

PREDICTION OF FINANCIAL HEALTH OF SELECTED YES BANKS LTD USING X-SCORE MODEL

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Abstract:

In recent years, banks have increasingly encountered significant challenges, particularly related to financial irregularities, mismanagement, and fraud. This study aims to evaluate the economic health and financial performance of Yes Bank Ltd. over a ten-year period, from 2013–14 to 2022–23. The analysis is based on secondary data obtained from Capitaline and is conducted using Microsoft Excel and SPSS software. To assess the financial condition of the bank, the study applies the X-score model alongside simple linear regression techniques. The results reveal that while Yes Bank Ltd. remained financially stable during the majority of the observed years, it experienced financial distress in certain periods, which notably influenced the X-score outcomes. These fluctuations highlight vulnerabilities in the bank's financial structure during those years. It is important to note that the study is limited to one bank and a single predictive model. Therefore, future research is encouraged to expand the analysis by including multiple banks or industries and incorporating a variety of predictive tools and models to obtain more generalizable and robust insights.

Keywords: Banking Sector, X-score, Financial Health, Financial Distress, Yes Bank Ltd

INTRODUCTION

Following the COVID-19 pandemic, the financial health of the banking system in India is undergoing an optimistic recovery (Bajpai, N., & Biberman, J., 2020). While challenges such as non-performing assets persist, regulatory reforms and government interventions aim to bolster financial stability. Digital transformation and fintech innovations present opportunities for growth; however, disparities in financial inclusion persist (Anakpo, G. et al., 2023). The Reserve Bank of India's prudent monetary policies and proactive supervision are pivotal in sustaining resilience. Continued vigilance, coupled with strategic initiatives to address vulnerabilities, will be imperative for ensuring the robustness and adaptability of India's banking and financial sector in the evolving economic landscape. Global events and trends also significantly influence the financial health of the banking sector in India (Srivastava, D. A., 2019). The global financial crisis of 2008 had a profound impact on banks worldwide, including in India, leading to increased regulatory scrutiny and a focus on risk management practices. India's banking sector has undergone significant changes over the years, marked by reforms and liberalization efforts. The sector comprises various types of banks, including public sector banks, private sector banks, and foreign banks. Each category faces unique challenges and opportunities, which impact their financial health differently (Chaudhary & Sharma, 2011). The Yes Bank Ltd plays a key role in the Indian financial player as one of the prominent private sector banks. It significantly contributes to the country's economic growth by offering a range of financial services. Yes Bank facilitates capital formation by offering a range of lending products to businesses, individuals, and government entities. Its role in mobilizing savings and channeling them into productive sectors helps drive investment and economic development (Doshi, V., 2013).



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Yes Bank's presence enhances competition in the banking sector, leading to improved services and better interest rates for consumers. The bank's focus on technology and innovation has also contributed to the digitization of financial services, making banking more accessible and convenient for customers across India (Cetorelli, N. 1999). Yes Bank plays a vital role in financial inclusion by extending banking services to unbanked and underbanked regions and populations. It helps bring more people into the formal banking sector, thereby promoting financial literacy and inclusive growth (Kandpal, V., 2023). This study on predicting the financial health of Yes Bank Ltd using the X-Score Model holds significant implications for various stakeholders. Firstly, it provides crucial insights for investors, enabling them to make informed decisions regarding investments in Yes Bank Ltd. By assessing the bank's financial health through a predictive model, investors can better evaluate risks and potential returns. Moreover, for regulators and policymakers, this study provides a framework for effectively monitoring and regulating banks, thereby ensuring financial system stability. Understanding the factors influencing Yes Bank's financial health can aid in implementing targeted interventions to mitigate risks and maintain stability. Furthermore, for Yes Bank Ltd itself, this study serves as a diagnostic tool, identifying areas of strength and weakness in its financial performance. By leveraging the insights gained, the bank can devise strategies to enhance its financial resilience and adaptability in an ever-changing market environment.

Review of Literature. The study examines the factors influencing outsourcing attitudes in the Indian banking sector, revealing that perceived benefits, risks, roadblocks, and criticality have a significant impact on attitudes. Clients value quality factors, such as process improvement and cost transparency, more than cost savings (Jain, R. K., & Natarajan, R., 2011). The Indian banking sector underwent significant changes following economic reforms two decades ago, attracting new customers and players. However, demographic and cultural shifts have created challenges, leading to a growing demand for sophisticated retail banking services (Manikyam, K. R. 2014). The study found that the X-Score scoring function produced equally good results. The computational approaches validated in this study could be applied to other PTP1B inhibitors (Zhang, X. et al. 2009). The study examines the financial distress of four Indonesian shipping companies Using Altman and Zmijewski methods, revealing PT. MBSS is the most stable, while PT. BLT has the worst (Manalu, S. et al. 2017).

Objectives.

- To measure the financial health of Yes Bank Ltd.
- To assess the impact of financial performance ratios on the X-score of Yes Bank Ltd.

METHODS

This quantitative study utilizes secondary data collected from the official websites of Capitoline and Yes Bank, which include various financial statements. The study period is ten years, from 2013-14 to 2022-23. The study utilizes Excel and SPSS for data analysis and hypothesis testing through simple linear regression.

About the Zmijweski X-score. The Zmijewski X-Score, developed by Dr. Christian A. Zmijewski, is a financial distress prediction model used by investors and analysts to assess the probability of a company facing financial distress or bankruptcy. The X-score generates a score that indicates the likelihood of financial distress. A higher X-score suggests a greater probability of distress, while a lower score indicates a healthier financial position (Manalu, S. et al. 2017).

The formula for Zmijweski X-score is:

$$X\text{-Score} = -4.3 - 4.5X_1 + 5.7X_2 - 0.004X_3$$



Where:

$X1 = \text{Net Income} / \text{Total Assets}$

$X2 = \text{Total Liabilities} / \text{Total Assets}$

$X3 = \text{Current Assets} / \text{Current Liabilities}$

If $X > 0$ financial unhealthy

If $X < 0$ financial healthy

RESULT AND DISCUSSION

Table 1. Different Variables of the X-Score Model of Yes Bank Ltd. (Crore in ₹)

Years	Net Income	Total Liabilities	Total Assets	Current Liabilities	Current Assets
2022-23	11,844.22	3,54,786.13	3,66,630.35	19,089.82	52,909.18
2021-22	9,760.32	3,18,220.22	3,27,980.54	15,082.03	36,499.96
2020-21	10,440.30	2,73,542.76	2,83,983.06	13,450.71	31,873.36
2019-20	18,661.72	2,57,826.91	2,76,488.63	16,946.18	33,076.71
2018-19	14,399.18	3,80,826.17	3,95,225.35	17,887.68	22,098.02
2017-18	12,960.89	3,12,445.61	3,25,406.50	11,055.60	14,946.04
2016-17	9,954.06	2,15,059.92	2,25,013.98	11,525.33	12,532.46
2015-16	7,278.87	1,65,263.41	1,72,542.28	8,098.30	9,525.88
2014-15	5,534.30	1,36,170.42	1,41,704.72	7,094.18	9,515.98
2013-14	4,437.84	1,09,015.80	1,13,453.64	6,387.75	6,247.33

Source: Capital Line.

Table 1 shows the all-financial data that are required for measuring the X-score. This data is collected from the Capital Line. The data shows net income, total assets, total liabilities, current assets, and current liabilities as variables for over ten years from 2013-14 to 2022-23.

Table 2. Measured values of the X-score of Yes Bank Ltd.

Years	X1	X2	X3	X-score	Predictions
2022-23	0.011656	0.349148	2.771591	-2.373397	Financial Healthy
2021-22	0.012297	0.400910	2.420096	-2.079827	Financial Healthy
2020-21	0.015515	0.406490	2.369641	-2.062299	Financial Healthy
2019-20	0.034580	0.477750	1.951868	-1.740243	Financial Healthy
2018-19	0.029491	0.779979	1.235377	0.008225	Financial Unhealthy
2017-18	0.029462	0.710239	1.351898	-0.389626	Financial Healthy
2016-17	0.040683	0.878956	1.087384	0.522627	Financial Unhealthy
2015-16	0.035864	0.814273	1.176281	0.175262	Financial Unhealthy
2014-15	0.029116	0.716386	1.341378	-0.352985	Financial Healthy
2013-14	0.039995	0.982482	0.978017	1.116256	Financial Unhealthy

Source: The X-score values were calculated from the annual report of Yes Bank Ltd.

Table 2 reveals that X-scores were -2.373397, -2.079827, -2.062299, -1.740243, -0.389626, and -0.352985 for the years 2022-23, 2021-22, 2020-21, 2019-20, 2017-18, and 2014-15 respectively which are less than 0 indicating that the respected bank was financial healthy in these periods. The X-scores



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were 0.008225, 0.522627, 0.175262, and 1.116256 for the years 2018-19, 2016-17, 2015-16, and 2013-14, respectively, which are greater than 0, indicating that the respective bank was financially unhealthy during these periods.

Table 3. Regression Analysis Between Financial Performance Ratios and X-score of Yes Bank Ltd.

S No.	Ratios	R	R Square	Adjusted R Square	P-Values of Significances	Null Hypothesis
1	Return on Assets (ROA)	0.856	0.733	0.700	0.002	Rejected
2	Debt Ratio	1	1	1	0.000	Rejected
3	Current Ratio	0.968	0.938	0.930	0.000	Rejected

Source: SPSS

Table 3 presents the results of a regression analysis between financial performance ratios and the X-score of Yes Bank Ltd. The table includes the following information for each ratio:

Return on Assets (ROA): The correlation coefficient (R) between the ROA and X-score is 0.856, indicating a strong positive relationship. The R-squared value is 0.733 suggests that the X-score can explain 73.3% of the variability in ROA. The adjusted R-squared value of 0.70, considering the number of predictors in the model, indicates that the X-score explains 70% of the variability in ROA. The p-value is 0.002, which is less than 0.05, indicating that the relationship between ROA and the X-score is statistically significant, and the null hypothesis is rejected.

Debt Ratio: The correlation coefficient (R) between the Debt Ratio and X-score is 1, indicating a perfect positive relationship. The R-squared value is 1 suggests that the X-score can explain 100% of the variability in the Debt Ratio. The adjusted R-squared value is 1 indicates that the X-score explains 100% of the variability in the Debt Ratio. The p-value is 0.000, which is less than 0.05, indicating that the relationship between the Debt Ratio and the X-score is statistically significant, and the null hypothesis is rejected.

Current Ratio: The correlation coefficient (R) between the Current Ratio and X-score is 0.968, indicating a very strong positive relationship. The R-squared value is 0.938 suggests that the X-score can explain 93.8% of the variability in the Current Ratio. The adjusted R-squared value is 0.930, indicating that the X-score explains 93% of the variability in the Current Ratio. The p-value is 0.000, which is less than 0.05, indicating that the relationship between the Current Ratio and the X-score is statistically significant, and the null hypothesis is rejected.

CONCLUSION

This analytical study, utilizing the X-Score Model, provides valuable insights into the financial health of Yes Bank Ltd. The findings indicate that Yes Bank has maintained a healthy financial position during certain periods, as evidenced by X-scores below zero, indicating financial stability. However, there were also periods where the bank faced financial challenges, reflected in X-scores above zero, suggesting potential financial distress. The study's significance lies in its implications for investors, regulators, policymakers, and Yes Bank Ltd itself. Investors can utilize the X-Score Model to make informed decisions about investing in Yes Bank, taking into account the bank's financial health and stability. Regulators and policymakers can utilize this study to effectively monitor and regulate banks, thereby ensuring stability in the financial system. For Yes Bank Ltd, the study serves as a diagnostic tool, identifying areas of strength and weakness in its financial performance, allowing the bank to devise strategies for improvement.



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