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## “Prediction of Financial Distress by Using Bankometer Model: A Study on Selected Public Sector & Private Sector Banks in India”

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**Abstract:**

**Purpose:** *The main aim of this study to predict financial failure of selected Public and private sector bank by using Bankometer Model.*

**Approach/Methodology/Design:** *The present study is conducted to find the S score of the two public sector and two private sector banks during the period of 2018 to 2022. Solvency score of the Bank of Baroda, Punjab National Bank, HDFC Bank and Axis Bank has been calculated and analysed.*

**Findings:** *Researcher has found that Solvency score of the HDFC Bank for the year 2022 is in a weak position so bank should improve its Solvency score by improving the financial conditions and Non-performing loan conditions.*

**Originality/value:** *The International Monetary Fund has created the Bankometer model to assess the financial stability of banks. This model aids in determining a bank's solvency scores in order to prevent insolvency problems and to evaluate its financial status by considering the weight of each ratio as per the IMF's (2000) standards.*

**Key words:** Bankometer model, Financial Distress, Banking sector.

### INTRODUCTION:

The Indian economy relies heavily on the Banking Sector as its backbone. A key factor in maintaining financial stability in this sector is assessing the solvency of banks. Solvency refers to a bank's capacity to fulfill its long-term debts and financial obligations. This measure is crucial in evaluating a bank's overall financial health and its ability to manage its operations effectively in the long run. To measure the solvency scores of banks, the present study employs the Bankometer model, which was created by the International Monetary Fund to identify the financial soundness of banks. This model serves as an important tool for banks' internal management to pinpoint insolvency issues and address the shortcomings highlighted by the model. Numerous techniques exist for evaluating the health of a bank. One such method is the Bankometer model, which is recommended by the IMF (2000) and widely utilized by researchers due to its straightforward approach and high accuracy (Kattel, 2014). Another commonly used approach is the Risk Based Bank Rating (RBRR), which assesses a bank's Risk Profile, Good Corporate Governance, Earning, and Capital (RGEC) based on Central Bank of Indonesia Regulation no.13/1/PBI/2011, replacing the previous CAMELS method. Erari, Salim, Idrus, and Djumahir (2013) conducted a bank performance analysis using the Cael, Z-Score, and Bankometer methods, and found that the Cael and Bankometer methods produce similar results, while the S-Score method is unsuitable for the Indonesian Banking Industry. The Bankometer model has been widely used in numerous studies to evaluate a bank's financial condition, such as Rahman's (2007) analysis, which utilized data from commercial banks in Bangladesh between 2010 and 2015. This study revealed that the Bankometer model can aid management teams in decision-making during insolvency periods and identifying inefficiencies in their operations. In 2016, Yamen and Ali conducted a study in Jordan using the Bankometer model to assess the financial conditions of commercial banks. The study revealed that the banks in Jordan exhibited strong financial conditions. Similarly, Ashraf and Tariq (2016) employed the Bankometer model and Altman's Z-Score to assess the financial conditions of banks in Pakistan between 2006 and 2014. However, their study yielded different results from the Bankometer model. In India, Shamanth and Rajgopal (2016) suggested that the Bankometer model could function as an early warning system for evaluating a bank's financial performance. According to Kattel (2014), private banks and joint venture banks exhibit financial strength, but private banks outperform joint venture banks. Kattel (2014) also emphasized that the Bankometer model could assist bank management teams in mitigating insolvency risks through control and proper supervision.

### REVIEW OF LITERATURE



(Prasad D, 2019) Has conducted a research on Evaluation of Solvency Position of Nationalized Banks in India (With use of the Bankometer & Altaman's Techniques). The objectives of the study were to check the financial performance of the nationalized bank and to measure the solvency position of the bank. Data has been taken from the annual reports of the banks and total 19 banks' data have been collected and analyzed with the help of Bankometer model and Altman's model. Researcher has concluded that as specified by the after effects of the Altaman Z-Score model, limited banks under the investigation are expected to have a danger of insolvency. Specially, Altaman's model endorses Low 1.1 to 2.6; at that point it is likewise treated as low likelihood of liquidation.

(Rahman Z, 2017) Has made a research on "Financial Soundness Evaluation of Selected Commercial Banks in Bangladesh: An Application of Bankometer Model". The objectives of the study were to measure financial health of 24 private commercial banks of Bangladesh by using the model developed under the guidelines of IMF for the period of 2010 to 2015. The researcher has concluded that all the banks of the study were financially sound and also suggested that "Bankometer" model definitely help the management of the bank in knowing the insolvency status.

(Ningsih S, 2018) Has made a research on "Analysis Method of Altman Z Score Modifications to Predict Financial Distress on The Company Go Public Sub Sector of The Automotive and Components." The researcher has used explanatory and cross sectional data and purposive sampling technique has been used to collect the data from 13 companies. Researcher has concluded that out of 13 companies' seven companies with financial distress like GDYR, BOLT, IMAS, LPIN, MASA and PARS.

(Kumar V, 2017) Has conducted a research on "A camel model analysis of private banks in India." The objective of study was to compare the performance of private sector banks and the factors affecting the performance of the private sector banks. This research was descriptive cum exploratory in nature and researcher has used the various statistical tools like composite average, covariance etc. and researcher has concluded that Axis bank is ranked first and after that ICICI bank performance is sound and last position is taken by IndusInd bank among the selected private sectors banks.

(Mathur, 2022)The International Monetary Fund has developed the Bankometer model to assess the financial stability of banks. This model helps identify solvency scores to prevent insolvency issues by considering the contribution of each ratio in the model based on IMF (2000) norms. The purpose of this study is to compare the top 5 public and private sector banks (by market capitalization) using the Bankometer model from 2010 to 2020. The public sector banks examined were SBI, IDBI, PNB, UBI, and BOB, while the private sector banks studied were HDFC, Kotak Mahindra Bank, ICICI, Axis, and Bandhan Bank. Solvency scores (S) were calculated for all the banks, and the study found that private banks had higher S-scores than public banks, indicating a better financial position for private sector banks. Among the public sector banks, SBI was the most solvent, while Bank of Baroda held the lowest position. Among the private sector banks, HDFC was the most solvent, while Bandhan Bank was ranked last.

(Budiman T, 2017)The aim of this research is to examine the current state of financial distress faced by Islamic banks in Indonesia, whose market share has witnessed a decline in recent times. To achieve this, the study will utilize the Bankometer model developed by the IMF in 2000 to evaluate the banks' financial soundness. Additionally, the research will compare the Bankometer scores of listed and non-listed Islamic banks to identify any variations between the two groups. A purposive sampling method was employed to gather data between 2011 and 2015 for the study, which included a sample of 11 Islamic Banks operating in Indonesia. According to the findings, all Islamic banks were classified as highly healthy during the entire research period. Results obtained from an independent t-test indicated that there were variations in the non-performing loans of listed and non-listed Islamic banks. Nevertheless, no notable differences were observed in Variable Capital Asset, Equity Asset, Cost to Income, and Loan to Asset.

## METHODOLOGY AND PROCEDURES



**Research Objective:**

The objective is to utilize the Bankometer model to evaluate the solvency scores of the leading 5 public sector banks in India.

**Research Methodology:**

The table below shows the research methodology adopted by the researcher.

**Table 1.1 Shows the Research Methodology used**

Particulars	Research Methodology used
Research Type	This study is and analytical in nature.
Sampling unit	BOB, PNB, HDFC and AXIS BANK
Sample Technique	Simple Random Sampling (Lottery Method)
Data Used	Secondary data has been used by researcher.
Source of Data	Financial Statements of the companies
Period of study	Financial data from the year 2018 to 2022 has been used by the researcher.

**RESULTS AND DISCUSSION****Bankometer Model Review:**

In 2002, the IMF developed Bankometer Techniques, which have since been widely accepted around the world. The IMF proposed the following formula for calculating it.

$$S\text{-Score} = 1.5(CA) + 1.2(EA) + 3.5(CAR) + 0.6(NPL) + 0.3(CI) + 0.4(LA)$$

S' stands for solvency score. S-Solvency score	Financial Position
value of S <50	Insolvent
value of S 50<S<70	Grey Area
value is S>70	Financial Sound

**Bankometer parameters and IMF limits:****Where:**

CA = Capital to Asset Ratio ( $\geq 4\%$ )

EA = Equity to Asset Ratio ( $\geq 2\%$ )

CAR = Capital Adequacy Ratio ( $\geq 8\%$ )

NPL = Non-Performing Loan Ratio ( $\leq 5\%$ )

CI = Cost to Income Ratio ( $\leq 40\%$ )

LA = Loan to Asset Ratio ( $\leq 65\%$ )

**Calculation of Ratios of Bankometer Model:****Table 1.2 Shows the different Ratios of BOB for Bankometer Model**

Sr.	Name of the Ratios	2018	2019	2020	2021	2022
1	Capital to Asset Ratio (CA)	6.02	5.88	6.2	6.6	6.7
2	Equity to Asset Ratio (EA)	0.073	0.067	0.079	0.089	0.081
3	Capital Adequacy Ratio (CAR)	12.13	13.42	13.3	14.99	15.84
4	Non-Performing Loan Ratio (NPL)	13.21	10.28	10.05	9.43	8.24
5	Cost to Income Ratio (CI)	59.36	60.02	59.60	61.13	60.81
6	Loan to Asset Ratio (LA)	56.63	59.13	56.80	53.48	55.83

**Table 1.3 Shows the different Ratios of PNB for Bankometer Model**

Sr.	Name of the Ratios	2018	2019	2020	2021	2022
1	Capital to Asset Ratio (CA)	5.36	5.77	7.5	7.2	7.26
2	Equity to Asset Ratio (EA)	0.072	0.118	0.162	0.166	0.167
3	Capital Adequacy Ratio (CAR)	9.2	9.73	14.15	14.32	14.5
4	Non-Performing Loan Ratio (NPL)	19.97	17.12	15.57	15.48	12.69
5	Cost to Income Ratio (CI)	56.63	59.13	56.80	53.48	55.38
6	Loan to Asset Ratio (LA)	56.63	59.13	56.80	53.48	55.38

**Table 1.4 Shows the different Ratios of HDFC Bank for Bankometer Model**

Sr.	Name of the Ratios	2018	2019	2020	2021	2022
1	Capital to Asset Ratio (CA)	11.98	11.71	11.66	11.60	11.36



2	Equity to Asset Ratio (EA)	0.052	0.042	0.037	0.032	0.027
3	Capital Adequacy Ratio (CAR)	17.11	18.52	18.79	18.9	0
4	Non-Performing Loan Ratio (NPL)	1.369	1.273	1.331	1.179	1.125
5	Cost to Income Ratio (CI)	65.83	64.92	64.84	66.17	64.90
6	Loan to Asset Ratio (LA)	65.83	64.92	64.84	66.17	64.90

**Table 1.5 Shows the different Ratios of Axis Bank for Bankometer Model**

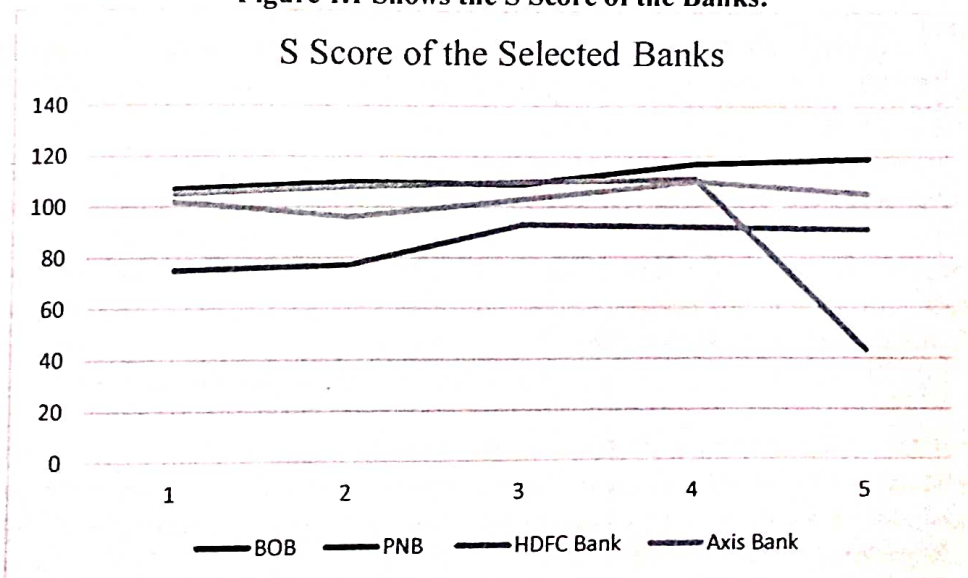
Sr.	Name of the Ratios	2018	2019	2020	2021	2022
1	Capital to Asset Ratio (CA)	9.17	8.34	9.28	10.19	9.8
2	Equity to Asset Ratio (EA)	0.074	0.06	0.061	0.061	0.052
3	Capital Adequacy Ratio (CAR)	16.57	15.84	17.53	19.12	18.54
4	Non-Performing Loan Ratio (NPL)	7.789	6.020	5.290	4.058	3.083
5	Cost to Income Ratio (CI)	63.59	61.77	62.43	62.61	60.22
6	Loan to Asset Ratio (LA)	63.59	61.77	62.43	62.61	60.22

**S Score of the Banks:**

**Table 1.6 shows the S Score of the Selected Banks for the Last Five Years**

Sr.	Name of the Banks	2018	2019	2020	2021	2022
1	BOB	107	110	109	117	119
2	PNB	75	77	93	92	91
3	HDFC Bank	105	108	110	111	111
4	Axis Bank	102	96	103	110	105

**Figure 1.1 Shows the S Score of the Banks:**



**Analysis and Interpretation of Data:**

From the above table we can see that Solvency score of Punjab National Bank is Lowest as compare to other three banks. The Solvency score of PNB Bank is from the year 2018 to 2022 is 75,77,93,92,91 respectively. The S Score of the PNB bank is low in the year 2018 and 2019 and after that bank has improved its S score from the year 2019 onwards. The Solvency score of Bank of Baroda is good and remain constant throughout the last five years from 2018 to 2022. The S score of Axis Bank is having the fluctuating trend as in 2018 the S score is 102 but in 2019 the S score is 96 and again bank achieved its previous score of 103 in the year 2020 and afterwards Axis bank has maintained its S score above 100. The S score of HDFC bank is remain good in all four years starting from 2018 to 2021 but in the year 2022 it is only 43 so HDFC Bank has to improve its S score position.

**CONCLUSION AND SUGGESTION**

The above table 1.6 shows the S scores of the BOB, PNB, HDFC and Axis Bank for the last five years from 2018 to 2022. As per the rule of S Scores if the score is less than 50 then bank is in an insolvent position.

Here the S score the banks have been calculated and from this calculation researcher has found that the S score of HDFC bank for the year 2022 is not good as it is less than standard score of 70 so bank have to focus on improving its financial and Non-performing assets conditions. From the above S score analysis researcher has also found that score pf Bank of Baroda is good as compare to other banks.

**Conflict of Interests**

The authors declare no conflict of interest

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