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Performance of Public Sector Banks in India (A Study Using Cramel Model)

Mr. M.Karthikeyan Ph.D Research Scholar, Department of Commerce, Karpagam University, Coimbatore – 21 & Assistant Professor & Head, Department of Commerce CA, Kongunadu Arts & Science College, Coimbatore - 29 .* Corresponding Author

*** Dr. P.Sivakami** Assistant Professor, Department of Commerce, Government Arts College (Autonomous), Coimbatore – 641018, TN, India.

ABSTRACT

A sound financial system is indispensable for the growth of a healthy and vibrant economy. The banking sector, being a crucial constituent of financial system is the lifeline of any modern economy. It is one of the important financial pillars of the financial system which plays a vital role in the success/failure on an economy. Banks are one of the oldest financial intermediaries in the financial system. They play an important role in the mobilization of deposits and disbursement of credit to various sectors of the economy. Indian Banking sector is one of the fastest growing sectors. To evaluate the performance of Indian banking sector we have chosen the CRAMEL model which measures the performance of banks from each of the important parameter like Capital Adequacy, Resources Deployed, Assets Quality, Management Efficiency, Earning Quality and Liquidity. The model we have chosen 19th nationalized banks. During the 20th century in most of the nations, domestic banking was generally subjected to heavy regulations and financial repression. The growth and financial stability of the country depends on the financial soundness of its banking sector.

KEYWORDS CRAMEL, Profitability, Financial Performance.

Introduction

The Indian banking sector has been working in a more open and globalize environment for last two decades since liberalization. The liberalization process of Indian Economy has made the entry of new private sector banks possible. Besides, following India's commitment to the WTO, foreign banks have been permitted to open more branches with effect from 1998-99. With the increased competition and the emphatic on profitability, the public sector banks are now moving towards on economic-oriented model departing from the social approach followed for decades. Thus, the restructuring of public sector banks and the emergence of new banks in the private sector as well as the increased competition from foreign banks, have improved the professionalism in the banking sector. The increased presence of the private and foreign banks during the past decade has made the market structure of the banking sector in terms of competitive pricing of services, narrow spreads, and improving the quality of the services. The public sector banks, which had dominated the banking sector for decades, are now feeling the heat of the competition from private and foreign sector banks.

Further, the strength of economy of any country basically hinges on the strength and efficiency of financial system, which, in turn, depends upon a sound banking system. The regulators have recommended bank's supervision through CRAMEL rating model to assess the performance of banks, which is better than the earlier systems. The prime objective of CRAMEL model of rating banking institutions is to make their comparative performance analysis. It is basically a ratio based model for evaluating the performance of banks. The basic purpose of the present study is to evaluate the financial performance of Indian public sector banks excluding State Bank Group for the period of 10 years i.e. 2002 – 2003 to 2011 – 2012.

Research confirms that countries with a well developed banking system grow faster than those with a weaker one. Fase and Abma (2003) argued that the expansion of the financial system could have a positive repercussion on economic growth of a country. Levine (2005) suggested five channels through which financial systems may have an effect on economic growth: Financial intermediaries, monitor investment, manage risk, mobilize savings and facilitate the exchange of goods and services. In a study on banks and stock market it was found that they positively influenced economic growth (Beck and Levine, 2004). The strength of an economy hinges on the strength and efficiency of the financial system, which, in turn, depends upon a sound and solvent banking system.

A sound banking system efficiently deploys mobilized savings in productive sectors and a solvent banking system ensures that the bank is capable of meeting its obligation to the depositors. Patrick (1996) opined that financial sector acts as supply leading to transfer of resources from traditional, low growth sector to high growth sector and to promote and stimulate an entrepreneurship response in the high growth sector. As it is clear from above discussion that the role of banking is very significant in the economy in capital formation. A sound banking system proves to be one of the pillars of economic, social and industrial growth of a country. In the recent past, the bank regulators have introduced a number of measures to link the regulation of banks to their level of risk and financial liability. With this view, an attempt has been made to contribute to the already existing body of knowledge. The study is organized as follows. The present part introduces the concept of the study and outlines the need for it; the second part reviews the literature available; the third part describes the methodology for the research; the fourth part analyzes and presents the results of the study and the fifth part concludes the study.

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.

Research Methodology

The present study is a descriptive research study based on analytical research design. The secondary data from the annual reports of relevant banks for a period of 10 years (2002-2012) has been taken, which is the most recent data available on banking sector immediately before and after 2007 global financial crisis. A sample of 19 public sector banks excluding State Bank group are chosen as sample for the purpose of present study.

Thirty ratios related to CRAMEL model are applied in this study, whereas only 20 ratios have been discussed by Parvesh Kumar Aspal and Naresh Malhotra (2011) in their CAMEL model. The 30 ratios applicable for CRAMEL Model have been discussed in the present study, which are not discussed by Aspal et al. (2011). For analysis and interpretation of results, the statistical tools used are arithmetic mean, One Way ANOVA. Beside these, tests of normality and homogeneity of variances are also used.

Objectives of the Study

The objectives of the present study are:

1. To measure the performance of select Indian Public Sector Banks.
2. To offer suitable recommendations based on the study for improvement of financial performance.

Hypothesis of the Study

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

DATA ANALYSIS & INTERPRETATION

Descriptive Statistics

To analyze the available financial information of various Banks, different techniques of applied research and accounting tools like comparative ratios have been employed. The following 30 major financial ratios (CRAMEL) and their descriptive Statistics were calculated for analyzing the financial performance:

LIST OF RATIOS TAKEN FOR THE STUDY

1. Ratio of Advances to Assets – RAA (C1)
2. Ratio of Government Securities to Assets – RGSA (C2)
3. Ratio of Government Securities to Investments – RGSI (C3)
4. Capital Adequacy Ratio – CAR (C4)
5. Debt Equity Ratio – DER (C5)
6. Ratio of Investment to Assets – RIA (R1)
7. Ratio of Other Assets to Assets – ROAA (R2)
8. Credit Deposit Ratio – CRDR (R3)
9. Ratio of Fixed Assets to Assets – RFAA (R4)
10. Investment Deposit Ratio – IDR (R5)
11. Ratio of Return on Advances – RRAD (A1)
12. Ratio of Return on Investments – RRI (A2)
13. Ratio of NPA to Advances – RNPAA (A3)
14. Ratio of Priority Sector Advances to Advances – RPSAA (A4)
15. Ratio of Non-Interest Income to Assets – RNIIA (A5)
16. Ratio of Profit Per Employee – RPPE (M1)
17. Ratio of Business Per Employee – RBPE (M2)
18. Intermediation Cost Ratio – ICR (M3)
19. Business Per Branch – BPB (M4)
20. Return On Networth – RON (M5)
21. Spread to Working Funds Ratio – SWFR (E1)
22. Burden to Working Funds Ratio – BWFR (E2)
23. Ratio of Operating Profit to Total Assets – ROPTA (E3)
24. Ratio of Return on Assets – RRA (E4)
25. Ratio of Interest Income to Total Income – RIIRI (E5)
26. Ratio of Approved Securities to Assets – RASA (L1)
27. Ratio of Term Deposits to Deposits – RTDD (L2)
28. Ratio of Liquid Assets to Assets – RLAA (L3)
29. Ratio of Provisions and Contingencies to Total Assets – RPCTA (L4)
30. Cash Deposit Ratio – CDR (L5)

The study deals with nineteen banks and to analyses the financial performance of banks for the period 2002-2003 to 2011-2012, the financial and accounting ratios have been calculated. Table 1.1 indicates Descriptive Statistics of the banks based on the simple ranking method.

Table 1: Descriptive Statistics for the performance of Banks with Type – I financial ratios

Sl. No	Bank	C1		C2		C3		C4		C5			
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1.	Allahabad Bank	60.33	14	21.10	19	72.04	1	85.58	1	42.3	2	7.40	3
2.	Andhra Bank	63.92	2	23.53	3	69.06	9	79.46	13	39.98	18	9.00	8
3.	Bank of Baroda	62.73	4	22.58	7	70.47	7	82.07	9	40.84	16	8.60	6
4.	Bank of India	62.7	5	22.35	10	71.24	5	83.07	5	41	14	7.80	5
5.	Bank of Maharashtra	60.13	15	22.49	9	66.72	16	78.9	15	41.4	8	12.60	17
6.	Canara Bank	62.33	7	22.31	12	70.79	6	82.74	7	41.1	12	8.80	7
7.	Central Bank of India	60.1	16	22.54	8	66.48	17	78.61	16	41.37	9	13.20	18
8.	Corporation Bank	58.64	17	21.73	16	66.95	14	80.21	12	42.21	3	12.40	16

9.	Dena Bank	61.78	8	22.62	6	68.85	11	80.59	11	40.99	15	10.20	10						
10.	Indian Bank	60.93	11	22.69	4	67.28	13	79.1	14	41.11	11	10.60	11						
11.	Indian Overseas Bank	61.61	9	22.18	14	70.11	8	82.33	8	41.32	10	9.80	9						
12.	Oriental Bank of Commerce	60.81	12	21.40	17	71.7	2	84.85	2	42	4	7.40	2						
13.	Punjab & Sind Bank	60.38	13	22.18	13	68.14	12	80.6	10	41.56	7	11.00	14						
14.	Punjab National Bank	62.74	3	22.33	11	71.35	3	83.18	4	41	13	6.80	1						
15.	Syndicate Bank	64.67	1	24.57	1	66.91	15	76.13	18	39.17	19	10.80	13						
16.	UCO Bank	61.54	10	21.83	15	71.24	4	83.82	3	41.57	6	7.60	4						
17.	Union Bank of India	62.56	6	23.78	2	66.22	18	76.62	17	40.07	17	12.00	15						
18.	United Bank of India	56.91	19	22.69	5	61.05	19	73.54	19	41.92	5	13.40	19						
19.	Vijaya Bank	58.5	18	21.11	18	68.99	10	82.91	6	42.66	1	10.60	12						

Source: Annual Reports of PSBS (2002 – 2012)

The different ratios measuring capital adequacy of the public sector banks are shown in table 1. It is found that the Syndicate Bank secured the top position with the highest average of 64.67 followed by Andhra Bank (63.92) and 3rd rank obtained by Punjab National Bank with an average of 62.74. The least average (56.91) was achieved by United Bank of India was at the bottom position. With regards to Government Securities to Assets ratio measuring capital adequacy of the public sector banks it is evident that Syndicate Bank secured the top position with the highest average of 24.57 followed by Union Bank of India (23.78) and the least average (21.10) 19th rank was secured by Allahabad Bank was found to be at the bottom position. With regards to Government Securities to Investments ratio measuring capital adequacy it is clear that Allahabad Bank secured the top position with the highest average of 72.04 followed by Punjab National Bank (71.35) and the least average (61.05) 19th rank was secured by United Bank of India was found to be at the bottom position. When considering Capital Adequacy ratio it is clear that Allahabad Bank secured the top position with the highest average of 85.58 followed by Oriental Bank of Commerce (84.85) and the least average (73.54) 19th rank was secured by United Bank of India was found to be at the bottom position. As far as the Debt Equity Ratio is concerned in measuring capital adequacy of the public sector banks it is proven that Vijaya Bank secured the top position with the highest average of 42.66 followed by Allahabad Bank (42.3) and the least average (39.17) 19th rank was secured by Syndicate Bank found to be at the bottom position.

To sum up, on the basis of group averages of five ratios taken as the sub-parameters measuring the capital adequacy of the select Public Sector Banks, Punjab National Bank was at the top position with group average of 6.80, followed by Oriental Bank of Commerce with group average of 7.4. Allahabad Bank stood at the 3rd Position with 7.40 whereas United Bank of India stood at last position due to its poor performance in Ratio of Advances to Assets, Ratio of Government Securities to Investments and Capital Adequacy Ratio.

Table 2: Descriptive Statistics for the performance of Banks with Type-II financial ratios

Sl. No	Bank	R1		R2		R3		R4		R5			
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1.	Allahabad Bank	29.68	2	15.35	13	69.36	15	9.52	8	34.12	3	8.20	6
2.	Andhra Bank	24.01	16	27.56	1	74.47	4	3.61	18	27.95	17	11.20	13
3.	Bank of Baroda	21.59	19	16.59	11	73.42	6	8.71	11	25.29	19	13.20	18
4.	Bank of India	23.62	18	13.38	18	74.76	2	9.52	7	28.16	16	12.20	15
5.	Bank of Maharashtra	28.42	6	22.77	4	68.56	17	8.1	13	32.37	8	9.60	9
6.	Canara Bank	26.48	13	14.49	15	71.82	8	11.28	5	30.52	13	10.80	12
7.	Central Bank of India	26.8	10	18.19	9	68.77	16	13.86	1	30.62	12	9.60	10
8.	Corporation Bank	28.99	4	19.81	8	70.52	10	2.92	19	34.56	2	8.60	7
9.	Dena Bank	26.49	12	20.03	7	69.45	14	7.29	14	29.78	15	12.40	16
10.	Indian Bank	28.3	7	25.49	2	70.5	11	13.38	6	32.73	6	5.60	1
11.	Indian Overseas Bank	26.99	9	14.36	16	74.73	3	9.98	6	32.71	7	8.20	5
12.	Oriental Bank of Commerce	26.62	11	15.11	14	69.99	12	8.67	12	30.63	11	12.00	14
13.	Punjab & Sind Bank	28.84	5	7.85	19	71.15	9	12.87	3	33.99	4	8.00	4
14.	Punjab National Bank	26.18	14	21.63	5	75.03	1	8.99	10	31.31	9	7.80	3
15.	Syndicate Bank	23.63	17	15.91	12	74.39	5	5.95	16	27.15	18	13.60	19
16.	UCO Bank	27.33	8	13.61	17	69.64	13	5.64	17	30.9	10	13.00	17
17.	Union Bank of India	26.08	15	25.47	3	73.15	7	12.54	4	30.48	14	8.60	8
18.	United Bank of India	30.9	1	20.29	6	65.15	19	9.39	9	35.37	1	7.20	2
19.	Vijaya Bank	29.64	3	16.92	10	66.88	18	7	15	33.88	5	10.20	11

Source: Annual Reports of PSBS (2002 – 2012)

The different ratios measuring Resource Raising Ability of the 19 public sector banks selected for the study are shown in table 2. It is found that the United Bank of India secured the top position with the highest average of 30.9 followed by Allahabad Bank (29.68) and 3rd rank obtained by Vijaya Bank with an average of 29.64. The least average (21.59) was obtained by Bank of Baroda was at the bottom position.

With regards to Ratio of Other Assets to Assets measuring resource raising ability of the public sector banks it is evident

that Andhra Bank secured the top position with the highest average of 27.56 followed by Indian Bank (25.49) and the least average (7.85) 19th rank was secured by Punjab and Sind Bank. With regards to Credit Deposit ratio measuring resource raising ability of the banks it is clear that Punjab National Bank secured the top position with the highest average of 75.03 followed by Bank of India (74.76) and the least average (65.15) 19th rank was secured by United Bank of India. When considering resource raising ability based on the fixed assets to assets ratio it is clear that Central Bank of India secured the top position with the highest average of 13.86 followed by Indian Bank (13.38) and the least average (2.92) 19th rank was secured by Corporation Bank was found to be at the bottom position. As far as the Investment Deposit Ratio is concerned in measuring capital adequacy of the public sector banks it is proven that United Bank of India secured the top position with the highest average of 35.37 followed by Corporation Bank (34.56) and the least average (25.29) 19th rank was secured by Bank of Baroda was found to be at the bottom position.

To sum up, on the basis of group averages of five ratios taken as the sub-parameters measuring the resource raising ability of the select Public Sector Banks, Indian Bank was at the top position with group average of 5.6, followed by Union Bank of India with the group average of 7.2. Syndicate Bank stood at last position due to its poor performance in Ratio of Investment to Assets, Ratio of Other Assets to Assets, Ratio of Fixed Assets to Assets and Investment Deposit Ratio

Table 3: Descriptive Statistics for the performance of Banks with Type-III financial ratios

Sl. No	Bank	A1		A2		A3		A4		A5			
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1.	Allahabad Bank	10.23	6	6.95	16	0.79	7	34.42	4	1.14	4	8.60	6
2.	Andhra Bank	10.75	1	6.8	17	0.36	1	34.96	3	1.05	8	9.60	8
3.	Bank of Baroda	8.47	19	7.09	14	0.4	2	25.43	19	1.09	6	15.20	19
4.	Bank of India	8.88	18	7.29	10	0.93	9	25.7	18	1.12	5	12.40	15
5.	Bank of Maharashtra	9.8	10	7.1	13	1.09	11	36.39	1	0.8	16	9.80	10
6.	Canara Bank	9.72	12	7.59	2	1.11	13	33.54	7	1.07	7	7.00	3
7.	Central Bank of India	9.46	16	7.42	5	1.42	17	30.75	14	0.77	18	11.20	14
8.	Corporation Bank	9.41	17	6.56	19	0.45	3	31.07	13	1.22	2	13.60	18
9.	Dena Bank	9.68	13	7.17	11	1.09	12	33.06	8	0.99	10	10.00	11
10.	Indian Bank	10.65	2	7.41	6	0.5	4	35.05	2	1.29	1	5.40	1
11.	Indian Overseas Bank	10.21	7	7.43	4	1.4	16	31.95	11	0.97	11	7.40	4
12.	Oriental Bank of Commerce	10.39	4	7.73	1	1.14	14	33.8	6	0.83	14	6.20	2
13.	Punjab & Sind Bank	10.42	3	7.3	9	0.56	5	30.62	15	0.87	13	11.00	12
14.	Punjab National Bank	10.12	8	6.97	15	0.74	6	34	5	1.16	3	9.00	7
15.	Syndicate Bank	9.81	9	7.14	12	0.95	10	31.69	12	0.75	19	12.40	16
16.	UCO Bank	9.74	11	6.62	18	1.63	19	28.64	17	0.78	17	12.80	17
17.	Union Bank of India	9.58	15	7.47	3	0.84	8	30.48	16	1	9	11.00	13
18.	United Bank of India	9.59	14	7.33	7	1.51	18	32.46	10	0.82	15	9.60	9
19.	Vijaya Bank	10.34	5	7.33	7	1.21	15	32.89	9	0.88	12	7.60	5

Source: Annual Reports of PSBS (2002 – 2012)

The different ratios measuring Asset Quality of the select banks shown in table 3. It is found that the Andhra Bank secured the top position with the highest average of 10.75 with regards to Return on Advances, followed by Indian Bank (10.65) and 3rd rank obtained by Punjab and Sind Bank with an average of 10.42. The least average (8.47) was obtained by Bank of Baroda was at the bottom position. With regards to Ratio of Return on Advances measuring Asset Quality of the public sector banks it is evident that Oriental Bank of Commerce secured the top position with the highest average of 7.73 followed by Canara Bank (7.59) and the least average (6.56) 19th rank was secured by Corporation Bank. When considering asset quality based on the priority sector advances to advances ratio it is clear that Bank of Maharashtra secured the top position with the highest average of 36.39 and the least average (25.43) 19th rank was secured by Bank of Baroda. As far as the Non-Interest Income to Assets is concerned in measuring Asset Quality of the banks it is proven that Indian Bank secured the top position with the highest average of 1.29 and the least average (0.75) 19th rank was secured by Syndicate Bank of India was found to be at the bottom position.

To sum up, on the basis of group averages of five ratios taken as the sub-parameters measuring the Asset Quality of the select Public Sector Banks, Indian Bank was at the top position with group average of 5.4, followed by Oriental Bank of Commerce with the group average of 6.2. Bank of Baroda stood at last position due to its poor performance in Ratio of Return on Advances, Ratio of Return on Investments, Ratio of NPA to Advances and Ratio of Priority Sector Advances to Advances.

Table 4: Descriptive Statistics for the performance of Banks with Type-IV financial ratios

Sl. No	Bank	M1		M2		M3		M4		M5			
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1.	Allahabad Bank	4.38	10	734.8	9	1.58	15	178.4	12	48.81	6	10.40	12
2.	Andhra Bank	5.16	8	799	6	1.05	19	250.3	10	52.11	3	9.20	9
3.	Bank of Baroda	6.04	2	898.6	3	1.56	17	370.5	6	50.55	5	6.60	2
4.	Bank of India	4.73	9	855.6	4	63.65	8	462.5	3	38.89	12	7.20	3

5.	Bank of Maharashtra	2.21	2.21	5.31	6	17	628.7	17	63.49	9	125.9	16	29.61	17	15.20	18		
6.	Canara Bank	5.31	6	829.8	5	62.86	10	290.1	7	45.9	8	7.20	4					
7.	Central Bank of India	2.14	18	562.4	19	69.68	2	160.7	14	17.66	18	14.20	17					
8.	Corporation Bank	7.14	1	1073	2	50.11	13	581.2	2	55.16	2	4.00	1					
9.	Dena Bank	3.94	12	727	10	60.85	11	113.6	18	51.04	4	11.00	14					
10.	Indian Bank	5.77	4	632	16	69.08	3	110.2	19	47.11	7	9.80	10					
11.	Indian Overseas Bank	3.44	13	691.3	13	66.66	6	459.9	4	30.33	14	10.00	11					
12.	Oriental Bank of Commerce	5.81	3	1112	1	55.43	12	245.1	11	30.07	15	8.40	6					
13.	Punjab & Sind Bank	4.37	11	720.8	11	74.49	1	622	1	17.56	19	8.60	7					
14.	Punjab National Bank	5.16	7	678.5	15	68.49	4	253.4	9	245.9	1	7.20	5					
15.	Syndicate Bank	2.9	15	689.6	14	65.13	7	261	8	44.9	9	10.60	13					
16.	UCO Bank	2.66	16	741.8	8	68.4	5	155.5	15	39.69	11	11.00	15					
17.	Union Bank of India	5.45	5	759.6	7	1.56	18	377.2	5	41.14	10	9.00	8					
18.	United Bank of India	1.84	19	594.4	18	1.62	14	119.8	17	30	16	16.80	19					
19.	Vijaya Bank	3.39	14	717.6	12	1.57	16	168.7	13	32.69	13	13.60	16					

Source: Annual Reports of PSBS (2002 – 2012)

The different ratios measuring Management and System Evaluation of the banks shown in table 4. It is found that the Corporation Bank secured the top position with the highest average of 7.14 with regards to return on profit per employee ratio and the least average (1.84) was obtained by United Bank of India. With regards to Ratio of Business Per Employee of the public sector banks it is evident that Oriental Bank of Commerce secured the top position with the highest average of 1112 and the least average (562.4) 19th rank was secured by Central Bank of India. With regards to Intermediate Cost ratio measuring Management and System Evaluation of the banks it is clear that Punjab and Sind Bank secured the top position with the highest average of 74.49 and the least average (1.05) 19th rank was secured by Andhra Bank. When considering Management and System Evaluation based on the Business per Branch ratio it is clear that Corporation Bank secured the top position with the highest average of 622 and the least average (110.2) 19th rank was secured by Indian Bank. As far as the Return on Net Worth is concerned in measuring Management and System Evaluation of the banks it is proven that Punjab National Bank secured the top position with the highest average of 245.9 and the least average (17.56) 19th rank was secured by Punjab and Sind Bank was found to be at the bottom position.

To sum up, on the basis of group averages of five ratios taken as the sub-parameters measuring the Management and System Evaluation of the select Public Sector Banks, Corporation Bank was at the top position with group average of 4.0, followed by Bank of India with the group average of 6.6. Bank of India stood at last position due to its poor performance in all the rations namely, Ratio of Profit Per Employee, Ratio of Business Per Employee, Intermediation Cost Ratio, Business Per Branch and Return On Net Worth.

Table 5: Descriptive Statistics for the performance of Banks with Type-V financial ratios

Sl. No	Bank																	
1.	Allahabad Bank	Bank	E1															
2.	Andhra Bank	Mean	0.075	0.081	0.064	0.062	0.075	0.058	0.059	0.055	0.066	0.088	0.065	0.064	0.06	0.082	0.073	
3.	Bank of Baroda	Rank	6	4	10	13	5	16	15	18	8	2	9	12	14	3	7	
4.	Bank of India	Mean	0.13	0.139	0.096	0.115	0.126	0.142	0.144	0.131	0.125	0.12	0.135	0.154	0.158	0.109	0.135	
5.	Bank of Maharashtra	Rank	11	7	19	16	13	6	5	10	14	15	8	3	2	17	9	
6.	Canara Bank	Mean	1.1	1.24	1.15	0.99	0.64	1.13	0.52	1.22	1.03	1.55	0.85	0.9	1.07	1.3	0.78	
7.	Central Bank of India	Rank	8	3	5	11	17	6	19	4	10	1	13	12	9	2	14	
8.	Corporation Bank	Mean	2.18	2.24	2.05	2.09	1.45	1.9	1.22	2.1	1.81	2.81	1.9	1.82	1.71	2.54	1.64	
9.	Dena Bank	Rank	4	3	8	7	15	10	19	6	12	1	9	11	13	2	7	
10.	Indian Bank	Mean	0.13	0.139	0.096	0.115	0.126	0.142	0.144	0.131	0.125	0.12	0.135	0.154	0.158	0.109	0.135	
11.	Indian Overseas Bank	Rank	11	7	19	16	13	6	5	10	14	15	8	3	2	17	9	
12.	Oriental Bank of Commerce	Mean	1.1	1.24	1.15	0.99	0.64	1.13	0.52	1.22	1.03	1.55	0.85	0.9	1.07	1.3	0.78	
13.	Punjab & Sind Bank	Rank	8	3	5	11	17	6	19	4	10	1	13	12	9	2	14	
14.	Punjab National Bank	Mean	87.79	88.93	86.73	87.12	90.33	88.36	90.68	86.96	88.69	87.46	89.23	91.14	90.53	87.5	91.35	
15.	Syndicate Bank	Rank	13	10	18	16	6	12	4	17	11	15	9	3	5	14	2	
		Mean	8.40	5.40	12.00	12.60	11.20	10.00	12.40	11.00	11.00	6.80	9.60	8.20	8.60	7.60	9.20	
		Rank	6	1	14	17	13	10	16	11	12	2	9	5	7	4	8	

16.	UCO Bank	0.103	1	0.175	1	1.43	17	0.67	16	130.6	1	7.20	3
17.	Union Bank of India	0.04	19	0.1	18	2.12	5	1.12	7	61.74	19	13.60	19
18.	United Bank of India	0.064	11	0.126	12	1.42	18	0.57	18	90.2	7	13.20	18
19.	Vijaya Bank	0.055	17	0.153	4	1.44	16	0.7	15	90.02	8	12.00	15

Source: Annual Reports of PSBS (2002 – 2012)

The different ratios measuring Earnings Potential of the banks shown in table 5. It is found that the UCO Bank secured the top position with the highest average of 0.103 with regards to Spread to Working Funds ratio and the least average (0.04) was obtained by Union Bank of India. With regards to Ratio of Burden to Working Funds Ratio of the public sector banks it is evident that UCO Bank secured the top position with the highest average of 0.175 and the least average (0.096) 19th rank was secured by Bank of Baroda. With regards to Operating Profit to Total Assets ratio measuring Earnings Potential of the banks it is clear that Indian Bank secured the top position with the highest average of 2.81 and the least average (1.22) 19th rank was secured by Central Bank of India. When considering Return on Asset Ratio measuring earnings potention it is clear that Indian Bank secured the top position with the highest average of 1.55 and the least average (0.52) 19th rank was secured by Central Bank of India. As far as the Interest Income to Total Income is concerned in measuring Earnings Potential of the banks it is proven that UCO Bank secured the top position with the highest average of 130.6 and the least average (61.74) 19th rank was secured by Union Bank of India was found to be at the bottom position.

To sum up, on the basis of group averages of five ratios taken as the sub-parameters measuring the Earnings Potential of the select Public Sector Banks, Andhra Bank was at the top position with group average of 5.40, followed by Indian Bank with the group average of 6.8. Union Bank of India stood at last position due to its poor performance in the ratios viz. Spread to Working Funds Ratio, Burden to Working Funds Ratio and Ratio of Interest Income to Total Income – RIIRI (E5)

Table 6: Descriptive Statistics for the performance of Banks with Type-VI financial ratios

Sl. No	Bank	L1		L2		L3		L4		L5			
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1.	Allahabad Bank	0.21	9	45.57	9	7.16	15	3.75	19	6.6	16	13.60	18
2.	Andhra Bank	0.09	15	43.98	16	9.06	3	3.93	17	7.95	6	11.40	13
3.	Bank of Baroda	0.31	5	44.88	11	9.07	2	4.52	5	5.88	19	8.40	5
4.	Bank of India	0.31	4	44.51	12	7.81	10	4.42	6	6.26	18	10.00	10
5.	Bank of Maharashtra	0.08	17	48.17	2	7.14	17	5.14	2	7.37	10	9.60	9
6.	Canara Bank	0.23	6	44.03	15	6.54	19	4.18	11	6.73	15	13.20	17
7.	Central Bank of India	0.21	8	46.68	3	8.36	8	4.37	8	8.78	2	5.80	1
8.	Corporation Bank	0.08	18	42.03	18	8.04	9	4.65	4	8.74	3	10.40	11
9.	Dena Bank	0.18	10	46.4	6	8.37	7	4.12	12	8.91	1	7.20	4
10.	Indian Bank	0.23	7	45.94	8	7.06	18	3.96	16	7.77	8	11.40	14
11.	Indian Overseas Bank	0.13	12	45.09	10	7.72	11	4.07	13	7.26	12	11.60	15
12.	Oriental Bank of Commerce	0.37	2	44.4	13	9.36	1	4.07	14	7.08	13	8.60	6
13.	Punjab & Sind Bank	0.1	14	41.76	19	7.19	14	6.32	1	6.93	14	12.40	16
14.	Punjab National Bank	0.44	1	46.56	5	7.44	13	4.4	7	7.42	9	7.00	3
15.	Syndicate Bank	0.09	16	46.61	4	8.69	4	3.99	15	8.23	4	8.60	7
16.	UCO Bank	0.17	11	43.85	17	7.64	12	3.83	18	6.37	17	15.00	19
17.	Union Bank of India	0.37	3	45.97	7	7.14	16	4.2	10	7.37	10	9.20	8
18.	United Bank of India	0.12	13	48.66	1	8.44	6	5.04	3	7.95	7	6.00	2
19.	Vijaya Bank	0.04	19	44.11	14	8.6	5	4.31	9	8.21	5	10.40	12

Source: Annual Reports of PSBS (2002 – 2012)

The different ratios measuring Liquidity / Asset Management Liability of the banks shown in table 6. It is found that the Punjab National Bank secured the top position with the highest average of 0.44 with regards to Approved Securities to Assets ratio and the least average (0.04) was obtained by Vijaya Bank. With regards to Ratio of Term Deposits to Deposits of the public sector banks it is evident that United Bank of India secured the top position with the highest average of 48.66 and the least average (41.76) 19th rank was secured by Punjab and Sind Bank. With regards to Liquid Assets to Assets ratio measuring Liquidity / Asset Management Liability of the banks it is clear that Oriental Bank of Commerce secured the top position with the highest average of 9.36 and the least average (6.54) 19th rank was secured by Canara Bank. When considering Provisions of Contigencies to Total Assets Ratio measuring Liquidity / Asset Management Liability it is clear that Punjab and Sind Bank secured the top position with the highest average of 6.32 and the least average (3.75) 19th rank was secured by Allahabad Bank. As far as the Cash Deposit Ratio is concerned in measuring Liquidity / Asset Management Liability of the banks it is proven that Dena Bank secured the top position with the highest average of 8.91 and the least average (5.88) 19th rank was secured by Bank of Baroda was found to be at the bottom position.

To sum up, on the basis of group averages of five ratios taken as the sub-parameters measuring the Liquidity / Asset Management Liability of the select Public Sector Banks, Central Bank of India was at the top position with group average of 5.80, followed by United Bank of India which found to have an average of 6.00. UCO Bank stood at last position due to its poor performance in Ratio of Term Deposits to Deposits, Ratio of Liquid Assets to Assets, Ratio of Provisions and Contingencies to Total Assets and Cash Deposit Ratio.

Table 7: OVERALL RANK SHOWING THE CRAMEL MODEL

Sl No.	Bank	C	R	A	M	E	L	Mean	CRAMEL Rank
1.	Allahabad Bank	3	6	6	12	6	18	8.50	4
2.	Andhra Bank	8	13	8	9	1	13	8.67	5
3.	Bank of Baroda	6	18	19	2	14	5	10.67	9
4.	Bank of India	5	15	15	3	17	10	10.83	11
5.	Bank of Maharashtra	17	9	10	18	13	9	12.67	19
6.	Canara Bank	7	12	3	4	10	17	8.83	6
7.	Central Bank of India	18	10	14	17	16	1	12.67	17
8.	Corporation Bank	16	7	18	1	11	11	10.67	10
9.	Dena Bank	10	16	11	14	12	4	11.17	12
10.	Indian Bank	11	1	1	10	2	14	6.50	3
11.	Indian Overseas Bank	9	5	4	11	9	15	8.83	7
12.	Oriental Bank of Commerce	2	14	2	6	5	6	5.83	2
13.	Punjab & Sind Bank	14	4	12	7	7	16	10.00	8
14.	Punjab National Bank	1	3	7	5	4	3	3.83	1
15.	Syndicate Bank	13	19	16	13	8	7	12.67	18
16.	UCO Bank	4	17	17	15	3	19	12.50	16
17.	Union Bank of India	15	8	13	8	19	8	11.83	14
18.	United Bank of India	19	2	9	19	18	2	11.50	13
19.	Vijaya Bank	12	11	5	16	15	12	11.83	15

Source: Collected & Calculated

To sum up, on the basis of group Cramel averages of the all the thirty ratios taken for the study of the select Public Sector Banks, Punjab National Bank was at the top position with CRAMEL average of 3.83, followed by Oriental Bank of Commerce which found to have an average of 5.83. Bank of Maharashtra stood at last (19th) position due to its poor performances in C, A, M and W i.e. Capital Adequacy, Asset Quality, Management Efficiency and Earnings Quality.

CAMEL CRITERIA

Table 7

Rank	CAMEL Criteria	Range	Mean=10, SD=2.39
Excellent	Upto (Mean–0.67 SD)	First = 25%	Upto 8.40
Good	From (Mean–0.67 SD) Upto Mean	Second= 25%-50%	From 8.40 to 10
Fair	Above Mean, upto (Mean + 0.67 SD)	Third= 50%-75%	From 10 to 11.60
Poor	Above (Mean + 0.67 SD)	Fourth= Above 75%	Above 11.60

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Average	190	1.00	19.00	10.0000	5.50141
Valid N (listwise)	114				

Tests of Normality

For testing the normality of data, we proposed the null hypothesis that the population distribution is normal. For this Shapiro-Wilk test was applied and results are depicted in table.

Tests of Normality

Sl. No.	Bank	Statistic	df	Sig.
1.	Allahabad Bank	0.847	6	0.149
2.	Andhra Bank	0.871	6	0.230
3.	Bank of Baroda	0.887	6	0.304
4.	Bank of India	0.889	6	0.312
5.	Bank of Maharashtra	0.846	6	0.147
6.	Canara Bank	0.955	6	0.777
7.	Central Bank of India	0.84	6	0.131
8.	Corporation Bank	0.956	6	0.792
9.	Dena Bank	0.939	6	0.654
10.	Indian Bank	0.831	6	0.111
11.	Indian Overseas Bank	0.949	6	0.730
12.	Oriental Bank of Commerce	0.823	6	0.094
13.	Punjab & Sind Bank	0.931	6	0.591
14.	Punjab National Bank	0.942	6	0.676
15.	Syndicate Bank	0.975	6	0.926
16.	UCO Bank	0.792	6	0.050
17.	Union Bank of India	0.841	6	0.133
18.	United Bank of India	0.797	6	0.055
19.	Vijaya Bank	0.898	6	0.360

Source: Collected & Calculated

The result reveals that calculated P- values are greater than the chosen alpha level of 0.05 for all banks, which means data are normally distributed.

Tests of Homogeneity of Variances

For testing the homogeneity of variance of data, we proposed the null hypothesis that there is no significant difference in population variance for the ratios. For this Levene's test of Homogeneity was applied in table 8.

Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
1.849	18	95	.030

Source: Collected & Calculated

The results highlighted that calculated P- values are less than the chosen alpha level of 0.05 for all banks, thus we reject the null hypothesis.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	683.333	18	37.963	1.318	.195
Within Groups	2736.667	95	28.807		
Total	3420.000	113			

Source: Collected & Calculated

It is observed from the table that the calculated values of F-ratio is less than the tabulated values (at 5% level of significance is 1.318). It means there is statistically no significant difference between the mean values of CRAMEL ratios of public sector banks during the period of study. Hence we accept the null hypothesis and it reflects that there is no significant difference in the performance of public sector banks as

per the CRAMEL model. So the finding of the present study is not similar to the study conducted by Aspal and Malhotra (2012)[12] using CAMEL model which is found to have significant difference in ratios.

FINDINGS AND CONCLUSION

To conclude it is observed that United Bank of India stood at last position on measuring the capital adequacy of the select Public Sector Banks due to its poor performance in Ratio of Advances to Assets, Ratio of Government Securities to Investments and Capital Adequacy Ratio. While Syndicate Bank stood at last position on measuring the resource raising ability due to its poor performance in Ratio of Investment to Assets, Ratio of Other Assets to Assets, Ratio of Fixed Assets to Assets and Investment Deposit Ratio. Whereas Bank of Baroda stood at last position measuring the Asset Quality due to its poor performance in Ratio of Return on Advances, Ratio of Return on Investments, Ratio of NPA to Advances and Ratio of Priority Sector Advances to Advances. With regards to measuring the Management and System Evaluation Bank of India stood at last position due to its poor performance in all the rations namely, Ratio of Profit Per Employee, Ratio of Business Per Employee, Intermediation Cost Ratio, Business Per Branch and Return On Net Worth. As part of measuring the Earnings Potential of the select Public Sector BanksUnion Bank of India stood at last position due to its poor performance in the ratios viz. Spread to Working Funds Ratio, Burden to Working Funds Ratio and Ratio of Interest Income to Total Income and finally measuring the Liquidity / Asset Management Liability of the select Public Sector Banks it was found that UCO Bank stood at last position due to its poor performance in Ratio of Term Deposits to Deposits, Ratio of Liquid Assets to Assets, Ratio of Provisions and Contingencies to Total Assets and Cash Deposit Ratio.

To sum up, on the basis of group CRAMEL averages of the all the thirty ratios taken for the study of the select Public Sector Banks, Punjab National Bank was at the top position with CRAMEL average of 3.83, followed by Oriental Bank of Commerce which found to have an average of 5.83. Bank of Maharashtra stood at last (19th) position due to its poor performances in C, A, M and E i.e. Capital Adequacy, Asset Quality, Management Efficiency and Earnings Quality.

Based on the findings of the study, the banks in order to improve their performance, the authorities of the respective banks may consider CRAMEL split-up ranking to understand their current position and take necessary steps to enhance their rating.

REFERENCES

• Parvesh Kumar Aspal and Naresh Malhotra, Performance Appraisal of Indian Public Sector Banks, World Journal of Social Sciences, Vol. 3. No. 3. May 2013 Issue. Pp. 71 – 88 | • Patrick, HT 1966, 'Financial Development and Economic Growth in Underdeveloped Countries', Economic Development and Cultural Change, vol. 14, pp. 174-189. | • Prasad, KVN, Ravinder, G & Reddy, Maheshwara D 2011, 'A CAMEL Model Analysis of Public and Private Sector Banks in India', Journal of Banking Financial Services and Insurance Research, vol. 1, no. 5, pp. 50-72. | • Rao, S & Datta, L 1998, 'Benchmarking in Banking: A CAMEL Approach towards Sound and Strong Banking', BECON-98, Canara Bank, pp.156-67. | • Satish, D & Bharathi, Y Bala 2006, 'Indian Banking Coming of Age – Performance Snapshot 2005-2006', Charted Financial Analyst, vol. Special Issue, October, pp. 6-30. | • Siva, S & Natarajan, P 2011, 'CAMEL Rating Scanning (CRS) of SBI Groups', Journal of Banking Financial Services and Insurance Research, vol. 1, no. 7, pp. 1-17. | • Veni, P 2004, 'Capital Adequacy Requirement of Commercial Banks: A Study in Indian Context", GITAM Journal of Management, vol.2, no.2, pp. 99-107. | • Wirnkar, D & Tanko, M 2008, CAMEL(S) and Banks Performance Evaluation: The Way Forward, viewed 5 September 2009, http://ssrn.com/abstract=1150968. ||