

Financial Analysis of Indian Banking Industry: Bank Meter Model

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Abstract:

Capital in banking system is the foundation of economic development of country. If a specific country had been stimulated due to various risk, inflation of money, financial crisis, imbalance of economy development, unavoidable pandemic like COVID-19 and meagre supply of money circulation etc., these are all roots which can be interconnected for the failure of the banking system. These are the motives all countries are established and renowned by the BASEL's committee norms worldwide. The liquidity and solvency position of banks structured and build up by BASEL committee norms which evaluate each and every bank's financial health. To analyze the capital positions there are assorted authors suggested universally and accepted various techniques like ZMIJEWSKI Model, CAMEL, ALTAMAN's, SPRINGATE's Model, OHLSON's Model, BANKOMETER Model, etc. To appraise the performance based on various ratios of Public & Private sector banks, we have selected the Bankometer Model (S-score) developed and suggested by International Monetary Fund (IMF) recommendations global prudential indicators of financial system in January 2000, to evaluate the financial performance in respect of capital ratios of the Public and Private sector banks in India, for the present study we have considered a period of ten years (FY 2010 to FY2019). Secondary data have been collected from the reports of Indian Bankers Association (IBA), Statistical Tables, Annual Reports of Banks, Reserve Bank of India (RBI) Monthly Bulletin, NSE & SEBI, Money control, economic times etc. The results of the study showed that as per Bankometer model, banks were extremely liquid, had more than required adequate capital base, were able to manage debt, have excellent profitability and asset quality but they were deficient in the economic, operational & political risk. These findings suggest that this model can be used as EWS-early warning system & alert tool for measuring financial performance of a bank.

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1. Introduction

Every nation has their own financial system which can control economic transactions through Banks, and banking sector plays a fundamental role on all types of business transactions between Govt. to

Public and vice versa. As per reports published by the RBI indicated "Indian banking Industry is well-regulated and adequately capitalized". The financial and economic conditions of Indian banking sector is in a better position compared to other identical

countries in the world. The risk associated with Credit, liquidity, operational and market suggests that Indian banks are universally strong and have survived the global recession well. RBI's state-of-the-art measures and guidelines may go a far-flung in supporting the reshuffle of the Indian banking industry. Banks are increasingly converging on applying combined approach to risk management. Banks have already encompassed the international banking supervision accord of Basel II. RBI's information on capital requirements as per Basel III, majority of the banks has already been come across standards prescribed in Basel III, which has a time limit of March 31, 2019. Most of the banks have put in place the framework for capital/asset and liability identical, credit and derivatives risk management. Every national government has also designed new policies and regulation as per Basel III norms for maintaining for liquidity & capital adequacy Ratio. For strengthening of solvency position and avoiding bankruptcy to the banks some authors have introduced new formulas and techniques. Prof. Altaman's who developed worldwide accepted "Altaman's (Z-score)" technique for finding bank solvency is also suitable for manufacturing and services organizations. Based on his research he introduced standard weights which are helpful for identifying safety level of the concern organization or banks, and also standard weights are analysing the operational, retaining earnings, earning capacity based on total introducing assets. Altaman's model is limited and not only useful to assess the Non-Performing Assets for which Bankometer Analysis, but also applying to the solvency position of each and every bank in all parameters. Bankometer Model (S-score) Techniques was developed by IMF in 2002, and also recognized worldwide.

2. Structure of Indian banking industry

Before independence of India, society concept was followed in ancient India. When British Govt. was ruled in India, that time major Indian banks were established by either British government or business houses like Birla etc. In 1921, British Government merged three major banks namely Bank of Bombay, Bank of Madras and Bank of Bengal & named as Imperial Bank of India. Further Imperial Bank of India was renamed as State Bank of India.

The Reserve bank of India was established in the year 1935 and RBI is the supreme monetary and banking authority in the India and controls the entire banking system in India. With RBI as the central bank the structure of Indian Banking sector is as follows:

1. Commercial Banks:-

1.1. Public sector Banks: SBI (State banks of India and its associate banks) and various nationalised banks in India like Bank of Baroda, Bank of India, Punjab National Bank, Canara Bank, Oriental Bank of Commerce, Central Bank of India etc

1.2. Private sector Bank: There are two types of Private Banks in India namely Indian origin private banks and Foreign banks

1.2.1. Indian origin banks: Housing Development Finance Corporation Limited, Industrial Credit and Investment Corporation Of India, Kotak Mahindra Bank, Yes Bank, AXIS Bank, Karur Vysys Bank, Jammu & Kashmir Bank, Laxmi Vilas Bank, Federal Bank, Karnataka Bank, Ratnakar Bank Ltd., etc

1.2.2. Foreign Bank: Standard Charter Bank, Hongkong & Shanghai Banking

Corporation. Royal Bank of Scotland, ABN AMRO, Bank of America etc

2. Regional Rural Bank (RRB's): Baroda Rajasthan Kshetriya Gramin Bank, Manipur Rural Bank, Allahabad UP Gramin Bank, Punjab Gramin Bank, Andhra Pradesh Grameena Vikas Bank, Rajasthan Marudhar Gramin Banks etc.

3. Cooperative banks

- 3.1.State Cooperative Banks (SCB): State level banks
- 3.2.Central Cooperative bank (CCB): District level banks
- 3.3.Primary Credit societies (PCS): Village level Primary Agricultural Credit Societies (PACs).

As per the above structure of banking sector, commercial banks have 91 % share and control over of banking industry. Public sector banks play leading role in the banking structure. RBI issued license to private banks during liberalization era in 1994. Global Trust Bank (GTB) was the first private bank in Indian History, later it was merged with Oriental Bank of Commerce. Government of India started disinvestment plan and started converting institutions like HDFC, ICICI, Unit Trust of India (UTI) into private sector Banks. Later more banks like Karur Vysys Bank, Jammu & Kashmir Bank, Yes Bank, Karnataka Bank, etc. banks were introduced in Indian banking sector. Private-sector banks are second major players after Public sector Banks and both are back bone of Indian economy and provide innovative technology and customer friendly environment.

In cut thought competition and tech-savvy innovation with customer friendly environment, both public & private sector banks are playing a pivotal role in the Indian banking sector. That why, author has selected the Public sector and private

sector banks for assessment of Bankometer Model in Indian market .

4. Literature review

Onyema JI, et-al (2018) examined and evaluation of financial soundness of selected commercial banks in Nigeria and determined the liquidation issues and minimizing the shortcoming generating from incompetence in Nigerian banks by use of Bankometer analysis 1.

Sewaram Bhadkariya (2018) examined and investigated adoption echelon of mobile banking technology & platform for Banking Transaction and facilities of Indian public sector banks and private sector banks in various cities of India 2.

Md.Zahidur Rahman (2016) examined an investigation to quantify the capital related soundness of a few chosen private business banks of Bangladesh (2006-10), and resulted the soundness of financial position of the banks yielded to allotted ranks and partial-wealth (loans, higher deposits, investments, branches and employees) of banks.3.

Amin Jan and Maran Marimuthu (2015) examined the monetary variables with respect to liquidation of Islamic Banking industry and carry out a benchmark of their financial attributes with special regards to insolvency and liquidation .4.

Qamruzzaman, M. (2014) examined private business banks in Bangladesh. He has utilized S-score and Z-score for dissecting the monetary position of banks the analyst accepting 20 banks as test out of 30 registered private business banks in Dhaka Stock market. His investigation show that both S-score and Z-score indicate comparative outcomes proposes budgetary position in five year period.5.

Indra Kumar Kattel (2014) checked the Financial health of Selected Commercial Banks of Nepal by

Bankometer model for five years (2007-2012). He analysis the result that all the private and joint undertaking banks are in strong cash related position and private sector banks are economically greater interestingly with joint undertaking banks.6. Chotalia T.N.Rao (2014) completed an appraisal of fiscal prosperity of inspected private sector banks by measure the variable through Altman's z-score model and the study resulted the private sector banks falls in Gray Zone, and there is credibility of cash related agony in some private portion banks.7. Md.Rashedul Hoque and Md.Israt Rayhan (2013) evaluated effectiveness estimation on banking industry in Bangladesh with utilization of improvement examination (DEA). It is a non-parametric technique tasks inquire about in financial matters for the estimation of creation outskirts. He demonstrated and investigating the banks and distributed dependent on results given positions.8.

Prasad and Ravinder (2012) examined the application of CAMEL model for analyzing the financial performance of Public sector banks. They concluded that Andhara Bank is the best bank in India followed by Bank of Baroda and Punjab & Sindh Bank in Public sector banks in India from the selected bank .9

Makkar and Singh (2012) examined the level of solvency and liquidation in commercial banks in India for a period of five years (2006-2007 to 2010-2011). For examining the solvency the researchers used Bankometer model. The results show that application of Bankometer model provide better assessment then CAMEL model in terms of bank ability, so it was suggested to internal management to use Bankometer model for diagnosing the health of banking sector in India.10.

Amir Hussain Shar, Dr. Muneer Ali Sha and Dr.Hajan Jamali (2010), investigated as to how

appraisal of Banking Sector in Pakistan is done using Bankometer model. Bankometer model is finest among various models such as CAMELS system and CLSA stress test, results are essentially based on basic parameters with small changes in their gravitas of captivity and records. The gravitas of the chose various essential variables ratios were absolutely change to incorporate the estimations of banks liquidation and solvency level. The examination is a motivational attempt to application of Bankometer model for banking sector in Pakistan. This model is designate and robust method to enhance solvability of Islamic banking industry.11.

5. Objectives of the study

Author has been intended to achieve the following objectives in his paper:-

1. To examined and evaluated the financial performance of the Public and Private Sector banks under study on the basis of adequate capital base from Capital adequacy Ratio.
2. To assess the financial health of the selected Public and Private sector banks in India using the Bankometer model for Ten Years (2010-2019).
3. To check the utilization and scope of Bankometer framework for effective measurement of financial performance of Indian Banking Industry.
4. To enumerate the rank to various banks after compare S-score of selected Public and Private sector banks based on various parameters of S-score formula of Bankometer analysis.

To provide suggestion & advisable framework to the bank's internal management for elimination of potential insolvency and Bankruptcy issues and maintain various standard variable/Ratio like Capital Asset Ratio, Equity to Asset Ratio, Capital

Adequacy Ratio, NPL non-performing loans to Loans Ratio, Cost to Income, Loan to Asset etc. timely introduce and implement the coherent policy and model in banking system.

The researcher has used Bankometer model for this study to check the bank’s soundness and capital adequacy ratios are measured by a universal Bankometer S-score. He believes that this S-score of this study will be absolutely helpful for potential researcher, policymakers of country and shareholder policymakers in the society by providing reliable results.

6. Research methodology

The data collected for the research was in the form of secondary data information.

- 1) Secondary data-the secondary data was collected from various reports, money control, capitalline plus database, annual reports of banks, e-mails, journals, circulars, manuals, books and RBI reports.
- 2) Data analysis-researcher has selected SBI, BOB, BOI, PNB, Canara Bank from public sector banks and other hand HDFC, ICICI, KMB, AXIS Bank and YES Bank from private banks of India for analyzed capital adequacy level and author used IMF recommended Bankometer Model S-score for find out S-score. Based on S-score Bankometer Model allotted Ranks to Public sector & Private sector Banks and SBI & ICICI Bank received no one position respectively .

Banks	Sector Banks
1) SBI	1) HDFC Bank
2) BOB	2) ICICI Bank
3) BOI	3) KMB
4) PNB	4) AXIS Bank
5) Canara Bank	5) YES Bank

Table 1: Public & Private Sector Banks selected for research.

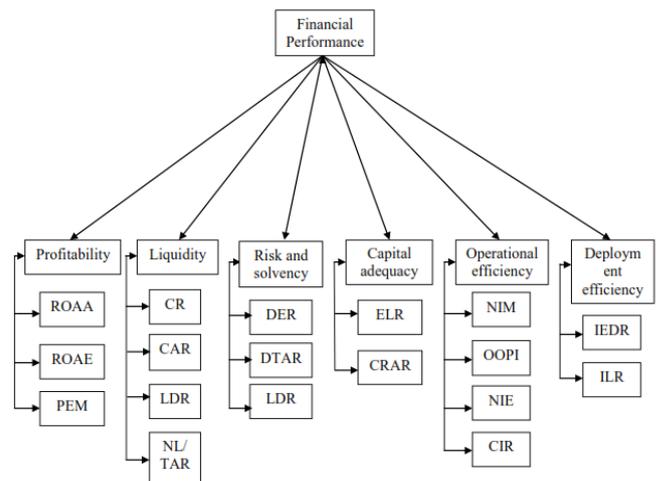


Figure 1: Performance indicators in measuring Banks performance

Profitability ratios: Profitability ratios are a variables of financial matrix that are used to evaluate the ability of banks to generate earnings pertained to its revenue, operating costs, balance sheet assets, and shareholders' equity over time, using data from a definite point in time.

- 1) ROAE:- Return on average equity
- 2) ROAA:- Return on average assets
- 3) PEM:- Profit expense margin

Liquidity ratios: Liquidity ratios are a cluster of financial metrics used to determine a Bank’s capacity to pay off current debt obligations without raising external capital.

Name of Public Sector	Name of Private

- 1) LDR:- Loan deposit ratio
- 2) Current Ratio =Current Asset/Current liability.
- 3) NLTA:- Net loans/ total assets
- 4) CAR:- Current asset ratio

Risk and solvency ratios: Risk ratios evaluate a Bank's/ company's debt levels, which are an indicator of a Bank's financial health. Liquidity ratios are a group of financial metrics used to determine a company's capacity to pay off current debt obligations without raising external capital.

- 1) DTAR: -Total debt/ total assets
- 2) DER:- Debt to equity ratios
- 3) LDR: -Loan deposit ratios

Capital adequacy ratios: Capital Adequacy Ratio (CAR) is the ratio of a bank's capital in relation to its risk weighted assets and current liabilities.

$CAR = \frac{\text{(Tier I+ Tier II+ Tier III (Capital fund))}}{\text{Risk weighted assets}}$

It is decided by RBI in India and at present this is 9% as per RBI Norms and 8% as per international Basel norms. RBI plays major role as bank regulators to prevent commercial banks from taking excess leverage and becoming insolvent in the process.

- 1) ELR:- equity- liabilities ratios = Average equity/ average liabilities
- 2) CRAR: -capital risk asset ratio

Operating ratios: Operating ratio is organization's ability to generate profit and it is a bank's operating expenses as a percentage of revenue.

- 1) CIR:- Cost / income ratio
- 2) NIE:- Net interest income / average assets
- 3) NIM:- Net interest margin = net markup & interest income / average assets

Deployment ratios

- 1) ILR: Investment / liability ratio

- 2) IEDR: Investment-Equity and deposit = total investment / total equity + total deposits.

6. Research sample and sampling technique

The research Sample contains total ten banks of India, where as five Banks from Public sector Banks (SBI, BOB, BOI, Canara Bank and PNB) and other side five Private Sector Banks (HDFC Bank, ICICI Bank, Kotak Mahindra Bank, Axis Bank and Yes Bank) of India. Author has been used Convenience Sampling Technique for the study.

7. Techniques of data analysis

Since, Bankometer model has been developed and recommended by International Monetary Fund (IMF) .This model is worldwide suggested to consider the Bankometer to measure the financial health of the banks.

$S = 1.5 \text{ times } R1 + 1.2 \text{ times } R2 + 3.5 \text{ times } R3 + 0.6 \text{ times } R4 + 0.3 \text{ times } R5 + 0.4 \text{ times } R6$

Whereas: R1 = Capital Asset Ratio (CA)

R2 = Equity to Asset Ratio (EAR)

R3 = Capital Adequacy Ratio (CAR)

R4 = Non-performing loans to Loans Ratio (NPL)

R5 = Cost to Income (CI)

R6 = Loan to Asset (LA)

B/V	SBI	BOB	BOI	C Bank	PNB
CA	0.031	0.055	1.047	0.111	0.761
EAR	5.76	4.492	2.425	5.115	5.957
CAR	12.9	13.5	11.2	12.6	11.9
CI	41.57	33.522	40.81	29.944	38.76
LA	79.77	70.527	71.22	70.614	75.93
NPA	0.052	0.0274	0.093	0.0362	0.052
S-	96.52	90.648	65.44	87.655	90.94

score	4		8		7
RANK					
K	1	3	5	4	2

Table 2: Bankometer Variables, S-score and ranking to Public Sector bank

B/V	HDFC	ICICI	KMB	AXIS	Y Bank
CAR	0.153	0.159	0.405	0.12	0.373
EAR	9.834	10.289	14.35	9.062	7.611
CAR	16.6	18.5	11.5	15	16.9
CI	39.34	39.79	38.35	39.44	28.05
LA	84.57	101.86	122.8	85.25	85.1
NPA	0.003	0.02	0.007	0.0142	0.004
S-score	115.7	130.01	118.7	109.5	111.3
RANK	3	1	2	5	4

Table 3: Bankometer Variables, S-score and ranking to Private Sector Bank.

Criteria to be considered:

Following standard bench mark recommended by IMF recommended is below for analysis and ranking:

- For the value of S is less than 50 ($S < 50$) means that the bank is experiencing financial difficulties and high risk.
- For the value of S is less than 70 ($S < 70$) then the bank is considered to be in the gray area.
- For the value of S is greater than 70 ($S > 70$), provide an assessment and this represent the bank is in a extremely healthy position.

The bank wise performance has been calculated as per the Capital risk of the selected banks of the Private and Public sector banks from the ten years (2009-10 to 2018-19).

8. Assessment of Bankometer Model

Bankometer model has developed base on IMF recommendations in 2000 pertaining to the appraisal of financial health of banks. Thus, the results should be analyzed by using Bankometer Model.

Bank/year	SBI	BOB	BOI	CB	PNB
2010	96.15	86.57	83.23	98.98	88.43
2011	94.12	93.21	99.17	95.62	89.16
2012	101.09	95.12	-29.38	90.85	91.27
2013	98.1	95.02	-9.99	82.65	93.83
2014	99.29	86.67	84.99	80.48	95.38
2015	93.24	84.15	78.69	79.56	92.82
2016	97.73	89.12	83.05	82.28	96.23
2017	93.41	93.84	87.93	89.28	90.94
2018	95.45	89.81	86.93	88.19	87.65
2019	96.64	93.11	90.42	88.64	83.78
Avg. S-SCORE	96.52	90.65	65.45	87.66	90.95

Table 4: Public Sector Banks capital Ratios

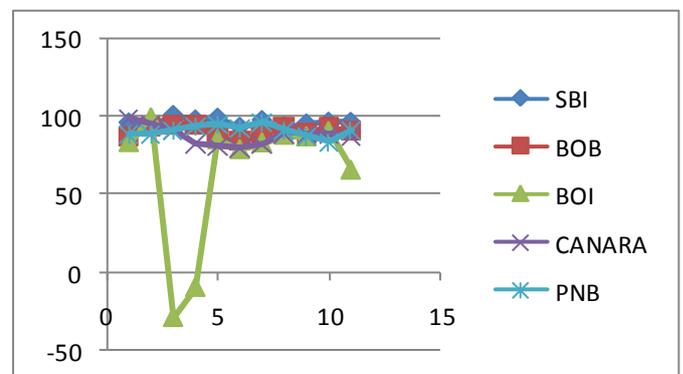


Figure 2: Public Sector Banks capital Ratios

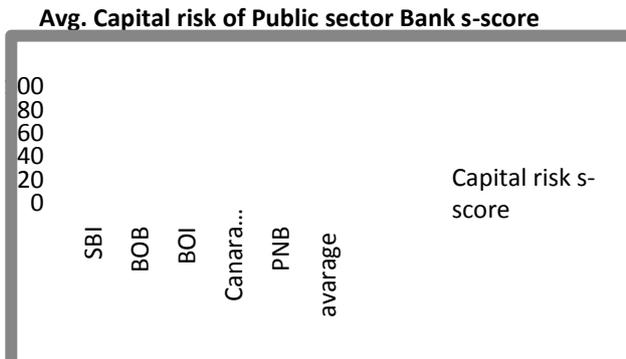


Figure 3: Average Capital S-score of Public Sector Banks.

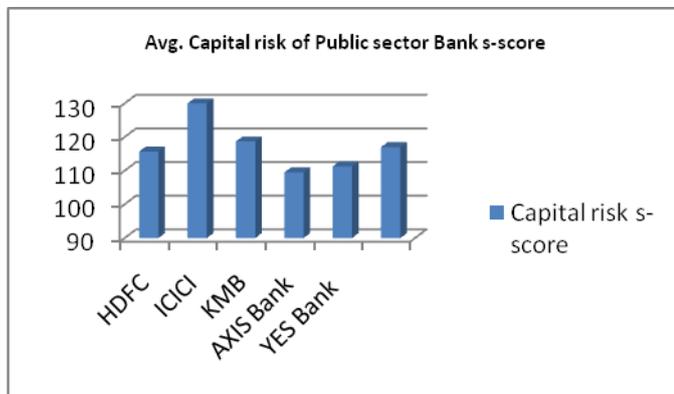


Figure 4: Average Capital S-score of Private Sector Banks.

In term of ranking analysis of Capital S-score all selected public and private sector banks are above the required benchmark except BOI with 65.45 (S greater than 70 %).SBI received no one position in Public sector banks with average 96.52 s-score then PNB, BOB, Canara Bank and BOI with 90.95, 90.65,87.66 and 65.45 respectively. Similarly ICICI received no one position in Private sector banks with average 130 s-score then KMB, HDFC, YES Bank and AXIS Bank with 118.69, 115.69, 111.30 and 109.49 respectively. Recently RBI has imposed corrective actions on YES Bank and BOI for inadequate capital adequacy and poor management issues. Hence, this is self explanatory that

Bankometer Model is reliable tool in India’s banking industry.

Bank/year	HDFC	ICICI	KMB	AXIS	YES Bank
2010	4	8	2	94.93	113.13
2011	2	8	9	97.05	105.37
2012	1	134.1	9	99.69	108.52
2013	7	8	6	6	105.48
2014	115.5	9	6	111.6	94.55
2015	2	6	5	3	107.67
2016	3	3	3	1	113.79
2017	116.2	8	1	6	118.81
2018	111.9	9	3	6	123.96
2019	8	2	1	7	121.73
Avg. S-SCORE	115.6	130	9	9	111.3

Table 5: Private Sector Banks capital Ratios

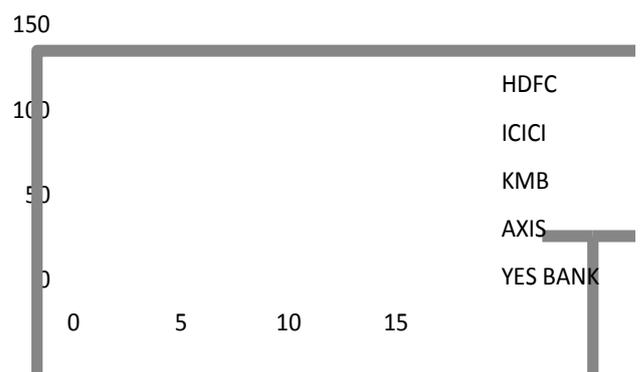


Figure 5: Private Sector Banks capital Ratios

9. Suggestion

The success of any bank mainly depends on its customers & investors. Banking is a service industry and each and every bank should aim at satisfying the customers' needs & want by providing quality of service. Potential globally investor, shareholders and policymakers have an interest in elevated yields on the capital invested in the banks, ensuring that there is no unnecessarily elevated shareholder equity. On the Other hand, it is essential for the Bank to maintain a ample buffer or risk capital to cover potential risks to shareholders and society. The capital adequacy rules therefore embark the minimum buffer size requirements, based on the amount of risk implicit by the bank. The Basel III Regulations strengthen the link between risk-taking and capital requirements, including stricter risk management and disclosure of banking information. Maintaining stable revenues over time requires not only a low level of risk where solvency, efficiency and collateral for each borrower are determinative factors, but also the capacity to adjust quickly to changing customer behavior and other company rudiments. Banks will maintain a sustainable balance of deposits and loans and endeavor to match all maturities with sustainable growth.

Banking Sector plays critical role in the growth of the economy and it fulfills financial requirements of all other sectors and this is strongly monitored and governed by RBI and believed to be most transparent sector so we can get required information about financial ratio etc. Reserve bank of India as a regulators, track the each & every bank's CAR to ensure that it absorbs a reasonable quantity of losses and meets the statutory capital requirements. Capital Adequacy Ratio (CAR) represented as Capital to Risk (Weighted) Assets Ratio (CRAR), is the ratio between the capital of

the bank and its risk associated. It is a assessment of the bank's resources in term of audited financial result. The Basle III minimum capital adequacy ratio shall be retained by banks and as a regulator RBI imposes Prompt corrective action (PCA) on non compliance bank. Hence above research suggest that this model can be used as EWS-early warning system & alert tool for measuring financial performance of a bank.

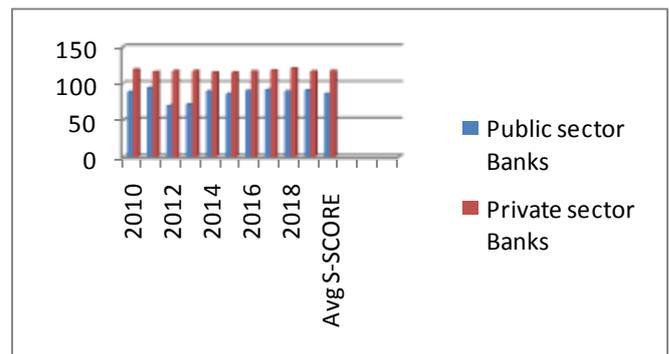


Figure 6: Comparison of Public Sector Banks capital Ratios

S. NO.	Public Sector Banks	Capital risk s-score	Private sector Banks	Capital risk s-score
1.	SBI	96.52	HDFC	115.69
2.	BOB	90.65	ICICI	130.00
3	BOI	65.45	KMB	118.69
4.	Canara Bank	87.66	AXIS Bank	109.49
5.	PNB	90.95	YES Bank	111.30
Average		86.25	Average	117.03

Table 6: Average Capital Ratio of Public and Private Sector Banks.

10. Conclusion

The above graph represents the capital risk comparison between the select Public and Private sector banks capital risk for the period of 10 years (2009-10 to 2018-19). The average capital risk of the public sector banks were found to below 100% but private sector banks are observed to be greater than the 115%. In the year 2011-12 public sector banks have experienced stress like BOI as their capital risk is found to be below 70% i.e., 69.782 but later years it has been improved significantly. The private sector banks have shown constant performance in capital risk management during the study period. Bank of India and Yes Bank both banks were fluctuated in term of capital adequacy ratios, hence recently both bank were in dilemma and RBI enforce essential restriction on the banks as a regulator. Hence the study concludes that as per the IMF clause (2000 year) the capital risk of the selected private sector banks and the public sector banks meet permissible level of BASEL norms. Financial health of selected private sector banks and the public sector banks found good Position (i.e., >70% except BOI avg. 65.45%). Major restriction of application Bankometer Model is anonymous risks like COVID-19 pandemic lockdown and it futuristic effects in global competitive environment. Thus Bankometer model could not feasible for some anonymous variables in present scenario and these variables affect the entire financial performance of banking industry in the world. Other hand, investors and customer's expectation this newly recognized Bankometer model will definitely helpful for bank's internal management to meet capital adequacy. This study also concludes all the banks to maintain the reliable solvency to ensure soundness of financial health of banking sector for the economic growth of the developing countries.

Finally we can conclude that Bankometer Model can be widely and efficiently used for measure performance of national banking system in India.

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