

Determination of Financial Sustainability in Indian Banking Industry

¹Dr. D. Mahila Vasanthi Thangam, ²Dr. S. Thanga Helina, ³Dr. A. G. Sudha

ABSTRACT--Financial sustainability means the ability to maintain the financial health at a certain rate or level. It has a close relationship with the financial efficiency of any financial institutions like banks which mean provision of highest quality financial services at the lowest possible cost. So the overall growth of any country's economy depends to an exquisite quantity on the financial health of its banking system. This research has its focus on analysis and measurement of the overall health of banks in India. The present study is an analytical research purely based on secondary data, which has been taken from the published annual reports from the official reports of banks, data obtained from CMIE database, Statistical tables published by Reserve Bank of India for the period of eight years from 2011-12 to 2018-19 of 20 Public sector banks and 22 Private sector banks, five banks from each sector have been taken into account using stratified random sampling technique. Tools viz. basic ratio analysis, average, co efficient of variation, trend, and CRAMEL, Bankometer, and Spearman Rank correlation and students t test were used for the analysis. It may be generalized that the private sector banks are performing better than the public sector banks. The study also recommends that the Bankometer can be used to study the financial health of banks rather all other tools as it pinpoints the areas of strength and weaknesses of banks.

Keywords-- Determination of Financial Sustainability in Indian Banking Industry

I. INTRODUCTION

The literal meaning of the word sustainability is "A process or state that can be maintained at a certain level for as long as is wanted". It is a complex term which consists of economic, social, institutional and environmental aspects of human society. Financial sustainability means the ability to maintain the financial health at a certain rate or level. Financial health is a term used to measure the overall financial aspect of an individual and or a firm which includes the amount of assets they own and how much income they must pay out to cover regular and other expenses. It has a close relationship with the financial efficiency of any financial institutions like banks which mean provision of highest quality financial services at the lowest possible cost. So the overall growth of any country's economy depends to an exquisite quantity on the financial health of its banking system. A sound banking system serves as a vital medium for pushing economic growth by mobilization of small saving of unproductive domestic sector and putting them to the productive use and make sizable contributions to the economic system across the country. They maintain to pursue all the opportunities available to enhance their vibrancy and competitiveness. They play a pivotal position to foster liquidity, solvency and

¹ Associate Professor, Department of CommerceKarunya Institute of Technology and Sciences (Deemed to be University), Coimbatore

² Assistant Professor, Department of CommerceKarunya Institute of Technology and Sciences (Deemed to be University), Coimbatore

³ Assistant Professor, Department of Management StudiesKarunya Institute of Technology and Sciences (Deemed to be University), Coimbatore

proper functioning of stable financial system. At the same time they are highly sensitive and continually open to public scrutiny. So they need to ensure their efficiency, productivity, profitability, the financial health and its sustainability which are essential for their boom and viability and also for infusing public confidence. Therefore to survive in the technology based competitive era, banks have to monitor their financial sustainability by means of financial analysis since the Indian banks are not there within the world top 100 list.

II. REVIEW CRITERIA

Wahab (2001) observed that reforms have produced favorable effects on health of commercial banks in general but still there are few distortions like low priority sector advances and low profitability. Sabarinathan and Umarani (2010) found that IDBI is found to be the weakest among the select PSBs taken for the study due to its weak health in Credit Deposit Ratio (R2), Investment Deposit Ratio (R3), Ratio of Return on Advances (A1), and Ratio of Priority Sector Advances to Advances (A3). Prasad (2012) compared the financial health of public sector and private sector banks in India using CAMEL and concluded that there is no significant difference between health of public and private sector banks. But Sriharsha Reddy (2012) in his article “Relative health of commercial banks in India using CAMEL approach” found that public sector banks have drastically improved by indicating positive impact of the reforms in liberalizing interest rates, rationalizing directed credit and Investments and increasing competition. Devanadhen (2013) found that the Andhra Bank secured the first place followed by Corporation Bank and HDFC Bank. Central Bank of India stood last in the overall health and SBI (largest public sector bank) exhibited better health than ICICI Bank (largest private sector bank) by using CAMELS. Ruchi Gupta (2014) studied the financial position and health of the 26 Public Sector banks in India using CAMEL model for the period of 5 years from 2009-2013. The researcher has also used one way ANOVA. The study reveals that there is significant difference on the results obtained by CAMEL and ANOVA. Karthikeyan and Sivakami (2014) in their research article “The Impact of Nationalized Banks on Economic Development Using CRAMEL Model” based on 19 public sector banks for the period 2009-2014. The result derived using CRAMEL is not satisfactory regarding the health aspect. Roli Pradhan (2014) forecasted the Z score value up to 2020 and also emphasizes the usage of BPNN for prediction of bankruptcy of three public sector banks that are considered in the big, medium and small on the basis of capital norms being Oriental Bank of Commerce, Punjab National Bank and State Bank of India for the period between 2000 to 2008. The analysis suggests that the Z score value of Oriental Bank of Commerce is the highest amongst the mentioned three banks and also found that BPNN has the ability to forecast the Z- score parameters financial ratios. Sneha S. Shukla (2015) in her article “Analysing Financial Strength of Public and Private Sector Banks: A CAMEL Approach” has made an attempt to evaluate the financial health of various public & private sector banks using CAMEL approach for the period covering from 2010-13. Trend analysis is also used by the researcher. She has concluded that judging the banks financial strength solely using CAMEL model is not advisable and based on trend the private sector banks are growing faster than the public sector banks.

These reviews shows that in the Indian context few studies are available in respect of financial analysis by applying the ratio analysis, CAMEL and CRAMEL. But sizable number of studies has been done worldwide (Seranmadevi and Senthil, 2019; Senthil & Padma, 2019; Ramesh et al. 2019). Amir Hussain Shar *et, al.*, (2010)

have attempted to predict solvency of banks in Pakistan using Bankometer for the period 1999-2002. They have also examined the results using CAMEL & CLSA. They have recommended that the new tool Bankometer can be used by banks to predict its health and helps to avoid insolvency issues. They have also advised that the banks should eradicate the shortcomings, pointed out by Bankometer. Ravichandran *et al.*, (2012) concluded that each one of the Saudi Arabian banks was performing well and the only area all the banks have to pay attention is Asset Quality. They observed that the Bank Al Jazira was rated as the best Bank when compared to the other Saudi Arabian Banks based on CRAMEL model. Suvita Jha and Xiaofeng Hui (2012) have found that the public sector banks in Nepal are notably less efficient. Other counter parts and domestic private banks are equally efficient to foreign-owned (joint venture) banks. Anita Erari *et al.*, (2013) analyzed financial health of Bank Papua for the period from 2003 to 2011 by using CAEL, Z-score and Bankometer. The result indicates that the model CAEL and Bankometer gives fantastic sign to the bank, alternatively the Z-Score model shows negative picture on liquidity and performance. The similarity of the analysis results the three models above is the Bank Papua has shown good profitability. Md.Qamruzzaman (2013) tried to study and analyze financial position of randomly selected 30 private commercial Banks in Bangladesh for the period from 2008 - 2012. The researcher used “S-score” and “Z-score” model together with Bankometer. His findings indicate that approximately 60% banks are strolling bankruptcy. Angela Roman and Alina Camelia (2013) have studied the liquidity, health and efficiency of 15 selected Banks in Romania from the period 2004-2011. The study revealed that the Banca Commercila Romania is determined to be satisfactory based on diverse parameters. Erari *et al.* (2013) analyzed the precision and accuracy of the financial ratio model by using CAEL, Z-score and Bankometer in assessing the financial performance development of Bank Papua within the period from 2003 to 2011. The results show that the model CAEL and Bankometer give the same assessment that Bank Papua, from 2003 to 2011, had good well being, was highly liquid, had robust capital, were able to manage debt well, had good profitability, and asset quality but turned into still lacking performance. Z-score model reversely put Bank Papua in a grey region and went bankrupt in 2007 and 2011, weak liquidity and capital. These findings made the previous research stronger which suggests that Z-score is not suitable model to be used in banking, however, the using Z-score is recommended because the dissenting opinion and early warning device in assessing financial performance of a bank, because it can correctly show vital factors in financial management of a bank. All the three models used in the study show that the Bank Papua has good profitability. Nimalathasan *et al.* (2013) compared the financial position of state and private sector banks in Srilanka from 2006-2010. The study analysed the performance of the banking sector in Sri Lanka using Bankometer approach. Bankometer ratios are derived from both the CAMELS and CLSA stress test parameters with some modifications. On the basis of the Bankometer results, it is found that state banks are in a sounder solvency role in comparison to private sector banks Gireeshan *et al.*, (2015). Indra Kumar Kattel (2014) evaluated the Financial Solvency of Selected Commercial Banks of Nepal using Bankometer” and found that private sector banks are financially sounder in comparison to joint venture banks. The study suggests that joint venture banks require some corrective actions to find out which bank is better among leading banks and where the investors and customers should invest cash into. Ihsan Ilahi *et al.*, (2015) has made the Financial Health Analysis of Pakistan Banking Sector Using The Altman Z Score Model of Corporate Bankruptcy”. The study investigates the usefulness of Z score model on six commercial banks’ balance sheets for the period of 5 years from 2009-13. The results has illustrated that all commercial banks in this

model are in monetary troubles Gireeshan *et, al.*, (2020). Ismail Younes Yameen *et, al.*, (2016) the Financial Health of the Jordanian Commercial Banks by applying Bankometer Model for the period of 2002-2011 and concluded that all of the Jordanian Commercial banks are financially super sound banks.

There are very few studies have been conducted on the financial performance of the banks with CRAMEL model and none of the study is conducted with the application of CRAMEL and Bankometer models in Indian context. Also while the calculation of a set of financial ratios is relatively easy, the aggregation of those ratios can be quite complicated, which requires experienced judgment and cannot also give the overall picture of organizational operations because bank's health may exhibit considerable variation, depending on the indicators selected. All these factors triggered the researcher to assess and compare the financial health of Indian public and private sector banks using both Bankometer and CRAMEL and to find out the reasons for weak financial health which affects its financial sustainability at large if any and offer suggestions to improve the same.

III. HYPOTHESIS

H1-There is significant difference in the results of Bankometer and CRAMEL analysis for analysing the financial health of the public sector and private sector banks

IV. DESIGN AND METHODOLOGY

Methodology describes the research route to be followed, the instruments to be used, universe and sample of the study for the data to be collected, the tools of analysis used and pattern of deducing conclusion. This research has its focus on analysis and measurement of the overall health of banks in India. The present study is an Analytical research purely based on secondary data, which has been taken from the published annual reports from the official reports of banks, data obtained from CMIE database, Statistical tables published by Reserve Bank of India for the period of eight years from 2011-12 to 2018-19. Out of 20 Public sector banks and 22 Private sector banks, five banks from each sector have been taken into account using stratified random sampling technique. The selected banks are, Canara Bank, Indian Overseas Bank, Vijaya Bank, Punjab National Bank and Andhra bank in public sector banks and Indusind Bank, Yes Bank, ICICI Bank, Karur Vysya Bank and HDFC Bank from private sector banks. Tools viz; Basic Ratio analysis, Average, Co efficient of Variation, Trend, and CRAMEL, Bankometer, and Spearman Rank correlation and students t test has been used.

V. RESULTS AND DISCUSSION

Bank collects the fund from surplus sector of the economy by means of various deposit products and supplies the fund to the deficit area of the economy through credit products. The Bankometer model was developed according to International Monetary Fund guidelines which help to access the financial sustainability of banks which are the back bone of any country. This model has the quality of minimum number of parameters with maximum accurate results.

Parameters of Bankometer

1. Capital Adequacy Ratio: $40\% \leq \text{CAR} \leq 10\%$
2. Capital to Assets Ratio = Capital / Asset: $\geq 04\%$
3. Equity to total Assets= Equity / Asset: $\geq 02\%$
4. NPLs to Loans= NPLs / Loans: $\leq 5\%$
5. Cost to Income ratio= Cost / Income: $\leq 40\%$
6. Loans to Assets =Loan / Asset: $\leq 65\%$

The health of the banks can be measured under Bankometer procedure by measuring their respective solvency.

$$S = 1.5 * CA + 1.2 * EA + 3.5 * CAR + 0.6 * NPL + 0.3 * CI + 0.4 * LA$$

Where 'S' stands for solvency

CAR stands for capital adequacy ratio

CA stands for capital assets ratio

EA stands for equity to assets

NPL stands for non-performing loans to loans

CI stands for cost to income

LA stands for loans to assets

Capital Adequacy Ratio (CAR)

Capital adequacy is the capital expected to maintain balance with the risks exposure of the financial institution such as credit risk, market risk and operational risk, in order to absorb the potential losses and protect the financial institution's debt holder. It is the measurement of bank's available capital expressed as a percentage of a bank's risk-weighted credit exposure. It is used to protect depositors and to promote the stability and efficiency of financial systems in a country. It is used by the regulator to run stress tests. Generally, a bank with a high CAR is considered safe and likely to meet its financial obligations. In present study, the average Capital Adequacy Ratio in Private sector is found to be the highest and that too is in ICICI Bank (17.72) followed by Yes Bank (16.54). It is the least in Indian Overseas Bank (11.2). The CV of Indusind Bank is high with (12.3) which belongs to private sector followed by Canara Bank with (11.76) which comes under public sector, which shows its higher volatility. On the other hand it is found least in HDFC (3.32). The trend percentage is highest in ICICI Bank (18.82), but it is least in Andhra bank (12.60). Compared to Public sector banks, Private sector banks have the highest CAR on an average over the period of eight years. According to IMF guidelines this ratio should be greater than 10% and it should be lesser than 40%. In the present study all the banks fulfilled the prescribed criteria.

Capital to Asset Ratio (CA)

Capital to asset ratio helps to determine whether a bank has enough capital to support its assets. The regulatory body may use this ratio to set a minimum level of capital that a must have which is 8%, with 4 percent of it supported by certain types of capital. The higher the ratio indicates that the more of the internal and external source of funds have been used for investment in assets. As per IMF guidelines the bank should have capital asset ratio more than 4%. In present study, all the banks have maintained the CA ratio more the specified level.

Table 1 shows that the average Capital To Asset Ratio in PSB is the higher (34.6%) than Private sector banks (27%) and that is too low in Vijaya Bank (1.03%) followed by Indian Overseas Bank (46%).It is the least in Punjab National Bank and Andhra bank (7%).The CV of Vijaya Bank is high with (55.23%) which show that the Capital To Asset Ratio is found to be highly flexible, on the other hand it is least in Punjab National Bank (7.82%).The trend also highest in Vijaya Bank (1.67%), but it is least in Punjab National Bank (0.07%).From this, it is concluded that the PSB have sufficient capital to support its Asset compared to private sector banks.

Table 1: Descriptive statistics of selected ratios using Bankometer

RATIO S	PUBLIC SECTOR BANKS						PRIVATE SECTOR BANKS					
	C B	IOB	VB	PN B	AB	Aver age	IND USI ND	YE S BA NK	ICIC I BAN K	KVB	HD FC BA NK	Averag e
CAR (AVG)	11.6 9	11.2	11.8	12.4	11.4	11.69 8	13.6	16.5 4	17.7 2	13.6	16. 34	15.56
CV (%)	11.7 6	11.6 4	9.28	7.21	3.67	8.712	12.3	9.75	5.15	8.38	3.3 2	7.78
TREND (%)	13.1 2	12.8	11.8	13.2	12.6	12.70 4	13.2	17.6 4	18.8 2	14.2	16. 74	16.12
CA (AVG)	10	46	1.03	7	7	14.20 6	52	31	20	23	9	27
CV (%)	13.0 4	26.0 2	55.2 3	7.82	12.7 8	22.97 8	15.0 8	10.6	15.2 5	12.4 5	22. 22	15.12
TREND (%)	0.11	0.32	1.67	0.07	0.07	0.448	0.61	0.34	0.23	0.26	0.1 1	0.31
EA (AVG)	5.93	5.6	4.37	6.33	6.34	5.714	99.8 8	7.71	12.4 8	7.23	9.5	27.36
CV (%)	2.58	3.38	9.84	6.67	2.87	5.068	0.02	14.0 5	1.31	9.95	8.5 5	6.776
TREND (%)	6.1	5.49	3.95	6.52	6.5	5.712	99.8 7	6.57	12.5 9	6.66	8.6 8	26.874
NPL (AVG)	4	7.4	3.4	6.4	5.4	5.32	1	0.2	2	1.2	1	1.08
CV (%)	72.8 9	76.8	60.9 9	62.1 1	21.1 1	58.78	0	223. 6	141. 42	37.2 7	0	80.46

TREND (%)	1	1	1.6	1.8	4.2	1.92	1	0.09	0.83	1	1	0.784
CI (AVG)	25.5 5	31.8 1	21.6 1	36.8 1	31.8 1	29.51 8	32.8 2	24.5 6	32.1 5	25.3 1	37. 22	30.412
CV (%)	22.5 9	17.1 7	9.63	18.8 5	3.25	14.29 8	8.75	12.8 9	13.7 2	15.5	1.9 9	10.57
TREND (%)	19.7 6	26.5 1	20.0 4	28.8 5	31.0 6	25.24 4	29.3 8	20.6 1	27.0 5	20.4 7	37. 99	27.1
LA % (AVG)	60	63	61	63	66	62.6	63	54	57	66	62	60.4
CV (%)	2.17	4.71	2.43	1.33	1.52	2.432	0	6.2	5.26	3.46	3.5 3	3.69
TREND (%)	0.61	0.65	0.6	0.64	0.66	0.632	0.63	0.5	0.53	0.63	0.5 9	0.576

Equity to Total Asset Ratio (EA)

Equity to total Assets ratio is one of the measurements used to assess a company's financial leverage, financial health and long term profitability of the banks which is used to determine to what extent the company's assets are owned by share holders fund and not leveraged and not come under the control of debt holders at the time of insolvency. Higher the ratio the less leveraged and risky the company is. In another words, Higher EA ratio is treated as an indicator of sound financial position of the bank. Large proposition of assets provided by equity reveals that the bank is less dependent on external sources of funds.

The average Equity to Total Asset Ratio in Private sector is higher (27.36%) and it is the highest in Indusind Bank (99.88) followed by ICICI (12.48). It is very least in Vijaya Bank (4.37) followed by Indian Overseas Bank with (4.37). Rests of the other banks have maintained the Equity to Total Assets ratio at a comfortable level.

The CV of Yes Bank is high with (14.05) followed by Karur Vysya Bank with (9.95) both belongs to private sector, on the other hand it is found to be least in Indusind Bank with (0.02). The trend found to be highest in Indusind Bank (99.87) followed by ICICI with (12.59) both belongs to private sector, but it is least in Vijaya Bank (3.95). To summarize Indusind Bank performs well in terms of financial leverage, thereby assure its solvency. According to the IMF guideline EA ratio must be more than 2%. In the present study, all the banks satisfied the specified criteria.

NPL to Loans ratio (NPL)

This ratio measures the effectiveness of a bank in receiving repayments on its loans. It is a health indicator of bank efficiency. The lower the ratio, more efficient the bank is. Similarly, higher ratio is a symbol of the inefficient management of the bank in controlling nonperforming assets which erodes the profitability of the banks. Non-performing loan ratio up to 5% is acceptable as per the international banking practices.

In this study, Average NPL to Loans Ratio in PSB is higher (5.32%) and it only 1.08 % in private sector banks. It is the highest in Indian Overseas Bank to the tune of 7.4% followed by Punjab National Bank (6.4%) which indicates less effective in recovering its advanced loans. It is the least in Yes Bank (0.2) followed by Indusind Bank and HDFC with (1) shows better effectiveness. The CV of Yes Bank is high with (223.61) followed by ICICI Bank with (141.42) both belongs to private sector and shows instability, on the other hand it is found to be least in Indusind Bank and HDFC with (0) which shows their ability and effectiveness to control this ratio. The trend of NPL to Loan ratio is the highest in Andhra bank (4.20) which belongs to public sector should take steps to control it, but it is least in Yes Bank (0.09).which shows effectiveness in managing its NPLs. This study also indicates that all the PSB's except Canara Bank and Vijaya Bank fail to maintain the prescribed ratio on the other hand all the PVTB's maintains the prescribed ratio of non- health loan within 5%.

Cost to Income ratio (CI)

The cost to income ratio is a key financial measure, particularly important in valuing banks. It shows a company's costs in relation to its income. This ratio is calculated by dividing the operating expenses by the operating income. It is important to assess the profitability and operating efficiency of banks. Lower the ratio the more profitable the bank is. Compared to PSBs, though the Average Cost to Income Ratio of Private sector in overall is low (30.42%) which shows its operating efficiency, it is the highest in HDFC Bank (37.22), but it is the least in Vijaya Bank (21.61) which is a PSB and followed by Punjab National Bank (36.81). The CV of HDFC (1.99) is the least but the trend is the highest (37.99) which shows it's inefficiency in controlling its operating expenses and magnifying its operating income. In PSB the Punjab National Bank faces the same problem in contrast with Canara Bank. According to the IMF guidelines, the cost income ratio should be below 40%.All the banks fulfilled the criteria mentioned by IMF.

Loans to Asset Ratio (LA)

LA ratio indicates how much of the total assets of the bank are tied up in loans and this ratio helps to assess the liquidity of the bank. The higher the ratio the more illiquid the bank is and the risk is also higher. At the same time, banks have limitation to maintain the liquidity for day to day transactions and to maintain CRR as per NRB directives. This Ratio is the highest in Karur Vysya Bank in Pvt Sector (66%) and Andhra bank in PSB with (66%) which shows there comparatively worse liquidity position. It is the least in Yes Bank (54%). According to IMF guidelines this ratio should be below 65% (.65). In the present study, all the selected banks have the value lesser than the prescribed ratio other than Andhra Bank and Karur Vysya Bank.

Table 2: Financial health of selected banks using Bankometer analysis- Overall ranking

S. No	PUBLIC SECTOR														Rank In
	BANK NAME	CA	1.5 *C A	CI	0.3 *CI	CA R	3.5 *C AR	N P L	0.6 *N PL	EA	1.2 *E A	L A	0.4* LA	Ban ko Met er	

														(s)	g
1	CANARA	0.1	0.1	25.	7.6	11.	40.	4	2.4	5.9	7.1	0.	0.24	58.4	9
		5	55	65	69	9				3	16	6		9	
2	INDIAN OVERSEAS BANK	0.4	0.6	31.	9.5	11.	39.	7	4.4	5.6	6.7	0.	0.25	60.8	8
		6	9	81	43	2	2	4	4		2	6	2	5	
3	VIJAYA BANK	1.0	1.5	21.	6.4	11.	41.	3.	2.0	4.3	5.2	0.	0.24	56.8	1
		3	45	61	83	8	3	4	4	7	44	6	4	6	0
4	PUNJAB NATIONAL BANK	0.0	0.1	36.	11.	12.	43.	6.	3.8	6.3	7.5	0.	0.25	66.2	5
		7	05	81	04	4	4	4	4	3	96	6	2	4	
5	ANDHRA BANK	0.0	0.1	31.	9.5	12.	42.	5.	3.2	6.3	7.6	0.	0.26	63.4	7
		7	05	81	43	2	7	4	4	4	08	7	4	6	
PRIVATE SECTOR															
6	INDUSIND BANK	0.5	0.7	32.	9.8	13.	47.	1	0.6	99.	119	0.	0.2	178.	1
		2	8	82	46	6	6			88	.9	63	52	93	
7	YES BANK	0.3	0.4	24.	7.3	16.	57.	0.	0.1	7.7	9.2	0.	0.2	75.3	4
		1	65	56	68	5	9	2	2	1	52	54	16	1	
8	ICICI	0.2	0.3	32.	9.6	17.	62	2	1.2	12.	14.	0.	0.2	88.3	2
				15	45	7				5	98	57	28	7	
9	KARUR VYSYA BANK	0.2	0.3	25.	7.5	13.	47.	1.	0.7	7.2	8.6	0.	0.2	65.2	6
		3	45	31	93	6	6	2	2	3	76	66	64	0	
10	HDFC	0.0	0.1	37.	11.	16.	57.	1	0.6	9.5	11.	0.	0.2	80.7	3
		9	35	22	17	3	2				4	62	48	4	

Solvency (S): The solvency refers to the availability of the cash over the long terms to meet the financial commitment. Indusind Bank (PVTB) ranks first on solvency with (178.93) followed by ICICI Bank (PVTB) with (88.37) Similarly, Vijaya Bank (PSB) (56.86) occupies the least position followed by Canara Bank (PSB) (58.49), it is established that the private sector banks have sound solvency position in comparison with public sector banks.

Table 3: Financial health of select banks using CAMEL analysis- Overall ranking

SL.NO	BANK NAME	C	R	A	M	E	L	TOTAL	RANKING
PUBLIC SECTOR									
1	CANARA	13.15	1.19	0.46	10.01	8.86	7.10	40.76	6
2	INDIAN OVERSEAS BANK	11.20	1.34	0.75	-4.48	7.67	2.15	18.63	10
3	VIJAYA BANK	13.22	1.33	0.27	8.79	7.51	2.07	33.20	8
4	PUNJAB NATIONAL BANK	13.52	1.34	0.37	8.08	7.73	2.10	33.14	9

5	ANDHRA BANK	13.75	1.32	0.83	8.57	9.52	2.05	36.05	7
PRIVATE SECTOR									
SL.NO	BANK NAME	C	R	A	M	E	L	TOTAL	RANKING
1	INDUSIND BANK	14.99	3.33	0.41	15.88	8.58	3.11	46.30	3
2	YES BANK	16.54	1.68	0.31	20.33	10.10	1.69	50.65	1
3	ICICI	17.72	1.82	0.28	12.35	8.12	1.43	41.72	5
4	KARUR VYSYA BANK	15.16	1.34	0.42	14.67	10.37	2.64	44.61	4
5	HDFC	16.34	1.43	0.39	17.77	9.24	1.93	47.10	2

Capital Adequacy Ratio (C): The capital adequacy ratio of ICICI Bank ranks top with (17.72) followed by Yes Bank with (16.54). Both the banks belong to PVTB. The banks which have greater ratio have strong solvency. Indian Overseas Bank shows the least with (11.20).

Resource Deployed (R): The ratio shows the effective management of outside investment. In the present study Indusind Bank shows the greater value of (3.33) followed by ICICI Bank with (1.82). Both the banks belong to PVTB. Canara Bank shows the least with (1.19). The greater the ratio shows the indolence of banking but doing safer side on investment.

Asset Quality (A): The ratio shows how the banks manage the schedule 3 and schedule 9 items. If the ratio increases then it shows the social responsibility of banks towards public. Andhra bank shows the greatest ratio of (0.83) followed by Indian Overseas Bank (0.75) which shows the PSBs are socially responsible with the exception of Vijaya Bank which is the least with 0.27.

Management Ratio (M): This ratio shows the highest overall profitability ratio of the banks. On the above table, Yes Bank (PVTB) shows the highest value of (20.33) followed by HDFC Bank (PVTB) with (17.77) which shows larger overall profitability. Indian Overseas Bank shows the least with (-4.48) which is the PSB. Earning Potential (E): This ratio shows the general profitability of the banks. Karur Vysya Bank ranks first with (10.37) followed by Yes Bank with (10.10) shows better profitability. Both the banks belong to PVTB. Vijaya Bank (PSB) shows the least with (7.51).

Liquidity (L): This ratio shows the short term solvency of the banks. The above table reveals that Canara Bank has better liquidity with (7.10) followed by Indusind Bank (PVTB) with (3.11). ICICI Bank shows poor liquidity with (1.43). The overall health of Yes Bank (PVTB) shows good on CRAMEL with (50.65) followed by HDFC Bank with (47.10). Indian Overseas Bank (PSB) shows the poor health with (18.63).

STUDENT 't' test –BANKOMETER WITH CRAMEL

To assess the association between the results of financial health of Public and Private sector banks, Spearman Rank correlation is used and tested using 't' test at 5% level of significance.

H1: There is significant association among the results of Bankometer and CRAMEL for assessing the financial health of Banks

Table 4: Comparison of Financial Health Results using Bankometer and CRAMEL

SL.NO	Bank name	BANKOMETER	CRAMEL
1	Canara Bank	58.27	40.76
2	Indian Overseas Bank	60.62	18.63
3	Vijaya Bank	56.64	33.20
4	Punjab National Bank	66.01	33.14
5	Andhra bank	63.22	36.05
6	Indusind bank	178.71	46.30
7	Yes bank	75.12	50.65
8	ICICI	88.16	41.72
9	Karur vysya bank	64.97	44.61
10	HDFC	80.51	47.10

$r=0.39$, t value=1.19, Degrees of freedom=8

critical t value at 5% level of significance =1.86

The study has found that the calculated value is less than the critical value. The hypothesis is accepted, which shows that there is significant association among the results of Bankometer and CRAMEL for assessing the financial health of Banks

VI. CONCLUSION

As noted, Indusind bank stands first in financial health using Bankometer formula and YES bank as per CRAMEL analysis because of the reasons that it adheres to all the norms dictated by IMF. Also the reason for the least ranking in terms of solvency is Vijaya bank using Bankometer and the reason would be its poor capital to assets ratio and equity to total asset ratio. This bank's asset quality and earning potential are also very low as per CRAMEL analysis. Indian Overseas Bank's solvency according to CRAMEL and also Bankometer is poor which may be due to weak Capital Adequacy ratio, equity to total assets and NPL to total loan ratio. Also according to CRAMEL analysis, the management efficiency ratio goes in negative figure for Indian Overseas Bank which implies its poor profitability. These two banks must take effective steps in accordance to IMF guidelines to improve its financial sustainability which is the need of the hour. The study focused on comparative study on financial health between Public and Private sector banks for the period of eight years from 2011-12 to 2018-19. The research belongs to analytical. The researcher used CRAMEL and Bankometer as analysing technique and also used Rank Correlation and 't' test at 5% significance level to know the relationship between the variables and results of Bankometer and CRAMEL. It may be generalized that the PVTB's are performing better than the PSB's. The study also recommends that the Bankometer can be used to study the financial health of banks rather all other tools as it pinpoints the areas of strength and weaknesses of banks. Bankometer model acts as a mirror which reflects the financial sustainability which strongly urges that if a bank wants to improve or maintain its financial sustainability, it has to adhere to the guidelines given by IMF. The study also recommends that all banks in India including foreign banks may be taken for comparison. Study can be done as pre-merger and post- merger comparison as no study was conducted in these areas.

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