period from 2004-2013. **Frederick (2015)** used linear multiple regression and it was found that management efficiency, asset quality, interest income, capital adequacy and inflation were the factors affecting the performance of domestic commercial banks in Uganda for the period 2000-2011. **Gupta (2014)** used CAMEL rating system and found that Andhra Bank was on the first position amongst all the 26 public sector banks operating in India for the period 2008-09 to 2012-13. Also, there was a statistically significant difference in the performance of selected public sector banks assessed by CAMEL model. **Aspal and Nazneen (2014)** found in their study that capital adequacy ratio was negatively correlated with proxy variables of lending (loans), asset quality and management efficiency of private sector banks in India over a period 2008-12. However, liquidity and sensitivity were positively correlated. **Khatik and Nag (2014)** assessed the financial health of nationalized banks in India with the help of CAMEL framework and by using various statistical techniques such as arithmetic mean, coefficient of variation and one way ANOVA for the period 2009-13, it was found that Bank of Baroda secured the top position. **Das et al. (2014)** found for the period 1995-96 to 2009-10 in Indian banking sector NPA/D ratio was positively correlated with CRAR for below 10% ranges of CRAR and reverse in the above 10% range. It was also noticed that correlation between C-D ratio and CRAR was negative for below 10% ranges but positive in the above 10% range. The correlation between the NPA/D ratio and C-D ratio was negative and significant. **Aspal and Malhotra (2013)** evaluated the financial health of all the public sector banks in India excluding State Bank Group for the period 2007-11. It was found that Bank of Baroda was on the top position; data was normally distributed; there was no significant difference in population variance for the ratios of CAMEL model and there was a statistically significant difference between the mean values of CAMEL ratios of selected banks as per ANOVA results. **Dutta et al. (2013)** conducted the study to investigate the impact of bank-specific factors on the Return on Assets (ROA) of public sector banks in India for the period from 2010-12. The study found that found that spread, operating expenses, provisions & contingencies and non-interest income were the most significant factors influenced the ROA of banks. **Chishty (2011)** quantify the impact of Capital Adequacy on profitability or performance of selected private sector banks for the period 2004-05 to 2008-09 by employing descriptive statistics, correlation, regression and ANOVA. The study found that profitability of banks was negatively related to the Capital Adequacy ratio of the selected banks. **Gul et al. (2011)** investigated the impact of bank-specific variables and macroeconomic indicators on the profitability performance of banks in Pakistan for the period 2005-2009 by using Pooled Ordinary Least Square (POLS) method. It was observed that both of internal and external variables had a strong influence on the profitability of banks. **Javaid et al. (2011)** used Pooled Ordinary Least Square (POLS) method to investigate the impact of assets, loans, equity, and

deposits on one of the major profitability indicator return on asset (ROA) of Pakistan's banks over the period 2004-08 and it was found that there was strong evidence that these variables had a strong influence on the profitability. **Thiagarajan et al. (2011)** found that Non-Performing Assets (NPAs) had significantly influenced the cost of deposits for both public and private sector banks. Return on Equity had a significant positive influence on the cost of deposits for private sector banks. **Vyas et al. (2008)** found a positive and significant impact of bank-specific variables such as Capital Adequacy Ratio (CAR), Non-Interest Income (NII) and Net Interest Margin (NIM) on the performance (ROA) of scheduled commercial banks in India for the period from 1997-2007. **Sensarma (2005)** examined the efficiency of all scheduled commercial banks in India for the period 1986-2003 by using stochastic frontier analysis and it was noticed that cost efficiency of the banking industry increased during the period, while profit efficiency underwent a decline. Also, it was concluded that group of domestic banks was more efficient than the group of foreign banks. **Haron (2004)** investigated the impact of determinants of profitability of Islamic banks. It was found that factor such as liquidity, deposit items, asset structure, inflation and money supply had a significant impact on the profitability of Islamic banks. **Staikouras and Wood (2004)** examined that there was a negative impact of risk on the profitability of the banks in European banking sector for the period 1994–1998.

### RESEARCH PROBLEM

In India, banking has the chief, pre-eminent and most significant share in shaping up Indian economy. As we know, banking sector is the most dominant segment of the financial system in India and dominated by the public sector banks as public-sector banks as the sector control over more than the half of the banking system assets. Therefore, in the present study, an effort is made to examine the financial performance of the public sector banks operating in India. Apart from these, there are many parties interested in the performance of Indian banking sector such as bank management, financial markets, bank supervisors, potential investors and so on. As described earlier that banking sector plays the pivotal role in shaping up Indian economy as such it is of great importance to investigate the factors influencing the performance of the banks adversely. Thus, in the present study, an effort is also made to investigate the factors affecting the performance (ROA) of banks adversely in order to resist the negative shocks and financial stability in the Indian economy.

### OBJECTIVES OF THE STUDY

- (1) To evaluate the financial performance of selected public sector banks by using CAMEL analysis technique.
- (2) To make a comparative analysis of banks on the basis of ranking method.
- (3) To offer suitable suggestions based on the findings for improvement of financial performance of the sample banks.
- (4) To investigate the impact of the bank-specific variables on the performance (ROA) of the banks.

### RESEARCH METHODOLOGY

The study is descriptive cum analytical research in nature. All the public sector banks (excluding Bharatiya Mahila Bank) have been taken into consideration for the purpose of the study. Here, Bharatiya Mahila Bank is out of sample because of non-similar operations of the bank. The study is conducted for the period from 2013-14 to 2016-17. The relevant statistical data for the study is drawn from secondary sources such as database on Indian banks published by the Indian Banks' Association (IBA). Performance of the selected banks is evaluated through CAMEL analysis technique which is a ratio based technique. The ratios used under this model are selected on the basis of convenience of availability of data. Additionally, by taking Return on Assets (ROA) as the dependent variable, regression analysis has been applied to find out the impact of the bank-specific variables on the performance (ROA) of the banks.

**DATA ANALYSIS & INTERPRETATION**

This section comprises of analysis and interpretation of data by applying CAMEL rating methodology. Additionally, the section contains the results of regression analysis.

**Table 1**  
**Capital Adequacy**

Sr. No.	Banks	Capital Adequacy Ratio		Advances to Total Assets Ratio		Group Rank	
		Average	Rank	Average	Rank	Average	Rank
1.	Allahabad Bank	10.72	22	63.94	6	14	15
2.	Andhra Bank	11.32	13	64.84	5	9	6
3.	Bank of Baroda	12.57	3	58.10	20	11.5	11
4.	Bank of India	11.21	17	61.77	13	15	16
5.	Bank of Maharashtra	11.28	15	64.88	4	9.5	7
6.	Canara Bank	11.28	15	59.69	18	16.5	19
7.	Central Bank of India	10.53	24	55.60	25	24.5	25
8.	Corporation Bank	11.15	18	60.58	16	17	20
9.	Dena Bank	11.12	19	60.14	17	18	22
10.	Indian Bank	13.09	1	63.09	8	4.5	1
11.	Indian Overseas Bank	10.26	26	57.62	21	23.5	24
12.	Oriental Bank of India	11.46	9	62.64	11	10	8
13.	Punjab & Sind Bank	11.06	20	62.14	12	16	17
14.	Punjab National Bank	11.67	6	61.64	14	10	8
15.	Syndicate Bank	11.29	14	67.02	1	7.5	3
16.	UCO Bank	11.35	12	56.41	24	18	22
17.	Union Bank of India	10.84	21	65.27	2	11.5	11
18.	United Bank of India	10.40	25	51.58	26	25.5	26
19.	Vijaya Bank	11.83	5	60.60	15	10	8
20.	State Bank of India	12.67	2	62.78	10	6	2
21.	State Bank of Bikaner & Jaipur	10.64	23	65.11	3	13	14
22.	State Bank of Hyderabad	11.65	7	62.93	9	8	5
23.	State Bank of Mysore	11.84	4	59.03	19	11.5	11
24.	State Bank of Patiala	11.59	8	63.34	7	7.5	3
25.	State Bank of Travancore	11.37	11	56.70	23	17	20
26.	IDBI Ltd.	11.45	10	57.22	22	16	17

**Source:** Compiled from Business Statistics Reports (For the FY 2013-14 to 2016-17), Indian Banker' Association.

**Table 1** reveals the Capital Adequacy parameter of the banks for the study period. The table shows that Indian Bank secured the top position in terms of Capital Adequacy ratio with the highest average ratio of 13.09. On the other hand, the last position is acquired by Indian Overseas Bank because of the lowest average ratio. The above table also depicts that in case of Advance to Total Assets Ratio, it is Syndicate Bank occupied the first rank due to highest average ratio of 67.02; while United Bank of India is on the bottom-most position. According to the average ranks (which represents the good performance if lowest and vice-versa), Indian Bank secured the top position followed by State Bank of India and State Bank of Patiala respectively. On the other hand, United Bank of India holds the last rank under this parameter.

**Table 2**  
**Asset Quality**

Sr. No.	Banks	Gross NPA to Net Advances Ratio		Net NPA to Net Advances Ratio		Group Rank	
		Average	Rank	Average	Rank	Average	Rank
1.	Allahabad Bank	8.81	14	5.95	18	16	16
2.	Andhra Bank	8.14	12	4.56	9	10.5	11
3.	Bank of Baroda	7.13	7	3.30	4	5.5	5
4.	Bank of India	9.20	16	5.01	12	14	13
5.	Bank of Maharashtra	9.34	17	6.08	19	18	19
6.	Canara Bank	6.55	5	4.35	7	6	6
7.	Central Bank of India	11.24	21	6.23	21	21	20
8.	Corporation Bank	7.72	10	5.07	13	11.5	12
9.	Dena Bank	9.18	15	5.80	16	15.5	15
10.	Indian Bank	5.70	3	3.53	5	4	4
11.	Indian Overseas Bank	14.37	26	8.73	26	26	26
12.	Oriental Bank of India	8.42	13	5.44	15	14	13
13.	Punjab & Sind Bank	6.68	6	4.75	11	8.5	8
14.	Punjab National Bank	9.73	18	5.82	17	17.5	18
15.	Syndicate Bank	5.38	2	3.29	3	2.5	2
16.	UCO Bank	11.71	24	6.18	20	22	22
17.	Union Bank of India	7.52	9	4.22	6	7.5	7
18.	United Bank of India	12.78	25	8.04	25	25	25
19.	Vijaya Bank	4.70	1	3.16	2	1.5	1
20.	State Bank of India	5.83	4	3.05	1	2.5	2
21.	State Bank of Bikaner & Jaipur	7.48	8	4.65	10	9	9
22.	State Bank of Hyderabad	9.93	19	5.39	14	16.5	17
23.	State Bank of Mysore	11.33	22	6.63	23	22.5	23
24.	State Bank of Patiala	11.05	20	6.63	23	21.5	21
25.	State Bank of Travancore	7.72	10	4.45	8	9	9
26.	IDBI Ltd.	11.53	23	6.34	22	22.5	23

**Source:** Compiled from Business Statistics Reports (For the FY 2013-14 to 2016-17), Indian Banker's Association.

**Table 2** depicts the Asset Quality acronym of the banks. It is clear from the table that in case of Gross NPA to Net Advances Ratio, Vijaya Bank secured the top position with the lowest average ratio of 4.70 followed by Syndicate Bank (5.38). On the other hand, the last position is occupied by Indian Overseas Bank because of highest average ratio. The table also depicts that in terms of Net NPA to Net Advances Ratio, it is State Bank of India occupied the first rank with the lowest average ratio of 3.05 followed by Vijaya Bank (3.16). As per the group ranks Vijaya Bank and State Bank of India are top two banks respectively under this parameter; whereas Indian Overseas Bank stood at the bottom-most position amongst all the selected banks.



**Table 3**  
**Management Quality**

Sr. No.	Banks	Business Per Employee Ratio		Profit Per Employee Ratio		Group Rank	
		Average	Rank	Average	Rank	Average	Rank
1.	Allahabad Bank	14.42	12	0.74	17	14.5	16
2.	Andhra Bank	15.74	7	2.23	8	7.5	4
3.	Bank of Baroda	17.96	4	8.22	2	3	1
4.	Bank of India	19.42	2	-0.43	18	10	7
5.	Bank of Maharashtra	16.59	6	-1.04	20	13	14
6.	Canara Bank	14.40	13	1.70	12	12.5	13
7.	Central Bank of India	11.35	26	-2.96	23	24.5	26
8.	Corporation Bank	19.21	3	1.57	13	8	6
9.	Dena Bank	14.32	15	-0.58	19	17	21
10.	Indian Bank	14.79	10	5.48	3	6.5	2
11.	Indian Overseas Bank	12.9	20	-4.96	24	22	23
12.	Oriental Bank of India	17.33	5	0.99	16	10.5	9
13.	Punjab & Sind Bank	15.70	8	2.50	7	7.5	4
14.	Punjab National Bank	13.45	18	1.50	14	16	18
15.	Syndicate Bank	14.45	11	1.99	10	10.5	9
16.	UCO Bank	13.67	17	-1.86	21	19	22
17.	Union Bank of India	15.04	9	4.00	5	7	3
18.	United Bank of India	11.90	23	12.74	1	12	12
19.	Vijaya Bank	14.38	14	3.50	6	10	7
20.	State Bank of India	13.33	19	5.17	4	11.5	11
21.	State Bank of Bikaner & Jaipur	11.61	24	2.00	9	16.5	19
22.	State Bank of Hyderabad	13.98	16	1.02	15	15.5	17
23.	State Bank of Mysore	11.59	25	-2.63	22	23.5	25
24.	State Bank of Patiala	12.03	21	-6.75	25	23	24
25.	State Bank of Travancore	11.97	22	1.71	11	16.5	19
26.	IDBI Ltd.	24.87	1	-9.31	26	13.5	15

**Source:** Compiled from Business Statistics Reports (For the FY 2013-14 to 2016-17), Indian Banker' Association.

**Table 3** shows the Management Efficiency of the banks. It is noticed that in terms of Business per Employee Ratio, IDBI Bank Ltd. secured the first position with the highest average ratio of 24.87. On the other hand, the last position is occupied by Central Bank of India. The above table also illustrates that in case of Profit per Employee Ratio, it is United Bank of India occupied the first rank with the average ratio of 12.74 followed by Bank of Baroda (8.22). Group ranks show that Bank of Baroda is on the top position followed by Indian Bank, while Central Bank of India is on the last position under this acronym.

**Table 4**  
**Earning Quality**

Sr. No.	Banks	Return on Assets Ratio		Spread as of Assets Ratio		Group Rank	
		Average	Rank	Average	Rank	Average	Rank
1.	Allahabad Bank	0.10	14	2.74	2	8	6
2.	Andhra Bank	0.26	6	2.53	4	5	3
3.	Bank of Baroda	0.17	11	1.89	20	15.5	16
4.	Bank of India	-0.10	17	1.88	21	19	21
5.	Bank of Maharashtra	-0.04	16	2.35	8	12	11
6.	Canara Bank	0.19	9	1.74	25	17	18
7.	Central Bank of India	-0.39	23	2.20	10	16.5	17
8.	Corporation Bank	0.14	13	1.80	24	18.5	20
9.	Dena Bank	-0.24	22	1.87	22	22	24
10.	Indian Bank	0.56	1	2.28	9	5	3
11.	Indian Overseas Bank	-0.53	25	1.87	22	23.5	26
12.	Oriental Bank of India	0.10	14	2.14	11	12.5	12
13.	Punjab & Sind Bank	0.26	6	2.02	15	10.5	9
14.	Punjab National Bank	0.19	9	2.37	7	8	6
15.	Syndicate Bank	0.21	8	1.95	18	13	13
16.	UCO Bank	-0.21	18	1.96	17	17.5	19
17.	Union Bank of India	0.37	3	2.08	13	8	6
18.	United Bank of India	-0.21	18	1.72	26	22	24
19.	Vijaya Bank	0.36	4	1.92	19	11.5	10
20.	State Bank of India	0.55	2	2.50	5	3.5	2
21.	State Bank of Bikaner & Jaipur	0.33	5	2.78	1	3	1
22.	State Bank of Hyderabad	0.17	11	2.65	3	7	5
23.	State Bank of Mysore	-0.23	21	2.43	6	13.5	14
24.	State Bank of Patiala	-0.72	26	2.02	15	20.5	23
25.	State Bank of Travancore	-0.21	18	2.11	12	15	15
26.	IDBI Ltd.	-0.45	24	2.06	14	19	21

**Source:** Compiled from Business Statistics Reports (For the FY 2013-14 to 2016-17), Indian Banker' Association.

**Table 4** illustrates the Earning Quality of the banks. It is noticed from the table that in terms of Return on Assets Ratio, Indian Bank acquired the first rank with the highest average ratio followed by State Bank of India. On the other hand, the last position is occupied by State Bank of Patiala. The above table also depicts that in case of Spread as of Assets Ratio, it is State Bank of Bikaner & Jaipur occupied the top position with the highest average ratio of 2.78. Thus, it is concluded that State Bank of Bikaner & Jaipur is on the top position as per group ranks under this parameter followed by State Bank of India.

**Table 5**  
**Liquidity**

Sr. No.	Banks	Credit to Deposit Ratio		Investment to Deposit Ratio		Group Rank	
		Average	Rank	Average	Rank	Average	Rank
1.	Allahabad Bank	75.11	9	27.83	21	15	18
2.	Andhra Bank	75.55	8	30.33	12	10	5
3.	Bank of Baroda	67.42	22	20.48	26	24	26
4.	Bank of India	72.80	13	23.12	25	19	25
5.	Bank of Maharashtra	75.74	7	26.88	23	15	18
6.	Canara Bank	69.49	18	29.99	13	15.5	20
7.	Central Bank of India	65.56	24	33.18	5	14.5	17
8.	Corporation Bank	68.92	20	28.88	17	18.5	24
9.	Dena Bank	68.09	21	31.04	11	16	21
10.	Indian Bank	73.01	12	31.27	9	10.5	6
11.	Indian Overseas Bank	71.27	15	33.78	4	9.5	4
12.	Oriental Bank of India	71.56	14	29.61	14	14	14
13.	Punjab & Sind Bank	69.87	17	31.27	9	13	8
14.	Punjab National Bank	73.83	11	29.49	15	13	8
15.	Syndicate Bank	78.71	4	26.16	24	14	14
16.	UCO Bank	66.00	23	35.76	3	13	8
17.	Union Bank of India	77.84	5	27.44	22	13.5	12
18.	United Bank of India	57.73	26	39.98	1	13.5	12
19.	Vijaya Bank	69.05	19	33.01	6	12.5	7
20.	State Bank of India	82.54	1	31.81	8	4.5	2
21.	State Bank of Bikaner & Jaipur	77.34	6	28.74	20	13	8
22.	State Bank of Hyderabad	74.42	10	28.83	18	14	14
23.	State Bank of Mysore	69.88	16	28.76	19	17.5	23
24.	State Bank of Patiala	79.26	2	29.37	16	9	3
25.	State Bank of Travancore	65.07	25	32.80	7	16	21
26.	IDBI Ltd.	79.09	3	36.49	2	2.5	1

**Source:** Compiled from Business Statistics Reports (For the FY 2013-14 to 2016-17), Indian Banker' Association.

**Table 5** shows that in terms of Credit to Deposit Ratio, State Bank of India secured the top position with the highest average ratio of 82.54 followed by State Bank of Patiala (79.26). On the other hand, the last position is acquired by United Bank of India. The table also reveals that in terms of Investment to Deposit Ratio, it is United Bank of India occupied the first rank with the highest average ratio of 39.98 followed by IDBI Ltd. As per group ranks, IDBI Bank Ltd. occupied the top position under this parameter. On the other hand, Bank of Baroda is on the bottom-most position amongst all the selected banks.



**Table 6**  
**Overall Ranking**

Sr. No.	Banks	C	A	M	E	L	Average	Rank*
1.	Allahabad Bank	14	16	14.5	8	15	13.5	13
2.	Andhra Bank	9	10.5	7.5	5	10	8.4	3
3.	Bank of Baroda	11.5	5.5	3	15.5	24	11.9	9
4.	Bank of India	15	14	10	19	19	15.4	19
5.	Bank of Maharashtra	9.5	18	13	12	15	13.5	13
6.	Canara Bank	16.5	6	12.5	17	15.5	13.5	13
7.	Central Bank of India	24.5	21	24.5	16.5	14.5	20.2	25
8.	Corporation Bank	17	11.5	8	18.5	18.5	14.7	16
9.	Dena Bank	18	15.5	17	22	16	17.7	21
10.	Indian Bank	4.5	4	6.5	5	10.5	6.1	2
11.	Indian Overseas Bank	23.5	26	22	23.5	9.5	20.9	26
12.	Oriental Bank of India	10	14	10.5	12.5	14	12.2	10
13.	Punjab & Sind Bank	16	8.5	7.5	10.5	13	11.1	8
14.	Punjab National Bank	10	17.5	16	8	13	12.9	12
15.	Syndicate Bank	7.5	2.5	10.5	13	14	9.5	5
16.	UCO Bank	18	22	19	17.5	13	17.9	23
17.	Union Bank of India	11.5	7.5	7	8	13.5	9.5	5
18.	United Bank of India	25.5	25	12	22	13.5	19.6	24
19.	Vijaya Bank	10	1.5	10	11.5	12.5	9.1	4
20.	State Bank of India	6	2.5	11.5	3.5	4.5	5.6	1
21.	State Bank of Bikaner & Jaipur	13	9	16.5	3	13	10.9	7
22.	State Bank of Hyderabad	8	16.5	15.5	7	14	12.2	10
23.	State Bank of Mysore	11.5	22.5	23.5	13.5	17.5	17.7	21
24.	State Bank of Patiala	7.5	21.5	23	20.5	9	16.3	20
25.	State Bank of Travancore	17	9	16.5	15	16	14.7	16
26.	IDBI Ltd.	16	22.5	13.5	19	2.5	14.7	16

**Source:** Compiled from the above tables.

**\*Note:** Lowest average value & rank represents good performance and vice-versa.

**Table 6** contains the results of CAMEL analysis of selected banks. It is clear from the table that State Bank of India holds the first rank with the lowest average value followed by Indian Bank and Andhra Bank respectively. Table also reveals that Indian Overseas Bank occupied the last position amongst all the selected banks.

### Regression Analysis

By taking Return on Assets Ratio (ROA) as the dependent variable, regression analysis has been applied to find out the impact of these variables on the performance (ROA) of the banks.

**Table 7**  
**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	<b>.941<sup>a</sup></b>	<b>.886</b>	.822	.13966	<b>1.804</b>

- a. Predictors: (Constant), IDR, PPE, SAR, CAR, BPE, GNNA, CDR, ATAR, NNNA  
b. Dependent Variable: ROA

**Table 7** shows the summary of regression model analysis. Here, the value of R is .941 which means that the predictors have 94.1 % influences on the dependent variable (ROA). In case of this value of R Square is .886 which illustrates that the predictors account for 88.6% variation in the dependent variable. The value of **Durbin-Watson** statistic is **1.804** which indicates that there is no problem of autocorrelation likely to distort the conclusion.

**Table 8**  
**ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.421	9	.269	13.793	<b>.000<sup>b</sup></b>
Residual	.312	16	.020		
Total	2.733	25			

- a. Dependent Variable: ROA  
b. Predictors: (Constant), IDR, PPE, SAR, CAR, BPE, GNNA, CDR, ATAR, NNNA

**Table 8** here shows the output of Analysis of Variance (ANOVA). Here, the sum of Square is 2.421; the value of Residual of Squares is .312 and represents the total difference between the model and observed data. From the value of F-ratio which is 13.793 here, we can conclude that the value of F is highly significant and our ability to predict the Outcome Variable is much better. Here, the Sig. (p-value) is less than alpha (.05), which indicates that the model is significant.

**Table 9**  
**Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.456	1.472		-1.669	.115
CAR	.013	.057	.026	.228	.823
ATAR	.031	.023	.338	1.311	.208
GNNA	-.031	.052	-.231	-.606	.553
NNNA	-.053	.083	-.230	-.637	.533
BPE	.018	.011	.166	1.651	.118
PPE	.036	.009	.491	4.136	<b>.001</b>
SAR	.266	.121	.249	2.203	<b>.043</b>
CDR	-.005	.012	-.076	-.370	.716
IDR	.015	.011	.185	1.424	.174

- a. Dependent Variable: ROA

**Table 9** depicts the parameters of the model. The above table reveals that CAR, ATAR, BPE, PPE, SAR and IDR are having a positive impact on the performance (ROA) of banks. On the other hand, GNNA, NNNA

and CDR have a negative influence on the performance of the banks. However, PPE and SAR are having a positive and significant relationship with the performance (ROA) of the banks here's why the sig. values of these variables is less than the value .05. Additionally, it is found that SAR is the most predominant factor affecting the performance (ROA) of the banks positively during the study period.

### FINDINGS & SUGGESTIONS

The results of the study show that State Bank of India and Indian Bank are leading in all the aspects of CAMEL model respectively. So, it can be concluded that both of these banks have strong performance and sound management with no cause for supervisory concern. On the other hand, the last position is occupied by Indian Overseas Bank amongst all the selected banks due to its poor performance. So, it needs to improve its position in particular weak areas. The results reveal that there exists a strong positive relationship of (0.941) i.e. 94.1 % of ROA with the independent variables and rest 5.9% is with other variables during the study period. Some independent variables such as CAR, ATAR, BPE, PPE, SAR and IDR are having a positive impact on ROA which illustrates that all of these bank-specific variables and ROA move in the same direction, as these variables increase then ROA also increase and vice versa. Besides, variables such as GNNA, NNNA and CDR influencing the performance of the banks adversely which means these variables and ROA move in the opposite direction, as these variables increase then ROA decrease and vice versa. However, it is found that variables such as PPE and SAR having positive as well as significant influence on the performance of the banks. The study concludes that amongst all the independent variables, SAR is the most predominant variable affecting the performance (ROA) of the banks positively during the study period.

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**Table 10**  
**ABBREVIATIONS**

Variables	Notation
Capital Adequacy Ratio	CAR
Advances to Total Assets Ratio	ATAR
Gross NPA to Net Advances Ratio	GNNA
Net NPA to Net Advances Ratio	NNNA
Business Per Employee Ratio	BPE
Profit Per Employee Ratio	PPE
Return on Assets Ratio	ROA
Spread as of Assets Ratio	SAR
Credit to Deposit Ratio	CDR
Investment to Deposit Ratio	IDR



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