

BANK PERFORMANCE IN INDIA: A STUDY BASED ON CAMEL FRAMEWORK

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Abstract The banking system in India is significantly different from that of other Asian nations because of the country's unique geographic, social, and economic characteristics. India has a large population and land size, a diverse culture, and extreme disparities in income, which are marked among its regions. There are high levels of illiteracy among a large percentage of its population but, at the same time, the country has a large reservoir of managerial and technologically advanced talent.

In this article, an attempt has been made to rank the various commercial banks operating in India. The banks in India have been categorized into Public sector, Private sector, and Foreign banks. For the purpose of profitability analysis, 26 Public Sector, 18 Private Sector, and 15 Foreign banks have been taken into consideration. For the purpose of ranking, CAMEL analysis technique has been used. Each parameter of CAMEL—Capital Adequacy, Asset Quality, Management Quality, Earning Quality, and Liquidity has been evaluated.

This research paper was carried out to find the adequacy of CAMEL in capturing the overall performance of a bank. In addition, the best ratios in each of the factors in CAMEL were identified and tested for the significance between Public sector, Private sector, and Foreign banks.

Keywords: Banking Performance, CAMEL, Profitability Analysis.

1. INTRODUCTION

It is usual to measure the performance of banks using financial ratios. Often, a number of criteria such as profits, liquidity, asset quality, attitude towards risk, and management strategies must be considered. In the early 1970s, federal regulators in USA developed the CAMEL rating system to help structure the bank examination process. In 1979, the Uniform Financial Institutions Rating System was adopted to provide federal bank regulatory agencies with a framework for rating financial condition and performance of individual banks (Siems & Barr, 1998). Since then, the use of the CAMEL factors in evaluating a bank's financial health has become widespread among regulators. Piyu (1992) notes "currently, financial ratios are often used to measure the overall financial soundness of a bank and the quality of its management. Bank regulators, for example, use financial ratios to help evaluate a bank's performance as part of the CAMEL system". The evaluation factors are as follows.

- C → Capital adequacy
- A → Asset quality
- M → Management quality
- E → Earnings ability
- L → Liquidity.

Each of the five factors is scored from one to five, with one being the strongest rating. An overall composite CAMEL rating also ranges from one to five. The Federal Reserve System in U.S. describes the five composite rating levels as follows (Siems & Barr, 1998).

- 1 = An institution that is basically sound in every respect.
- 2 = An institution that is fundamentally sound but has modest weaknesses.
- 3 = An institution with financial, operational, or compliance weaknesses that give cause for supervisory concern.
- 4 = An institution with serious financial weaknesses that could impair future viability.
- 5 = An institution with critical financial weaknesses that render the probability of failure extremely high in the near term.

2. RESEARCH METHODOLOGY

The analysis was performed for a sample of 59 banks operating in India, of which 26 were public sector banks, 18 were private sector, and 15 were foreign banks. The study covered the Average of financials for the financial years 2006-07, 2007-08, 2008-09, 2009-10, and 2010-11. For this study, Descriptive Research has been adopted

3. OBJECTIVES OF RESEARCH

- To understand the financial performance of Public Sector, Private Sector, & Foreign banks in India.
- To describe the CAMELS model of banking, and the rating range for the same.
- To analyze the banks performance through CAMEL model.
- To give suggestions for improvement if necessary.

4. HYPOTHESES

H₀₁: There is no significant difference between public, private sector, & foreign bank's

Capital Adequacy.

H₀₂: There is no significant difference between public, private sector, & foreign bank's

Asset quality.

H₀₃: There is no significant difference between public, private sector, & foreign bank's

Management quality.

H₀₄: There is no significant difference between public, private sector, & foreign bank's

Earnings ability.

H₀₅: There is no significant difference between public, private sector, & foreign bank's

Liquidity.

5. DATA COLLECTION

Secondary data were collected from the Annual Reports, which was published by RBI.

6. LIMITATIONS OF THE STUDY

- Time and resource constrains.
- The study was completely done on the basis of ratios calculated from the balance sheets.
- It was not possible to get a personal interview with the top management employees of all banks under study.

6.1. CAMEL FRAMEWORK

CAPITAL ADEQUACY

Capital is rated based on the following considerations:

- Nature and volume of problem assets in relation to total capital and adequacy of LLR and other reserves
- Balance sheet structure including off balance sheet items, market, and concentration risk
- Nature of business activities and risks to the bank
- Asset and capital growth experience and prospects
- Earnings performance and distribution of dividends
- Capital requirements and compliance with regulatory requirements
- Access to capital markets and sources of capital

7. ASSET QUALITY

Asset quality is based on the following considerations:

- Volume of problem of all assets
- Volume of overdue or rescheduled loans
- Ability of management to administer all the assets of the bank and to collect problem loans
- Large concentrations of loans and insiders loans, diversification of investments
- Loan portfolio management, written policies, procedures internal control, Management Information System
- Loan Loss Reserves in relation to problem credits and other assets

8. MANAGEMENT QUALITY

Management is the most important element for a successful operation of a bank. Rating is based on the following factors:

- Quality of the monitoring and support of the activities by the board and management and their ability to understand and respond to the risks associated with these activities in the present environment and to plan for the future
- Development and implementation of written policies, procedures, MIS, risk monitoring system, reporting, safeguarding of documents, contingency plan, and compliance with laws and regulations controlled by a compliance officer
- Availability of internal and external audit function
- Concentration or delegation of authority
- Compensations policies
- Response to CBI concerns and recommendations
- Overall performance of the bank and its risk profile

9. EARNINGS ABILITY

Earnings are rated according to the following factors:

- Sufficient earnings to cover potential losses, provide adequate capital and pay reasonable dividends
- Composition of net income; Volume and stability of the components
- Level of expenses in relation to operations
- Reliance on extraordinary items, securities transactions, high risk activities
- Adequacy of budgeting, forecasting
- Earnings exposure to market risks, such as interest rate variations, foreign exchange fluctuations and price risk

10. LIQUIDITY

Liquidity is rated based on the following factors:

- Sources and volume of liquid funds available to meet short term obligations
- Volatility of deposits and loan demand
- Interest rates and maturities of assets and liabilities
- Access to money market and other sources of funds
- Diversification of funding sources
- Reliance on inter-bank market for short term funding
- Management ability to plan, control and measure liquidity process.
- Contingency plan

11. DATA ANALYSIS

The following Ratios are calculated for all the banks for Analysis

Capital adequacy

- $CRAR = \text{Capital} / \text{Total Risk Weighted Credit Exposure}$

Asset quality

- $\text{Net NPA} = \text{Net NPA} / \text{Total Loan}$

Management quality

- $\text{Total Advance to Total Deposit} = \text{Total Advance} / \text{Total Deposit}$
- $\text{Business per Employee} = \text{Total Income} / \text{No. of Employees}$
- $\text{Profit per Employee} = \text{Net Profit} / \text{No. of Employees}$

Earnings ability

- $\text{Return on Asset} = \text{Net Profit} / \text{Total Asset}$
- $\text{Interest Income to Total Income} = \text{Interest Income} / \text{Total Income}$

- $\text{Other Income to Total Income} = \text{Other than Interest Income} / \text{Total Income}$

Liquidity

$\text{Total loans to Total Deposit} = \text{Total loans} / \text{Total Deposit}$

COMPONENT RATINGS TO THE BANKS

Now, after analyzing the ratio, the next task is to give weightage to all the parameters according to the importance of the ratios.

12. MARKS ALLOTTED FOR THE RATINGS

The Ratings are assigned for respective Marks as follows:

RATINGS	MARKS
1	5
2	4
3	3
4	2
5	1

Component Weightage

Parameter	Weightage
Capital Adequacy	20%
Asset Quality	20%
Management	25%
Earnings	15%
Liquidity	20%

13. CRITERIA FOR MARKS ALLOCATION

After allocating the weightage, we have to set the criteria for allocation of Marks for different Ratios.

CAMEL RATING FOR PUBLIC, PRIVATE, & FOREIGN BANKS

All the Ratios are Average of last 5 years (2006-07, 2007-08, 2008-09, 2009-10, and 2010-11).

14. RESULTS OF HYPOTHESIS TESTING

14.1. Test for Capital Adequacy

The calculated value of the static $F=9.851232$ is more than the Critical Value at 5% significance level. Hence it falls in Rejection Region. So we reject H_{01} . And thereby we conclude that there is significant difference between the Capital Adequacy of Public sector, Private Sector, and Foreign Banks in India.

Table 1. Criteria for Allocation of Marks for Different Ratios

Ratios	Marks				
	1	2	3	4	5
CRAR (in %)	Below 15.50	15.50-20.00	20.00-24.50	24.50-29.00	Above 29.00
Net NPA Ratio	Above 2	1.5-2.0	1.0-1.5	0.5-1.0	Below 0.5
Total Advance to Total Deposit (in %)	Below 46	46-55	55-64	64-73	Above 73
Business per Employee(Rs. in Crores)	Below 2.5	2.5-5.0	5.0-7.5	7.5-10	Above 10
Profit per Employee (Rs. in Lakhs)	Below 2.0	2.0-4.5	4.5-7.0	7.0-9.5	Above 9.5
Return on Asset	Below 0.5	0.5-0.75	0.75-1.0	1.0-1.25	Above 1.25
Interest Income to Total Income (in %)	Below 56	56-67	67-78	78-89	Above 89
Other Income to Total Income (in %)	Below 7	7-18	18-29	29-40	Above 40
Total loans to Total Deposit	Below 0.5	0.5-0.75	0.75-1	1-1.25	Above 1.25

Source: Author Tabulated

Table 2: Showing Marks Scored By Different Banks in Capital Adequacy, Asset Quality, and Liquidity

Public Sector Banks		Capital Adequacy		Asset Quality		Liquidity	
Sl.no	Name of the Bank	CRAR	Marks	Net NPA ratio	Marks	Total loans/total deposits	Marks
1	Allahabad Bank	12.84	1	0.808	4	0.693	2
2	Andhra Bank	12.894	1	0.21	5	0.749	2
3	Bank of Baroda	13.534	1	0.414	5	0.737	2
4	Bank of India	12.382	1	0.826	4	0.723	2
5	Bank of Maharashtra	12.218	1	1.166	3	0.669	2
6	Canara Bank	13.932	1	1.008	3	0.722	2
7	Central Bank of India	11.356	1	1.146	3	0.687	2
8	Corporation Bank	13.588	1	0.37	5	0.713	2
9	Dena Bank	12.172	1	1.29	3	0.694	2
10	IDBI Bank Ltd.	12.44	1	1.084	3	0.847	3
11	Indian Bank	13.426	1	0.306	5	0.708	2
12	Indian Overseas Bank	13.546	1	1.238	3	0.742	2
13	Oriental Bank of Commerce	12.876	1	0.796	4	0.692	2
14	Punjab and Sind Bank	12.968	1	0.454	5	0.689	2
15	Punjab National Bank	13.272	1	0.59	4	0.761	3
16	State Bank of Bikaner & Jaipur	12.98	1	0.876	4	0.764	3
17	State Bank of Hyderabad	13.032	1	0.436	5	0.727	2
18	State Bank of India	13.1	1	1.696	2	0.798	3
19	State Bank of Mysore	12.474	1	0.756	4	0.773	3
20	State Bank of Patiala	13.042	1	0.856	4	0.737	2
21	State Bank of Travancore	13.104	1	0.898	4	0.774	3
22	Syndicate Bank	12.396	1	0.908	4	0.780	3
23	UCO Bank	12.286	1	1.662	2	0.678	2
24	Union Bank of India	12.808	1	0.694	4	0.724	2
25	United Bank of India	12.478	1	1.468	3	0.654	2
26	Vijaya Bank	12.392	1	0.98	4	0.668	2
Private Sector Banks							
1	Axis Bank	13.488	1	0.446	5	0.745	2
2	City Union Bank	12.792	1	0.85	4	0.691	2

Public Sector Banks		Capital Adequacy		Asset Quality		Liquidity	
Sl.no	Name of the Bank	CRAR	Marks	Net NPA ratio	Marks	Total loans/total deposits	Marks
3	Development Credit Bank	13.224	1	2.052	1	0.742	2
4	Dhanlaxmi Bank	11.83	1	0.93	4	0.714	2
5	Federal Bank	18.252	2	0.41	5	0.745	2
6	HDFC Bank	15.206	1	0.406	5	0.759	3
7	ICICI Bank	16.026	2	1.578	2	0.928	3
8	IndusInd Bank	13.644	1	1.332	3	0.765	3
9	ING Vysya Bank	12.052	1	0.838	4	0.749	2
10	Jammu & Kashmir Bank	14.026	1	0.812	4	0.603	2
11	Karnataka Bank	12.476	1	1.222	3	0.621	2
12	Karur Vysya Bank	14.182	1	0.192	5	0.709	2
13	Kotak Mahindra Bank	18.078	2	1.72	2	0.936	3
14	Lakshmi Vilas Bank	12.692	1	1.876	2	0.709	2
15	Nainital Bank	14.068	1	0.56	4	0.554	2
16	SBI Comm. & Intl. Bank	24.224	3	0.56	4	0.471	1
17	South Indian Bank	13.808	1	0.624	4	0.688	2
18	Yes Bank	16.18	2	0.56	4	0.788	3
Foreign Banks							
1	Abu Dhabi Commercial Bank	43.396	5	0.54	4	0.305	1
2	American Express Banking Corporation	12.81	1	1.486	3	1.806	5
3	Bank of Ceylon	51.46	5	0.67	4	0.565	2
4	Bank of Nova Scotia	16.212	2	0.67	4	1.596	5
5	Bank of Tokyo Mitsubishi UFJ	42.784	5	0.67	4	2.353	5
6	Barclays Bank	16.748	2	2.324	1	1.151	4
7	Citibank	14.348	1	1.646	2	0.695	2
8	Credit Agricole Bank	14.296	1	6.18	1	3.483	5
9	DBS Bank	19.006	2	0.47	5	0.815	3
10	Deutsche Bank	14.48	1	0.426	5	0.928	3
11	Hongkong & Shanghai Banking Corporation	14.604	1	1.13	3	0.081	1
12	JP Morgan Chase Bank	19.276	2	2.11	1	0.357	1
13	Mizuho Corporate Bank	45.578	5	0.67	4	2.330	5
14	Royal Bank of Scotland	12.214	1	1.354	3	0.782	3
15	Standard Chartered Bank	11.376	1	1.102	3	0.852	3

Source: Author Tabulated Ref: www.rbi.org

Table 3: Showing Marks Scored by Different Banks in Management Soundness

Public Sector Banks		Management Soundness					
Sl. no	Name of the Bank	Business per employee (in crores)	Marks	Profit per employee (in lakhs)	Marks	Advance/deposits	Marks
1	Allahabad Bank	7.426	3	4.948	3	0.69	4
2	Andhra Bank	7.98976	4	5.804	3	0.730387	5
3	Bank of Baroda	8.986	4	6.334	3	0.725639	4
4	Bank of India	8.556	4	5.148	3	0.731685	5
5	Bank of Maharashtra	6.28726	3	2.538	2	0.673014	4

Public Sector Banks		Management Soundness					
Sl. no	Name of the Bank	Business per employee (in crores)	Marks	Profit per employ- ee (in lakhs)	Marks	Advance/ deposits	Marks
6	Canara Bank	8.2982	4	5.794	3	0.71718	4
7	Central Bank of India	5.6241	3	2.376	2	0.668913	4
8	Corporation Bank	10.73298	5	7.878	4	0.702174	4
9	Dena Bank	7.27	3	4.178	2	0.683329	4
10	IDBI Bank Ltd.	19.98098	5	9.218	4	0.94197	5
11	Indian Bank	6.32	3	6.316	3	0.68763	4
12	Indian Overseas Bank	6.91286	3	4.17	2	0.732864	5
13	Oriental Bank of Commerce	11.12024	5	6.812	3	0.693849	4
14	Punjab and Sind Bank	7.20892	3	4.716	3	0.692436	4
15	Punjab National Bank	6.7852	3	5.528	3	0.74145	5
16	State Bank of Bikaner & Jai- pur	5.47146	3	3.57	2	0.752696	5
17	State Bank of Hyderabad	7.41168	3	5.322	3	0.713371	4
18	State Bank of India	5.4193	3	3.83	2	0.777644	5
19	State Bank of Mysore	5.924	3	3.754	2	0.770037	5
20	State Bank of Patiala	8.24222	4	4.254	2	0.736635	5
21	State Bank of Travancore	6.61356	3	5.072	3	0.781313	5
22	Syndicate Bank	6.89624	3	3.35	2	0.727332	4
23	UCO Bank	7.418	3	2.816	2	0.687461	4
24	Union Bank of India	7.43842	3	5.978	3	0.719019	4
25	United Bank of India	5.944	3	2.078	2	0.636602	3
26	Vijaya Bank	7.17568	3	3.892	2	0.659739	4
Private Sector Banks							
1	Axis Bank	11.356	5	10.396	5	0.714834	4
2	City Union Bank	5.69272	3	5.502	3	0.695956	4
3	Development Credit Bank	4.49	2	-1.12	1	0.694447	4
4	Dhanlaxmi Bank	4.64094	2	1.744	1	0.67766	4
5	Federal Bank	7.37	3	6.006	3	0.724951	4
6	HDFC Bank	5.604	3	5.726	3	0.719714	4
7	ICICI Bank	9.378	4	9.8	5	0.925468	5
8	IndusInd Bank	9.23976	4	4.694	3	0.720524	4
9	ING Vysya Bank	5.87666	3	3.156	2	0.731787	5
10	Jammu & Kashmir Bank	6.536	3	5.8	3	0.629173	3
11	Karnataka Bank	6.52	3	4.2	2	0.624569	3
12	Karur Vysya Bank	6.91	3	6.762	3	0.717824	4
13	Kotak Mahindra Bank	4.27382	2	5.026	3	0.968716	5
14	Lakshmi Vilas Bank	5.344	3	1.836	1	0.708429	4
15	Nainital Bank	4.352	2	5	3	0.548138	2
16	SBI Comm. & Intl. Bank	8.74784	4	9.012	4	0.565886	3
17	South Indian Bank	6.88486	3	4.056	2	0.677387	4
18	Yes Bank	12.09214	5	11.846	5	0.767029	5
Foreign Banks							
1	Abu Dhabi Commercial Bank	17.098	5	32.552	5	0.335614	1

Public Sector Banks		Management Soundness					
Sl. no	Name of the Bank	Business per employee (in crores)	Marks	Profit per employ- ee (in lakhs)	Marks	Advance/ deposits	Marks
2	American Express Banking Corporation	0.87814	1	2.69	2	1.867419	5
3	Bank of Ceylon	5.198	3	28.4	5	0.537931	2
4	Bank of Nova Scotia	34.65892	5	73.236	5	1.502481	5
5	Bank of Tokyo Mitsubishi UFJ	27.35012	5	44.752	5	1.886806	5
6	Barclays Bank	9.95556	4	1.19	1	1.000672	5
7	Citibank	17.46038	5	29.422	5	0.763421	5
8	Credit Agricole Bank	25.16	5	84.8	5	2.258845	5
9	DBS Bank	18.08582	5	45.108	5	0.617541	3
10	Deutsche Bank	16.04982	5	29.718	5	0.77734	5
11	Hongkong & Shanghai Bank- ing Corporation	10.6221	5	16.4	5	0.554436	3
12	JP Morgan Chase Bank	17.83066	5	143.004	5	0.336941	1
13	Mizuho Corporate Bank	17.11186	5	28.612	5	1.738741	5
14	Royal Bank of Scotland	10.76752	5	4.768	3	0.975042	5
15	Standard Chartered Bank	10.2841	5	23.266	5	0.872974	5

Source: Author Tabulated Ref: www.rbi.org

Table 4: Showing Marks Scored by Different Banks in Earnings Soundness

Public Sector Banks		Earnings Soundness					
Sl. no	Name of the Bank	Return on Assets	Marks	II/TI	Marks	OI/TI	Marks
1	Allahabad Bank	1.15	4	0.87564	4	0.12436	2
2	Andhra Bank	1.262	5	0.881653	4	0.118347	2
3	Bank of Baroda	1.064	4	0.863197	4	0.136803	2
4	Bank of India	1.022	4	0.865661	4	0.134339	2
5	Bank of Maharashtra	0.68	2	0.90152	5	0.09848	2
6	Canara Bank	1.136	4	0.87988	4	0.12012	2
7	Central Bank of India	0.594	2	0.904931	5	0.095069	2
8	Corporation Bank	1.238	4	0.851105	4	0.148895	2
9	Dena Bank	0.96	3	0.877061	4	0.122939	2
10	IDBI Bank Ltd.	0.644	2	0.875908	4	0.124092	2
11	Indian Bank	1.584	5	0.861357	4	0.138643	2
12	Indian Overseas Bank	1.014	4	0.894243	5	0.105757	2
13	Oriental Bank of Commerce	1.01	4	0.906369	5	0.093631	2
14	Punjab and Sind Bank	1.138	4	0.899065	5	0.100935	2
15	Punjab National Bank	1.27	5	0.869073	4	0.130927	2
16	State Bank of Bikaner & Jaipur	0.936	3	0.866901	4	0.133099	2
17	State Bank of Hyderabad	1.06	4	0.877673	4	0.122327	2
18	State Bank of India	0.896	3	0.836861	4	0.163139	2
19	State Bank of Mysore	1.036	4	0.87662	4	0.12338	2
20	State Bank of Patiala	0.82	3	0.892075	5	0.107925	2
21	State Bank of Travancore	1.086	4	0.888765	4	0.111235	2

Public Sector Banks		Earnings Soundness					
Sl. no	Name of the Bank	Return on Assets	Marks	II/TI	Marks	OI/TI	Marks
22	Syndicate Bank	0.796	3	0.908942	5	0.091058	2
23	UCO Bank	0.622	2	0.905871	5	0.094129	2
24	Union Bank of India	1.15	4	0.885864	4	0.114136	2
25	United Bank of India	0.572	2	0.899128	5	0.100872	2
26	Vijaya Bank	0.748	2	0.894295	5	0.105705	2
Private Sector Banks							
1	Axis Bank	1.426	5	0.774675	3	0.225325	3
2	City Union Bank	1.572	5	0.874972	4	0.125028	2
3	Development Credit Bank	-0.212	1	0.807924	4	0.192076	3
4	Dhanlaxmi Bank	0.604	2	0.861637	4	0.138363	2
5	Federal Bank	1.338	5	0.871609	4	0.128391	2
6	HDFC Bank	1.408	5	0.817881	4	0.182119	3
7	ICICI Bank	1.134	4	0.78345	4	0.21655	3
8	IndusInd Bank	0.772	3	0.841064	4	0.158936	2
9	ING Vysya Bank	0.73	2	0.800047	4	0.199953	3
10	Jammu & Kashmir Bank	1.112	4	0.906777	5	0.093223	2
11	Karnataka Bank	1.032	4	0.866489	4	0.133511	2
12	Karur Vysya Bank	1.624	5	0.872772	4	0.127228	2
13	Kotak Mahindra Bank	1.312	5	0.86205	4	0.13795	2
14	Lakshmi Vilas Bank	0.538	2	0.879545	4	0.120455	2
15	Nainital Bank	1.546	5	0.95155	5	0.04845	1
16	SBI Comm. & Intl. Bank	1.14	4	0.866667	4	0.133333	2
17	South Indian Bank	1.02	4	0.910948	5	0.089052	2
18	Yes Bank	1.588	5	0.824612	4	0.175388	2
Foreign Banks							
1	Abu Dhabi Commercial Bank	1.768	5	0.877698	4	0.122302	2
2	American Express Banking Corporation	-2.098	1	0.16227	1	0.83773	5
3	Bank of Ceylon	4.026	5	0.641304	2	0.358696	4
4	Bank of Nova Scotia	2.098	5	0.757418	3	0.242582	3
5	Bank of Tokyo Mitsubishi UFJ	1.754	5	0.796489	4	0.203511	3
6	Barclays Bank	0.412	1	0.756191	3	0.243809	3
7	Citibank	1.896	5	0.730879	3	0.269121	3
8	Credit Agricole Bank	3.102	5	0.585002	2	0.414998	5
9	DBS Bank	1.67	5	0.861517	4	0.138483	2
10	Deutsche Bank	1.644	5	0.633431	2	0.366569	4
11	Hongkong & Shanghai Banking Corporation	1.542	5	0.716685	3	0.283315	3
12	JP Morgan Chase Bank	2.528	5	0.584924	2	0.415076	5
13	Mizuho Corporate Bank	1.79	5	0.740741	3	0.259259	3
14	Royal Bank of Scotland	0.514	2	0.742204	3	0.257796	3
15	Standard Chartered Bank	2.906	5	0.687783	3	0.312217	4

Source: Author Tabulated Ref: www.rbi.org

Table 5: Results of ANOVA for Capital Adequacy

Groups	Count	Sum	Average	Variance		
Public Sector	26	333.536	12.82831	0.315583		
Private Sector	18	266.248	14.79156	9.019756		
Foreign	15	348.588	23.2392	206.4471		
ANOVA						
Source of Variation	SS	df.	MS	F	P-value	F crit
Between Groups	1073.603	2	536.8014	9.851232	0.000216	3.161861
Within Groups	3051.484	56	54.49079			
Total	4125.087	58				

Source: Author Tabulated

Table 6: Results of ANOVA for Asset Quality

Groups	Count	Sum	Average	Variance		
Public Sector	26	22.936	0.882154	0.157		
Private Sector	18	16.968	0.942667	0.311693		
Foreign	15	21.448	1.429867	2.079243		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.098268	2	1.549134	2.263092	0.113463	3.161861
Within Groups	38.33318	56	0.684521			
Total	41.43145	58				

Source: Author Tabulated

Table 7: Results of ANOVA for Management Soundness

Groups	Count	Sum	Average	Variance		
Column 1	26	18.77818	0.722238	0.003295		
Column 2	18	12.81249	0.711805	0.010641		
Column 3	15	16.0262	1.068414	0.386659		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1.374974	2	0.687487	6.782223	0.002304	3.161861
Within Groups	5.676499	56	0.101366			
Total	7.051473	58				

Source: Author Tabulated

14.2. Test for Capital Adequacy

The calculated value of the static $F=2.263092$ is less than the Critical Value at 5% significance level. Hence it does not fall in Rejection Region. So we fail to reject H_{02} . And thereby we conclude that there is no significant difference between the Capital Adequacy of Public sector, Private Sector, and Foreign Banks in India.

14.3. Test for Management Soundness

The calculated value of the static $F=6.782223$ is more than the Critical Value at 5% significance level. Hence it falls in Rejection Region. So we reject H_{03} . And thereby we conclude that there is a significant difference between the capital adequacy of Public sector, Private Sector, and Foreign Banks in India.

Table 8: Results of ANOVA for Earnings

Groups	Count	Sum	Average	Variance		
Column 1	26	25.488	0.980308	0.060118		
Column 2	18	19.684	1.093556	0.222236		
Column 3	15	25.552	1.703467	1.946252		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	5.260912	2	2.630456	4.52851	0.015032	3.161861
Within Groups	32.52848	56	0.580866			
Total	37.78939	58				

Source: Author Tabulated

Table 9: Results of ANOVA for Liquidity

Groups	Count	Sum	Average	Variance		
Column 1	26	18.90239	0.727015	0.002076		
Column 2	18	12.91917	0.717732	0.012684		
Column 3	15	18.0987	1.20658	0.87767		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2.614514	2	1.307257	5.830903	0.005008	3.161861
Within Groups	12.5549	56	0.224195			
Total	15.16941	58				

Source: Author Tabulated

Table 10: Overall Ranks and Sector-Wise Ranks of the Banks

Sl. No.	Name of the Bank	Weighted average scores	Sector –wise Rank	Overall Rank
1	Allahabad Bank	2.73	17	38
2	Andhra Bank	3.15	2	15
3	Bank of Baroda	3.02	4	19
4	Bank of India	2.90	12	28
5	Bank of Maharashtra	2.40	22	50
6	Canara Bank	2.62	18	44
7	Central Bank of India	2.40	23	51
8	Corporation Bank	3.18	1	13
9	Dena Bank	2.40	24	52
10	IDBI Bank Ltd.	2.97	8	24
11	Indian Bank	2.98	6	21
12	Indian Overseas Bank	2.58	20	47
13	Oriental Bank of Commerce	2.95	9	25
14	Punjab and Sind Bank	2.98	7	22
15	Punjab National Bank	3.07	3	17
16	State Bank of Bikaner & Jaipur	2.88	13	29
17	State Bank of Hyderabad	2.93	11	27
18	State Bank of India	2.48	21	49

19	State Bank of Mysore	2.93	10	26
20	State Bank of Patiala	2.82	15	33
21	State Bank of Travancore	3.02	5	20
22	Syndicate Bank	2.85	14	31
23	UCO Bank	2.20	26	57
24	Union Bank of India	2.73	16	39
25	United Bank of India	2.32	25	55
26	Vijaya Bank	2.60	19	45
Private Sector Banks				
1	Axis Bank	3.32	2	9
2	City Union Bank	2.78	8	35
3	Development Credit Bank	1.78	18	59
4	Dhanlaxmi Bank	2.38	15	53
5	Federal Bank	3.18	4	14
6	HDFC Bank	3.23	3	12
7	ICICI Bank	3.12	5	16
8	IndusInd Bank	2.77	10	37
9	ING Vysya Bank	2.68	13	42
10	Jammu & Kashmir Bank	2.70	11	40
11	Karnataka Bank	2.37	16	54
12	Karur Vysya Bank	2.98	7	23
13	Kotak Mahindra Bank	2.78	9	36
14	Lakshmi Vilas Bank	2.07	17	58
15	Nainital Bank	2.53	14	48
16	SBI Comm. & Intl. Bank	3.02	6	18
17	South Indian Bank	2.70	12	41
18	Yes Bank	3.60	1	5
Foreign Banks				
1	Abu Dhabi Commercial Bank	3.47	7	8
2	American Express Banking Corporation	2.82	11	32
3	Bank of Ceylon	3.58	6	7
4	Bank of Nova Scotia	4.00	3	3
5	Bank of Tokyo Mitsubishi UFJ	4.65	1	1
6	Barclays Bank	2.58	14	46
7	Citibank	2.80	12	34
8	Credit Agricole Bank	3.25	8	10
9	DBS Bank	3.63	4	4
10	Deutsche Bank	3.60	5	6
11	Hongkong & Shanghai Banking Corporation	2.63	13	43
12	JP Morgan Chase Bank	2.32	15	56
13	Mizuho Corporate Bank	4.60	2	2
14	Royal Bank of Scotland	2.88	10	30
15	Standard Chartered Bank	3.25	9	11

Source: Author Tabulated

14.4. Test for Earnings

The calculated value of the static $F=4.52851$ is more than the Critical Value at 5% significance level. Hence it falls in Rejection Region. So we reject H_{04} . And thereby we conclude that there is significant difference between the Capital Adequacy of Public sector, Private Sector, and Foreign Banks in India.

14.5. Test for Liquidity

The calculated value of the static $F=5.830903$ is more than the Critical Value at 5% significance level. Hence it falls in Rejection Region. So we reject H_{05} . And thereby we conclude that there is significant difference between the Capital Adequacy of Public sector, Private Sector, and Foreign Banks in India.

15. OVERALL RANKING OF THE BANKS

Ranking of the Banks is done based on two methods

- Sector –Wise Ranking
- Overall Ranking

The Ranking is done using the weighted Average scores of all the factors of CAMEL Analysis

It is calculated as shown below:

Weighted average scores = $W_c * C_a + W_a * A_a + W_m * M_a + W_e * E_a + W_l * L_a$, where W_c, W_a, W_m, W_e , & W_l = Weightage of CAMEL respectively. C_a, A_a, M_a, E_a , & L_a = Average Marks of CAMEL respectively.

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