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Research Paper

Performance of Select Public Sector Banks Using Cramel Model

Management

KEYWORDS :

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1. INTRODUCTION

For the Indian banking industry, Jul 19, 1969, was a landmark day, on which nationalization of 14 major banks was announced that each had a minimum of ` 500mn and above of aggregate deposits. In 1980, eight more banks were nationalized. In 1976, the Regional Rural Banks Act came into being, that allowed the opening of specialized regional rural banks to exclusively cater to the credit requirements in the rural areas. These banks were set up jointly by the central government, commercial banks and the respective local governments of the states in which these are located.

It is clear that the banking system occupies an important position in an economy. Bankers are regarded as, "Public Conservators of Commercial Virtues." A country with an effective banking system has a secure foundation of economic development. Traditionally, analysts often measures banks financial performance and management quality based on financial ratios and stock price. Traditional financial measures such as profitability, liquidity and asset turnover are not enough to evaluate banks performance. This has reference to the study conducted by **Dr.K. Ravichandran[11] et.al.,** on the topic of Ranking of Saudi Banks using CRAMEL Model. He mentioned that "Nowadays, measuring bank efficiency and bank performance has become complicated, especially in the presence of agency problems and conflict of interest among stakeholders. A unique technique that can capture financial and non-financial information to measure bank efficiency and bank performance is the current need of this complicated environment".

The study on the public sector banks in India for the period between 2004-05 and 2013-14, based on the data available in their annual reports. The public sector banks consist of 6 banks under SBI and its associate Group, 20 banks in nationalized bank group. To assess the performance of the banks under study, CRAMEL analysis was used. The acronym "CRAMEL" refers to six components of the banks that reflects the efficiency which are assessed as C - Capital Adequacy, R - Resource Deployed, A - Asset Quality, M - Management, E - Earnings and L - Liquidity. To highlight the determinants of the financial performance of public sector Banks in India the researcher has used CRAMEL ratios.

2. Review of Literature

Researchers, academicians and policy makers have assessed the performance of banking and financial sector using CRAMEL model from different perspectives and in different time periods. A brief review of some important studies is carried out here which highlights the need for the present study.

Veni (2004) studied the capital adequacy requirement of banks and the measures adopted by them to strengthen their capital ratios. The author highlighted that the rating agencies using CAMEL model lays emphasis on capital adequacy ratios of banks for rating the bank's certificate of deposits, fixed deposits and bonds. Baral (2005) studied the performance of joint ventures banks in Nepal by using the CAMEL. The study revealed that the financial health of joint ventures is more effective than that of commercial banks. CAMEL showed that the financial health of joint venture banks was not difficult to manage the possible impact to their balance sheet. Nurazi and Evans (2005) investigated whether CAMEL(S) ratios can be used to predict bank failure in Indonesia. The results found that logistic regression in tandem with multiple discriminant analysis could function as an early warning system for identifying bank failure and as a complement to on-site examination. Satish and Bharathi (2006) undertook a study for the year 2005-06 using CAMEL. Study suggested that ongoing developments in the Indian economy should excel the size and quality of service of banks. Grier (2007) recommended that management is considered to be the single most important element in the CAMEL rating system because it plays a substantial role in bank's success; however, it is subject to measure as the asset quality examination. Wirnkar and Tanko (2008) analyzed the adequacy of CAMEL in examining the overall performance of Nigerian banks during (1997-2005). The analysis disclosed the inability of each component in CAMEL to congregate the full performance of a bank. Muhammad (2009) claimed that the strength of CAMEL's factors would determine the overall strength of the bank. The quality of each component further underlines the inner strength. Jha and Hui (2012) compared the financial performance of different ownership structured commercial banks in Nepal. The results showed that public sector banks are significantly less efficient than their counterpart are; however domestic private banks are equally efficient to foreign-owned (joint venture) banks. It is clear from the above that research has been carried out using CAMEL in different countries including India. But we hardly find any similarity as per sample selection or time frame of data is concerned.

3. STATEMENT OF THE PROBLEM

Banking needs to be looked at from the relevance of the Indian economy. Presently, there are 32 private banks and 42 foreign banks operating in the country besides public sector banks which mop-up the bulk of the banking business, which accounts for 76 per cent of the total deposits and 72 per cent of the total advances. Presently, this sector contributes about 8 per cent to the GDP of the economy. In general, it is believed that there is a decline in profitability and productivity of the PSBs as a result of liberalization. It is also believed that PSBs have not only lost their deposits to new generation private sector banks but also to old private sector banks and foreign sector banks. Since the growth of economy is largely dependent on the performance of these banks, even with the growth of new private and foreign players, these banks will have an important role to play. Hence an attempt has been made to ascertain the problem and to analyse the performance of the PSBs during the study period. Hence, this study will be conducted based on the efficiency of select Public Sector Banks (20) and their performance. A unique technique has been applied taking 17 relevant ratios to measure the efficiency and performance of the 20 public sector banks using CRAMEL Model.

4. OBJECTIVES OF THE STUDY:

- To examine the performance of select Public Sector Banks in India.
- To find out the performances of PSBs' contributing towards growth of the economy
- To offer policy implications for the improvement of PSBs.

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5. Hypothesis of the Study

There is no significant difference in performance of public sector banks as assessed by CRAMEL model.

6. Scope AND Limitations

The performance of banks can be measured by a number of indicators. However, the CRAMEL has been adopted to assess the profitability and efficiency which are the most important and reliable indicators as it give a broad indication of the capability of banks to increase its earning. Hence, the overall performance of the banks based on the Return on Equity was taken that gives scope of the study. The banks selected which covers 20 Public sector banks functioning in India. In the present study, only the quantitative aspects of productivity have been examined. Qualitative aspects such as motivation of employees, customer satisfaction, image of the bank have not been considered which play definite role in performance of a bank can be considered as a major limitation.

8. METHODOLOGY ADOPTED

The study has been conducted using of secondary data and it formed the major source of the study. The secondary data has been compiled from statistical tables relating to banks, RBI bulletins, CMIE reports, etc. An entity specific analysis of the risk profile is done through qualitative cum quantitative approach following a structured methodology called the "CRAMEL" model. Based on the rating criteria, relative strengths and weakness of each entity in comparison to its peer group are evaluated. Even though, the performance of a bank can be measured by number of indicators. Return on Equity is the most important indicator because it gives an insight into the broad indication on the capability of a bank. However, based on the CRAMEL Model that consists around 36 ratios, only 17 variables which are considered important ratios was taken for the study and taking the Return on Net worth as the dependent factor all the other variables were measured using Regression Analysis.

9. SELECTION OF PUBLIC SECTOR BANKS

The banks selected covers 20 Public sector banks functioning in India. These are: Allahabad Bank, Andhra Bank, Bank of Baroda, Bank of India, Bank of Maharashtra Canara Bank, Central Bank of India, Corporation Bank, Dena Bank, IDBI Bank, Indian Bank, Indian Overseas Bank, Oriental Bank of Commerce, Punjab & Sind Bank, Punjab National Bank, Syndicate Bank, UCO Bank, Union Bank of India, United Bank of India and Vijaya Bank.

10. ANALYSIS AND RESULTS

I) RATIO ANALYSIS

C. Capital Adequacy

Under capital adequacy, the banks are assessed under three different sub-parameters namely (i) Ratio of Advances to Assets (ii) Ratio of Government Securities to Investment and finally, (iii) Capital Adequacy Ratio.

TABLE-1 : Capital Adequacy RATIOS

Banks	Advances to Assets (%)			Capital Adequacy Ratio (%)			C3-Government Securities to Investments (%)		
	Mean	SD	CV	Mean	SD	CV	Mean	SD	CV
Allahabad Bank	58.820	5.128	8.718	12.422	1.058	8.521	78.754	3.425	4.349
Andhra Bank	61.759	4.927	7.978	12.670	1.208	9.531	87.916	4.698	5.344
Bank of Baroda	59.083	5.746	9.726	13.477	0.937	6.952	78.615	4.715	5.998
Bank of India	61.864	2.503	4.046	11.791	0.806	6.840	78.129	6.743	8.631
Bank of Maharashtra	57.948	7.379	12.734	**11.006**	**3.936**	35.760	83.981	3.106	3.698
Canara Bank	60.518	2.701	4.462	13.096	1.286	9.823	84.667	3.770	4.452
Central Bank of India	57.153	7.407	12.960	11.581	1.077	9.299	83.250	4.037	4.849
Corporation Bank	58.695	2.578	4.393	**13.563**	1.386	10.219	76.950	6.017	7.820
Dena Bank	58.788	5.192	8.832	11.780	0.835	7.086	81.589	2.128	2.608
Indian Bank	60.271	**1.990**	**3.301**	13.411	**0.538**	**4.015**	**71.527**	**8.501**	**11.885**
Indian Overseas Bank	57.562	**8.059**	**14.001**	13.129	1.200	9.137	79.839	3.379	4.233
IDBI Bank Limited	60.294	4.604	7.636	13.335	1.410	10.574	84.810	3.353	3.953
Oriental Bank of Commerce	59.511	4.948	8.314	12.121	1.315	10.847	80.837	6.073	7.512
Punjab & Sind Bank	56.785	7.578	13.344	12.540	1.301	10.372	83.878	3.340	3.982
Punjab National Bank	60.034	5.798	9.658	11.844	4.263	**35.995**	82.233	2.225	2.706
Syndicate Bank	**62.989**	5.835	9.263	12.125	0.679	5.598	**88.510**	**1.729**	**1.953**
UCO Bank	60.869	3.886	6.384	12.371	1.164	9.411	80.190	4.316	5.383
Union Bank of India	62.029	3.749	6.044	12.273	0.635	5.170	77.881	3.862	4.959
United Bank of India	**53.542**	6.848	12.791	12.948	1.974	15.242	77.647	4.899	6.309
Vijaya Bank	57.334	4.011	6.996	12.217	1.020	8.350	81.813	3.926	4.799

Source : Secondary Data

It is observed that the overall mean was found to be low (M=53.542) with the United Bank of India and the highest mean (M=53.542) was found with the Syndicate Bank. The Standard deviation of all the Advances to Assets ratios for the selected public sector banks ranges between 1.990 and 8.059. The lowest standard deviation was found with Indian Bank and the maximum was found with Indian Overseas Bank. In view measuring the consistency based on co-efficient of variation that ranges between 3.301 and 8.059. It is observed that Indian Bank has posed more consistency in the performance during the study period with regards to Advances to Assets ratio, whereas Indian Overseas Bank was found to be less consistent.

It is clear that the overall mean was found to be low (M=11.006) with the Bank of Maharashtra and the high mean (M=13.583) was found with the Corporation Bank. The Standard deviation of Capital Adequacy ratios for the selected public sector banks ranges between 0.538 and 3.936. The lowest standard deviation was found with Indian Bank and the maximum was found with Maharashtra Bank. . In view of measuring the consistency, using co-efficient of variation, the ranges were identified between 4.015 and 35.995. It is observed that Indian Bank has been more consistent in its performance with regards to Capital adequacy during the study period, whereas Punjab National Bank was found to be less consistent.

It is found that the overall mean was found to be low (M=71.527%) with the Indian Bank and the high mean (M=88.510) was found with the Syndicate Bank. The Standard deviation of Government Securities to Investment ratios for the selected public sector banks ranges between 1.729 and 8.501. The lowest standard deviation was found with Syndicate Bank and the maximum was found with Indian Bank. In view of measuring the consistency, using co-efficient of variation, the ranges were identified between 1.953 and 11.885. It is observed that Syndicate Bank has more consistency in its performance with regards to Government Securities to Investment ratio during the study period, whereas Indian Bank was found to be less consistent.

R. ResourceS Deployed

Under resources deployed it carries the following ratios such as (i) Ratio of Investment to Assets, (ii) Credit Deposit Ratio and (iii) Investment Deposit Ratio.

TABLE-2 : ResourceS Deployed

Banks	Investment to Assets			Credit - Deposit Ratio			Investment - Deposit Ratio		
	Mean	SD	CV	Mean	SD	CV	Mean	SD	CV
Allahabad Bank	30.825	4.234	13.736	67.287	6.432	9.560	35.187	4.361	12.394
Andhra Bank	26.373	3.215	12.191	72.331	5.745	7.942	30.900	3.873	12.533
Bank of Baroda	**24.241**	6.438	**26.559**	69.004	6.543	9.482	**28.355**	7.684	27.100
Bank of India	24.247	3.109	12.824	73.814	3.154	4.273	28.933	3.768	13.025
Bank of Maharashtra	30.821	5.504	17.857	67.300	9.595	14.258	35.686	6.049	16.951
Canara Bank	27.713	2.684	9.685	69.802	3.226	4.622	31.956	2.994	9.369
Central Bank of India	30.394	6.340	20.858	65.760	9.652	14.677	34.844	6.916	19.848
Corporation Bank	28.870	**1.749**	**6.058**	70.670	**2.754**	**3.898**	34.768	**2.121**	**6.101**
Dena Bank	29.405	4.380	14.895	66.589	5.559	8.348	33.354	5.253	15.750
Indian Bank	28.742	2.480	8.629	67.173	8.176	12.172	36.443	8.028	22.028
Indian Overseas Bank	31.020	6.025	19.422	72.430	6.733	9.296	34.010	3.851	11.324
IDBI Bank Limited	28.410	3.824	13.459	127.782	71.824	56.208	**62.068**	**40.481**	**65.221**
Oriental Bank of Commerce	28.413	2.567	9.036	68.384	5.748	8.405	32.636	2.830	8.670
Punjab & Sind Bank	31.419	5.547	17.653	65.530	9.700	14.802	36.096	5.685	15.750
Punjab National Bank	28.040	4.356	15.534	72.137	6.891	9.552	33.732	5.543	16.434
Syndicate Bank	25.706	5.345	20.792	72.489	7.815	10.781	29.484	5.748	19.495
UCO Bank	28.391	3.241	11.416	69.401	5.598	8.066	32.305	3.365	10.418
Union Bank of India	27.059	2.166	8.004	73.167	4.572	6.248	31.921	2.640	8.270
United Bank of India	34.606	6.795	19.635	61.082	7.864	12.875	39.477	7.772	19.687
Vijaya Bank	31.224	4.095	13.116	65.238	4.509	6.912	35.535	4.728	13.305

Source : Secondary Data

The mean was found to be low (M=24.241%) with the Bank of Baroda and the high mean (M=34.606) was found with the United Bank of India. The Standard deviation of Investment to Assets ratios for the selected public sector banks ranges between 1.749 and 6.795. The lowest standard deviation was found with Corporation Bank and the maximum was found with United Bank of India. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 6.058 and 26.559. It is observed that Corporation Bank has been more consistent in its performance with regards to Investment to Assets ratio during the study period, whereas Bank of Baroda was found to be less consistent.

The mean was found to be low (M=61.082%) with the United Bank of India and the high mean (M=127.782) was found with the IDBI Bank Ltd. The Standard deviation of Credit Deposit ratios for the selected public sector banks ranges between 2.754 and 71.824. The lowest standard deviation was found with Corporation Bank and the maximum was found with IDBI Bank Ltd. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 3.898 and 56.208. It is observed that Corporation Bank has been more

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consistent in its performance with regards to Credit Deposit ratio during the study period, whereas IDBI Bank Ltd. was found to be less consistent.

The mean was found to be low (M=28.355%) with the Bank of India and the high mean (M=62.068) was found with the IDBI Bank Ltd. The Standard deviation of Investment Deposit ratios for the selected public sector banks ranges between 2.121 and 40.481. The lowest standard deviation was found with Corporation Bank and the maximum was found with IDBI Bank Ltd. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 6.101 and 65.221. It is observed that Corporation Bank has been more consistent in its performance with regards to Investment Deposit ratio during the study period, whereas IDBI Bank Ltd. was found to be less consistent.

A. Asset Quality

Under Asset quality ratio it consists of (i) Return on Advances (ii) Return on Investments and (iii) Ratio of Priority Sector Advances to Advances.

TABLE-3 : Asset Quality

Banks	Return on Advances			Return on Investment			Priority sector advances to total advances		
	Mean	SD	CV	Mean	SD	CV	Mean	SD	CV
Allahabad Bank	9.929	0.772	7.775	7.506	0.869	11.582	36.105	4.204	11.645
Andhra Bank	10.305	1.020	9.901	7.057	0.434	6.152	36.211	**2.022**	**5.585**
Bank of Baroda	**8.139**	**0.589**	7.240	7.341	0.532	7.246	25.906	2.769	10.688
Bank of India	8.446	0.771	9.124	7.388	0.589	7.973	26.171	3.465	13.239
Bank of Maharashtra	9.579	1.217	12.704	7.579	0.994	13.109	**37.194**	3.215	8.643
Canara Bank	9.353	1.076	11.505	7.820	**0.396**	**5.065**	34.253	2.893	8.446
Central Bank of India	9.370	0.984	10.502	7.644	0.624	8.164	34.487	6.108	17.712
Corporation Bank	9.215	1.015	11.010	6.914	0.806	11.654	32.543	2.771	8.514
Dena Bank	9.432	1.025	10.863	7.339	0.458	6.244	34.245	4.398	12.843
Indian Bank	10.117	0.935	9.241	7.822	0.455	5.819	37.724	5.108	13.540
Indian Overseas Bank	9.940	0.710	**7.139**	7.710	0.720	9.341	33.971	3.778	11.122
IDBI Bank Limited	9.120	**1.644**	**18.022**	**5.124**	**1.754**	**34.229**	**19.241**	5.693	**29.587**
Oriental Bank of Commerce	9.883	1.316	13.316	**8.033**	0.911	11.339	34.701	2.119	6.107
Punjab & Sind Bank	**10.307**	1.008	9.782	7.646	0.704	9.208	33.559	**6.767**	20.163
Punjab National Bank	9.567	1.023	10.690	7.466	0.753	10.082	36.405	5.882	16.157
Syndicate Bank	9.473	0.699	7.383	7.320	0.583	7.968	32.033	3.274	10.219
UCO Bank	9.349	0.949	10.151	7.148	0.700	9.800	30.610	4.302	14.054
Union Bank of India	9.287	0.793	8.542	7.702	0.453	5.884	33.961	5.925	17.448
United Bank of India	9.606	0.964	10.031	7.350	0.733	9.967	34.655	2.801	8.083
Vijaya Bank	9.891	1.019	10.305	7.419	0.510	6.876	33.936	5.233	15.420

Source : Secondary Data

It is evident that the mean was found to be low (M=8.139%) with the Bank of India and the high mean (M=10.307) was found with the Punjab and Sind Bank. The Standard deviation of Return on Advances ratios for the selected public sector banks ranges between 0.589% and 1.644%. The lowest standard deviation was registered by Bank of Baroda and the maximum was found with IDBI Bank Ltd. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 7.139 and 18.022. It is observed that Indian Overseas Bank has been more consistent in its performance with regards to Return on Advances ratio during the study period, whereas IDBI Bank Ltd. was found to be less consistent.

It is clear that the mean was found to be low (M=5.124%) with the IDBI Bank Ltd. and the high mean (M=8.033) was found with the Oriental Bank of Commerce. The Standard deviation of Return on Investment ratios for the selected public sector banks ranges between 0.396% and 1.754%. The lowest standard deviation was registered by Canara Bank and the maximum was found with IDBI Bank Ltd. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 5.065 and 34.229. It is observed that Canara Bank has been more consistent in its performance with regards to Return on Investment ratio during the study period, whereas IDBI Bank Ltd. was found to be less consistent.

The overall mean was found to be low (M=19.241%) with the IDBI Bank Ltd. and the high mean (M=37.194) was found with the Bank of Maharashtra. The Standard deviation of Priority Sector Advances to Total Advances ratios for the selected public sector banks ranges between 2.022% and 6.767%. The lowest standard deviation was registered by Andhra Bank and the maximum was found with Punjab and Sind Bank. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 5.585 and 29.587. It is observed that Andhra Bank has been more consistent in its performance with regards to Priority Sector Advances to Total Advances ratio during the study period, whereas IDBI Bank Ltd. was found to be less consistent.

M. Management Ratios

This set of ratios is used to test the management's efficiency in effectively utilizing the funds in order to increase the overall

profitability of the banks. They are (i) Intermediation Cost Ratio and (ii) Return on Net Worth.

TABLE-4 : Management Ratios

Banks	Intermediation cost to total assets			Return on equity		
	Mean	SD	CV	Mean	SD	CV
Allahabad Bank	1.746	0.366	20.985	18.246	5.473	29.993
Andhra Bank	1.869	0.420	22.487	**19.654**	6.898	35.098
Bank of Baroda	1.673	0.408	24.407	16.491	4.270	25.894
Bank of India	1.643	0.328	19.934	15.762	5.782	36.682
Bank of Maharashtra	1.957	0.198	**10.106**	12.288	5.177	42.128
Canara Bank	1.568	0.249	15.891	17.140	4.513	26.329
Central Bank of India	1.861	0.401	21.548	8.573	6.716	78.342
Corporation Bank	1.469	0.361	24.545	16.577	4.873	29.396
Dena Bank	1.802	0.427	23.715	15.407	6.504	42.214
Indian Bank	1.992	0.291	14.613	16.526	5.764	34.879
Indian Overseas Bank	1.808	0.324	17.933	17.334	10.136	58.474
IDBI Bank Limited	**0.891**	**0.139**	15.654	9.091	2.606	28.666
Oriental Bank of Commerce	1.436	0.147	10.251	12.721	4.918	38.660
Punjab & Sind Bank	**2.064**	**0.752**	**36.446**	11.913	**11.133**	93.452
Punjab National Bank	1.996	0.355	17.808	18.627	4.418	23.716
Syndicate Bank	1.786	0.418	23.419	18.808	**2.681**	**14.255**
UCO Bank	1.512	0.376	24.875	14.131	4.337	30.688
Union Bank of India	1.622	0.167	10.311	17.457	4.361	24.981
United Bank of India	1.813	0.458	25.251	**7.577**	10.648	**140.536**
Vijaya Bank	1.634	0.280	17.119	13.593	5.731	42.163

Source : Secondary Data

It is clear that the mean was found to be low (M=0.891%) with the IDBI Bank Ltd. and the high mean (M=2.064) was found with the Punjab and Sind Bank. The Standard deviation of Intermediation Cost to Total Assets ratios for the selected public sector banks ranges from 0.139% and 0.752%. The lowest standard deviation was registered by IDBI Bank and the maximum was found with Punjab and Sind Bank. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 10.106 and 36.446. It is observed that Bank of Maharashtra has been more consistent in its performance with regards to Intermediation Cost to Total Asset ratio during the study period, whereas Punjab and Sind Bank was found to be less consistent.

It is understood that the Return on Equity ratio overall mean was found to be low (M=7.577%) recorded by United Bank of India and the high mean (M=19.654) was found with the Andhra Bank. The Standard deviation of Return on Equity ratios for the selected public sector banks ranges from 2.681% and 11.133%. The lowest standard deviation was registered by Syndicate Bank and the maximum was found with Punjab and Sind Bank. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 14.255 and 140.536. It is observed that Syndicate Bank has been more consistent in its performance with regards to Return on Equity ratio during the study period, whereas United Bank of India was found to be less consistent.

E. Earnings Quality

Earnings quality ratios includes i) Spread Ratio ii) Operating Ratio and iii) Ratio of Interest Income to total income.

TABLE-5 : Asset Quality

Banks	Net interest income to total assets			operating profits to total assets			Interest Income to Total Income		
	Mean	SD	CV	Mean	SD	CV	Mean	SD	CV
Allahabad Bank	2.749	0.395	14.378	2.070	**0.218**	10.537	51.338	13.603	26.498
Andhra Bank	2.951	0.385	13.045	2.234	0.435	19.464	57.262	17.753	31.004
Bank of Baroda	2.602	0.388	14.928	1.984	0.282	14.217	60.258	14.591	24.215
Bank of India	2.442	0.223	9.111	1.900	0.346	18.193	50.831	**8.599**	**16.916**
Bank of Maharashtra	2.714	0.345	12.725	1.546	0.300	19.415	51.510	10.136	19.678
Canara Bank	2.412	0.382	15.828	1.900	0.305	16.039	45.364	15.752	34.723
Central Bank of India	2.469	0.681	27.584	1.413	0.402	28.419	48.192	21.209	44.009
Corporation Bank	2.432	0.608	25.013	2.182	0.504	23.090	51.001	**25.390**	49.783

Dena Bank	2.562	0.328	12.818	1.849	0.277	14.998	50.199	13.495	26.882
Indian Bank	3.235	0.314	9.704	**2.437**	0.438	17.991	**17.595**	9.204	**52.312**
Indian Overseas Bank	2.854	0.620	21.730	2.038	0.486	23.850	65.547	14.124	21.548
IDBI Bank Limited	**1.089**	0.618	**56.738**	**1.240**	0.445	35.873	54.759	21.911	40.014
Oriental Bank of Commerce	2.514	0.373	14.856	1.965	0.300	15.256	45.022	14.732	32.722
Punjab & Sind Bank	2.789	**0.708**	25.371	1.618	0.447	27.618	53.279	24.725	46.406
Punjab National Bank	**3.260**	**0.181**	**5.544**	2.383	0.220	**9.236**	**70.639**	15.265	21.610
Syndicate Bank	2.696	0.504	18.697	1.707	0.235	13.769	53.463	18.391	34.400
UCO Bank	2.320	0.427	18.399	1.557	0.340	21.841	42.791	12.825	29.971
Union Bank of India	2.717	0.261	9.604	2.043	0.235	11.505	52.602	11.619	22.088
United Bank of India	2.513	0.543	21.612	1.718	0.464	26.985	49.291	17.672	35.853
Vijaya Bank	2.377	0.694	29.198	1.615	**0.596**	**36.931**	44.748	22.678	50.680

Source : Secondary Data

It is understood that the Net Interest Income to Total Assets ratio's overall mean was found to be low (M=1.089%) recorded by IDBI Bank and the high mean (M=3.260) was found with the Punjab National Bank. The Standard deviation of Net Interest Income to Total Assets ratios for the selected public sector banks ranges from 0.181% and 0.708%. The lowest standard deviation was registered by Punjab National Bank and the maximum was found with Punjab and Sind Bank. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 5.544% and 56.738%. It is observed that Punjab National Bank has been more consistent in its performance with regards to Net Interest Income to Total Assets ratio during the study period, whereas IDBI Bank was found to be less consistent.

It is clear that the Operating Profits to Total Assets ratio's overall mean was found to be low (M=1.240%) recorded by IDBI Bank and the high mean (M=2.437) was found with the Indian Bank. The Standard deviation of Operating Profits to Total Assets ratios for the selected public sector banks ranges from 0.218% and 0.596%. The lowest standard deviation was registered by Allahabad Bank and the maximum was found with Vijaya Bank. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 9.236% and 36.931%. It is observed that Punjab National Bank has been more consistent in its performance with regards to Operating Profits to Total Assets ratio during the study period, whereas Vijaya Bank was found to be less consistent.

It is evident that the Interest Income to Total Assets ratio's overall mean was found to be low (M=17.595%) recorded by Indian Bank and the high mean (M=70.639) was found with the Punjab National Bank. The Standard deviation of Interest Income to Total Assets ratios for the selected public sector banks ranges from 8.599% and 25.390%. The lowest standard deviation was registered by Bank of India and the maximum was found with Corporation Bank. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 16.916% and 52.312%. It is observed that Bank of India has been more consistent in its performance with regards to Interest Income to Total Assets ratio during the study period, whereas Indian Bank was found to be less consistent.

L. Liquidity Ratios

Liquidity ratios consist of the following ratios such as (i) Ratio of Deposits to Assets (ii) Ratio of Liquid Assets to Assets and (iii) LiquiAssets to Total Deposits Ratio.

TABLE-6 : Asset Quality

Banks	Deposits to Total Assets			Liquid Assets to Total Assets			Liquid Assets to Total Deposits		
	Mean	SD	CV	Mean	SD	CV	Mean	SD	CV
Allahabad Bank	87.497	1.095	1.252	6.863	0.792	11.544	7.844	0.913	11.637
Andhra Bank	85.387	1.351	1.582	8.582	2.766	32.233	10.058	3.286	32.674
Bank of Baroda	85.613	1.344	1.570	**8.709**	**0.746**	**8.564**	10.174	**0.872**	**8.568**
Bank of India	83.820	**0.735**	**0.877**	7.244	1.293	17.853	8.637	1.511	17.495
Bank of Maharashtra	86.296	2.455	2.845	7.146	2.098	29.365	8.251	2.297	27.835
Canara Bank	86.714	1.252	1.444	6.249	1.228	19.659	**7.205**	1.420	19.713
Central Bank of India	87.133	2.352	2.699	7.595	2.225	29.299	8.672	2.386	27.510
Corporation Bank	83.068	2.354	2.834	7.633	1.935	25.351	9.212	2.408	26.145
Dena Bank	**88.259**	1.328	1.505	7.760	1.630	20.999	8.795	1.852	21.053
Indian Bank	**56.827**	**19.993**	**35.182**	**6.032**	1.090	18.068	**13.106**	**8.461**	**64.553**
Indian Overseas Bank	85.502	2.375	2.778	6.468	1.647	25.464	7.561	1.892	25.027
IDBI Bank Limited	83.379	1.787	2.143	7.581	1.702	22.454	9.086	1.999	21.999

Oriental Bank of Commerce	87.045	1.054	1.211	8.503	2.967	34.895	9.771	3.384	34.633
Punjab & Sind Bank	86.894	2.945	3.389	7.557	1.788	23.663	8.707	2.086	23.961
Punjab National Bank	83.218	1.459	1.753	8.239	**3.471**	**42.123**	9.896	4.195	42.392
Syndicate Bank	87.033	1.787	2.054	7.762	1.720	22.154	8.908	1.901	21.344
UCO Bank	87.833	2.189	2.492	7.007	2.223	31.719	7.949	2.397	30.154
Union Bank of India	84.797	1.350	1.592	6.615	1.405	21.233	7.796	1.624	20.825
United Bank of India	87.663	0.842	0.961	8.277	1.665	20.111	9.442	1.905	20.178
Vijaya Bank	87.891	1.424	1.620	8.066	2.403	29.787	9.189	2.786	30.317

Source : Secondary Data

It is understood that the Deposits to Total Assets ratio's overall mean was found to be low (M=56.827%) recorded by Indian Bank and the high mean (M=88.259) was found with the Dena Bank. The Standard deviation of Deposits to Total Assets ratios for the selected public sector banks ranges from 0.735% and 19.993%. The lowest standard deviation was registered by Bank of India and the maximum was found with Indian Bank. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 0.877% and 35.182%. It is observed that Bank of India has been more consistent in its performance with regards to Deposits to Total Assets ratio during the study period, whereas Indian Bank was found to be less consistent.

It is clear that the Liquid Assets to Total Assets ratio's overall mean was found to be low (M=6.032%) recorded by Indian Bank and the high mean (M=8.709) was found with the Bank of Baroda. The Standard deviation of Liquid Assets to Total Assets ratios for the selected public sector banks ranges from 0.746% and 3.471%. The lowest standard deviation was registered by Bank of Baroda and the maximum was found with Punjab National Bank. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 8.564% and 42.123%.

It is clear that the Liquid Assets to Total Deposits ratio's overall mean was found to be low (M=7.205%) recorded by Canara Bank and the high mean (M=13.106%) was found with the Indian Bank. The Standard deviation of Liquid Assets to Total Deposits ratios for the selected public sector banks ranges from 0.872% and 8.461%. The lowest standard deviation was registered by Bank of Baroda and the maximum was found with Indian Bank. In view of measuring the consistency with the assistance of co-efficient of variation, the ranges were identified between 8.568% and 64.553%. It is observed that Bank of Baroda has been more consistent in its performance with regards to Liquid Assets to Total Deposits ratio during the study period, whereas Indian Bank was found to be less consistent.

II) REGRESSION ANALYIS

The results of the regression analysis conducted on CRAMEL type variables infers that, out of 17 variables considered for the study only six variables such as **Capital Adequacy Ratio, Credit Deposit Ratio, Investment-Deposit Ratio, Return on Advances, Return on Investments and finally, Ratio of Operating profits to Total Assets** were found to be highly significant, which is evident from the below table. Also from the analysis of variance (ANOVA) conducted on those significant variables infers that there is a significant relationship between those variables.

A regression coefficient has been highlighted for the significant variables which are shown below:

TABLE-7 : Regression Analysis on Cramel Variables

Sl. No.	Variables	Coefficients Beta	t	Sig.
	(Constant)	-11.429	-.405	0.686
1	C1. Advances to Assets Ratio	4.329	.151	0.880
2	**C2. Capital adequacy ratio**	**.646**	**2.720**	**0.007**
3	C3. Government Securities to Investments	13.508	1.700	0.091
4	R1-Investment to Assets	33.206	1.059	0.291
5	**R2-Credit - Deposit Ratio**	**.161**	**2.132**	**0.034**
6	**R3-Investment - Deposit Ratio**	**-.374**	**-2.595**	**0.010**
7	**A1-Return on advances**	**-1.898**	**-3.359**	**0.001**
8	**A2-Return on investments**	**-1.573**	**-2.157**	**0.032**
9	A3- Ratio of priority sector advances to total advances	.146	1.305	0.193
10	M1- Ratio of intermediation cost to total assets	-.204	-.094	0.925
11	E1- Ratio of net interest income to total assets (Net Interest Margin)	1.619	.788	0.432
12	**E2-Ratio of operating profits to total assets**	**7.662**	**4.816**	**0.000**
13	E3-Interest Income to Total Income	-8.014	-1.689	0.093
14	L1-Deposits to Total Assets	3.725	.250	0.803
15	L2-Liquid Assets to Total Assets	60.927	.960	0.338
16	L3-Liquid Assets to Total Deposits	-3.582	-.078	0.938

Dependent Variable: M2-Return on equity ** t-value significantly different from zero at the significant level of 5%

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Table 8: Regression RESULTS

R-Value	R^2	Adj. R^2-	df – V_1	df – V_2	F	Sig.
0.673	0.453	0.406	16	183	9.488**	0.000

From the Regression analysis of CRAMEL type variables keeping return on Net worth as constant since performance is assumed to be based on the return on the funds employed. From the results of the t-values we find that out of 16 CRAMEL type variables considered for the study from which, only 6 variables seems to be significant. The F- test (9.488) signifies that there is a significant relation between the variables selected for the study. Also the R-Square (0.453) were found to be highly significant which reveals that these six variables had contributed upto 45.3% towards the efficiency of the public sector banks for the 10 years taken for the study.

To sum-up it is concluded that the Capital Adequacy (**Capital Adequacy Ratio**) have positive impact on the net worth, while the Reliability Ratio (**Credit Deposit Ratio & Investment Deposit Ratio**), Asset Quality (**Return on Advances and Return on Investments)** and finally, the Efficiency Ratio (**Ratio of Operating profits to Total Assets**) have significant impact on the Net worth based on the select variables from the CRAMEL ratios.

11. SUMMARY OF RESULTS

a) CAPITAL ADEQUACY

It is observed that **Indian Bank** had posed more consistency in the performance during the study period with regards to **Advances to Assets ratio,** whereas Indian Overseas Bank was found to be less consistent. It is observed that **Indian Bank** has been more consistent in its performance with regards to **Capital adequacy ratio** during the study period, whereas Punjab National Bank was found to be less consistent. **Syndicate Bank** has more consistency in its performance with regards to **Government Securities to Investment ratio** during the study period, whereas Indian Bank was found to be less consistent.

It is recommended that the Capital Adequacy ratio was found to be week with the select banks such as Indian Overseas Bank (C1), Punjab National Bank (C2) and Indian Bank (C3) which needed to improvement.

b) RESOURCE RAISING ABILITY

It is observed that **Corporation Bank** has been more consistent in its performance with regards to **Investment to Assets ratio** during the study period, whereas Bank of Baroda was found to be less consistent. **Corporation Bank** has been more consistent in its performance with regards to **Credit Deposit ratio** during the study period, whereas IDBI Bank Ltd. was found to be less consistent. It is observed that **Corporation Bank** has been more consistent in its performance with regards to **Investment Deposit ratio** during the study period, whereas IDBI Bank Ltd. was found to be less consistent.

It is suggested that the Resource raising ability ratio was found to be low with the select public sector banks such as Bank of Baroda (R1), IDBI Bank (R2) and IDBI Bank (R3) which needed to improvement.

c) ASSET QUALITY

It is observed that **Indian Overseas Bank** has been more consistent in its performance with regards to **Return on Advances ratio** during the study period, whereas IDBI Bank Ltd. was found to be less consistent. Followed by, **Canara Bank** has been more consistent in its performance with regards to **Return on Investment ratio** during the study period, whereas IDBI Bank Ltd. was found to be less consistent. Finally, **Andhra Bank** has been more consistent in its performance with regards to **Priority Sector Advances to Total Advances ratio** during the study period, whereas IDBI Bank Ltd. was found to be less consistent.

It is observed that the Asset Quality ratio was found to be low with the select public sector banks such as IDBI Bank (A1), Canara Bank (A2) and IDBI Bank (A3) which needed to improvement.

d) MANAGEMENT EFFICIENCY

It is observed that **Bank of Maharashtra** has been more consistent in its performance with regards to **Intermediation Cost to Total Asset ratio** during the study period, whereas Punjab and Sind Bank was found to be less consistent and **Syndicate Bank** has been more consistent in its performance with regards to **Return on Equity ratio** during the study period, whereas United Bank of India was found to be less consistent.

It is observed that the Management Efficiency ratio was found to be low with the select public sector banks such as Punjab and Sind Bank (M1) and United Bank of India (M2) which needed to improvement.

e) EARNING QUALITY

It is observed that **Punjab National Bank** has been more consistent in its performance with regards to **Net Interest Income to Total Assets ratio** during the study period, whereas IDBI Bank was found to be less consistent. While, **Punjab National Bank** has been more consistent in its performance with regards to **Operating Profits to Total Assets ratio** during the study period, whereas Vijaya Bank was found to be less consistent. Finally, **Bank of India** has been more consistent in its performance with regards to **Interest Income to Total Assets ratio** during the study period, whereas Indian Bank was found to be less consistent.

It is observed that the Earning Quality ratio was found to be low with the select public sector banks such as IDBI Bank (E1), Vijaya Bank (E2) and finally, Indian Bank (E3) which needed to improvement.

f) LIQUIDITY RATIOS

It is observed that **Bank of India** has been more consistent in its performance with regards to **Deposits to Total Assets ratio** during the study period, whereas Indian Bank was found to be less consistent. While, **Bank of Baroda** has been more consistent in its performance with regards to **Liquid Assets to Total Assets ratio** during the study period, whereas Punjab National Bank was found to be less consistent. Finally, **Bank of Baroda** has been more consistent in its performance with regards to **Liquid Assets to Total Deposits ratio** during the study period, whereas Indian Bank was found to be less consistent.

It is observed that the Liquidity ratio was found to be low with the select public sector banks such as Indian Bank (L1), Punjab National Bank (E2) and finally, Indian Bank (L3) which needed to improvement.

g) REGRESSION

To sum-up it is concluded that the Capital Adequacy (**Capital Adequacy Ratio**) have positive impact on the networth, while the Resource Raising Ability Ratio (**Credit Deposit Ratio & Investment Deposit Ratio**), Asset Quality (**Return on Advances and Return on Investments)** and finally, the Efficiency Ratio (**Ratio of Operating profits to Total Assets**) have significant impact on the Networth based on the select variables from the CRAMEL ratios.

It is observed that based on the CRAMEL model, the Capital Adequacy, Resource Raising Ability, Asset Quality and Efficiency Ratios are the major contributors that has significant impact on the Net worth based on the select variables.

12. CONCLUSION

To conclude it is observed that IDBI found to be the weakest link in the select PSBs taken for the study which stood at last position measuring the CRAMEL due to its weak performance in Credit Deposit Ratio (R2), Investment Deposit Ratio (R3), Ratio of Return on Advances (A1), Ratio of Priority Sector Advances to Advances (A3) and finally, Net Interest Income to Total Assets (E1) which are the major contributors that decides the performances of the banks. While Punjab National Bank-Capital Adequacy Ratio and Ratio of Operating Profits to Total Assets ratios i.e. Capital adequacy and Efficiency of the banks performances were found to be low. Whereas, three ratios of the Indian Bank had revealed its least contributions towards Government Securities to Investments, Interest Income to Total Income and Liquid Assets to Total Deposits which needs to be improved.

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