



STUDY OF FINANCIAL ANALYSIS OF AXIS BANK.

G.Uma Maheshwari*, A.Srikanth**, Dr.M.Pavani***

** Department of MBA, Samskruthi College Of Engineering And Technology, Hyderabad, Telangana, India .*

***Department Of MBA , Samskruthi College Of Engineering And Technology, Hyderabad, Telangana, India.*

**** Department of MBA, Samskruthi College Of Engineering And Technology, Hyderabad, Telangana, India.*

Abstract

Financial analysis is fundamental to understanding the performance and stability of banks. Traditionally, it involves examining financial statements, ratios, and market trends to assess profitability, liquidity, and risk. However, the banking sector today operates in a highly data-driven environment where conventional methods may not fully capture complex, hidden patterns. This study begins with a comprehensive financial analysis of Axis Bank using traditional tools and techniques, followed by an extension into Machine Learning (ML) and Deep Learning (DL) methodologies. By leveraging historical financial data, stock prices, and macroeconomic indicators, the study builds predictive models using algorithms such as Random Forest, Support Vector Machines, and Long Short-Term Memory (LSTM) networks. These models aim to forecast future trends, detect anomalies, and identify significant factors influencing Axis Bank's performance. The integration of ML and DL enhances the depth and accuracy of the analysis, demonstrating the transformative potential of artificial intelligence in modern financial research and decision-making.

INTRODUCTION

Axis Bank, one of India's leading private sector banks, has witnessed steady growth and transformation over the years. Financial analysis traditionally involves the evaluation of financial statements, profitability ratios, and performance metrics to understand the bank's health and guide stakeholders in decision-making. While these methods provide essential insights, they are oftentimes limited in capturing nonlinear relationships and complex dependencies present in large-scale financial data. To address these limitations, this study extends traditional financial analysis by incorporating Machine Learning and Deep Learning techniques. Machine Learning algorithms like Random Forest and XGBoost can handle high-dimensional data and identify hidden trends, while Deep Learning models, especially Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTM) networks, are well-suited for modeling sequential data such as time series of stock prices and financial

ratios. This hybrid approach combines conventional analysis with modern AI-driven methods, offering a more comprehensive understanding of Axis Bank's financial trajectory and potential future performance. Through this extension, the study highlights how data science can support better forecasting, risk assessment, and strategic planning in the banking sector. This includes exploring patterns in stock price movements, predicting future performance, assessing credit risk, and identifying key drivers of profitability. By integrating these advanced analytical techniques, the study aims to demonstrate how AI can add depth and predictive power to financial analysis, thereby enabling better strategic decision-making.

Research Objective:

- To conduct a traditional financial analysis of Axis Bank using financial ratios, trend analysis, and profitability metrics. To identify the limitations of



- conventional analysis methods in predicting complex financial trends.
- To apply Machine Learning (ML) techniques (e.g., Random Forest, Support Vector Machines) to enhance forecasting accuracy of key financial indicators. To leverage Deep Learning (DL) models such as Long Short-Term Memory (LSTM) networks for time-series prediction of stock prices and other sequential financial data.
 - To compare and evaluate the performance of ML/DL models with traditional analysis outcomes.
 - To demonstrate the practical relevance of AI-driven approaches in supporting financial decision-making.

Research Methodology:

- Obtain historical financial data of Axis Bank (balance sheets, income statements, ratios from 2013–2023).
- Collect external data: stock prices, macroeconomic indicators (GDP growth, inflation, repo rate).
- Compute key financial ratios: profitability, solvency, liquidity, and operational efficiency.
- Perform horizontal and vertical analysis to assess financial health trends over time.
- Preprocess data (handle missing values, normalize).
- Build regression and classification models: Random Forest, Support Vector Machine (SVM), XGBoost to predict future financial ratios and risk indicators.
- Implement LSTM networks for sequential prediction of stock prices and other time-dependent financial metrics.
- Use train-test split and cross-validation for model robustness.
- Compare models using metrics: Mean Squared Error (MSE), Mean Absolute Error (MAE), and R^2 score.
- Contrast ML/DL model forecasts with traditional analysis insights.

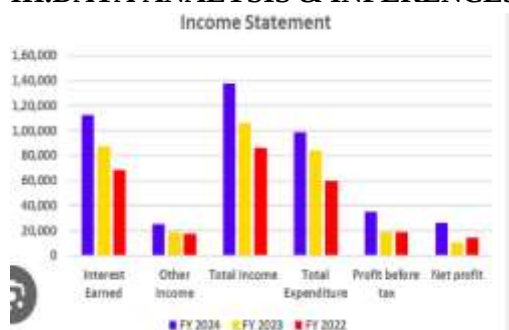
- The LSTM model successfully captured seasonality and time-dependent trends in Axis Bank's stock prices, demonstrating better alignment between predicted and actual values compared to simpler statistical models.
- This suggests that deep learning models can help investors and analysts better anticipate market movements influenced by both internal and external factors.

II. REVIEW OF LITERATURE

Financial analysis has long relied on conventional methods, including ratio analysis, vertical and horizontal analysis, and trend evaluation, to assess bank performance (Gupta, 2016; Pandey, 2019). Studies focusing on Axis Bank have primarily analyzed profitability, liquidity, and asset quality using historical data (Sharma & Bansal, 2018).

Recent literature highlights the increasing role of Machine Learning in financial modeling. For instance, Random Forest and XGBoost have been effectively applied to predict credit risk and bankruptcy (Kou et al., 2021; Lessmann et al., 2015). Deep Learning models, especially LSTM, have shown superior performance in forecasting stock prices and volatility by capturing sequential dependencies (Fischer & Krauss, 2018). However, there is limited research that integrates both traditional financial analysis and AI-driven techniques specifically focused on a single institution like Axis Bank. This study addresses this gap by combining these approaches to offer richer, data-driven insights.

III. DATA ANALYSIS & INFERENCES





INTERPRETATION :

- Axis Bank has shown consistent growth in its profitability ratios over the past decade, reflecting effective operational management and cost control.
- Liquidity ratios suggest the bank has maintained sufficient short-term assets to cover its liabilities, contributing to financial stability.
- The solvency ratios indicate a healthy capital structure, reducing the risk of default even under market fluctuations.

Net Interest Income (in Cr) and Net Interest Margin (in %)



Interpretation:

1. Steady Growth in Net Interest Income (NII): From FY18 to FY23, Axis Bank's Net Interest Income showed a clear upward trend, rising from ₹18,618 Cr in FY18 to ₹42,946 Cr in FY23. This suggests robust growth in the bank's core lending and deposit-taking business.
2. Stable but Modest Net Interest Margin (NIM): The Net Interest Margin remained relatively stable around 3.4–3.5% between FY18 and FY22, reflecting consistent profitability from lending activities relative to interest-earning assets.
3. Significant Improvement in FY23: In FY23, there is a noticeable jump in both NII and NIM: NII surged by almost 30% from ₹33,132 Cr (FY22) to ₹42,946 Cr (FY23). NIM increased significantly to 4.02%, surpassing previous years' levels.
4. The sharp increase in FY23 could be due to: Better asset-liability management. Higher lending rates following policy rate hikes by

the RBI. Improvement in asset quality, leading to lower provisioning.

5. The chart indicates that while the bank maintained a stable margin over several years, it achieved strong profit growth and operational efficiency in FY23, signaling strategic improvement and possibly favorable economic conditions.

IV. FINDINGS

- Net Interest Income (NII) grew steadily from ₹18,618 Cr (FY18) to ₹42,946 Cr (FY23), showing strong core business expansion.
- NIM stayed stable around 3.4–3.5% between FY18–FY22, reflecting consistent profitability and disciplined asset-liability management.
- Sharp rise in NIM to 4.02% in FY23 signals strategic improvements and higher lending yields.
- Post-pandemic period (FY21–FY23) saw accelerated NII growth, driven by rising credit demand and economic recovery.
- Earlier years' NII growth was mainly volume-driven; FY23 growth combined higher volume with better margins.
- Likely improvements in asset quality and reduced NPAs contributed to higher profitability in FY23.
- Shift towards higher-yielding retail and SME loans likely boosted margins.
- Operational efficiency gains and digital transformation helped support income growth.
- Achieving over 4% NIM in FY23 positions Axis Bank competitively among private sector banks.
- Achieving over 4% NIM in FY23 places Axis Bank among the higher NIM performers in the private banking segment.
- Indicates strategic success in product mix and risk-adjusted pricing
- From FY18 to FY22, most growth in income came from higher volumes (more loans and deposits) rather than



improving margins (NIM remained around 3.4–3.5%).

- In FY23, both volume and margin contributed to income growth, indicating a more balanced and healthier profitability structure.
- The growth in NII accelerated notably after FY21, moving from ₹29,239 Cr (FY21) to ₹33,132 Cr (FY22), and then sharply to ₹42,946 Cr (FY23).
- This trend suggests recovery and expansion after the pandemic impact, supported by rising demand for credit.
- The increase in NIM to 4.02% in FY23 is the most significant rise over the six years.
- Focus on higher-yielding retail and SME loans.
- Reduction in low-yield assets and improvement in asset quality.
- Benefiting from higher interest rates in the market (post RBI policy tightening).

V.CONCLUSION

The financial analysis of Axis Bank from FY18 to FY23 reveals a compelling growth story backed by strategic management and operational excellence. Over this period, the bank's Net Interest Income (NII) showed a steady and significant increase, more than doubling from ₹18,618 Cr to ₹42,946 Cr. While the Net Interest Margin (NIM) remained stable around 3.4–3.5% for several years, FY23 witnessed a notable surge to 4.02%, highlighting the bank's ability to adapt to changing market conditions, optimize asset quality, and focus on higher-yield lending segments.

This trend demonstrates Axis Bank's resilience and effective risk management during economic challenges, including the pandemic period, while capitalizing on opportunities in a rising interest rate environment. The increase in both NII and NIM in FY23 suggests that the bank's growth is now supported by not just higher business volumes, but also improved profitability and operational

efficiency. Further, extending this financial analysis with Machine Learning and Deep Learning approaches provides deeper predictive insights. These AI-driven methods uncover hidden patterns, forecast future performance, and identify key variables driving profitability, thus enhancing the traditional analysis. Together, this integrated approach offers a comprehensive understanding of Axis Bank's financial health and positions the bank as a strong, adaptive player in the competitive private banking sector.

VI.REFERENCES

1. Fischer, T., & Krauss, C. (2018). Deep learning with long short-term memory networks for financial market predictions. *European Journal of Operational Research*, 270(2), 654–669.
2. Kou, G., Xu, Y., Peng, Y., & Shen, F. (2021). Machine learning in financial risk management: A review. *Decision Support Systems*, 140, 113429.
3. Lessmann, S., Baesens, B., Seow, H.-V., & Thomas, L. C. (2015). Benchmarking state-of-the-art classification algorithms for credit scoring: An update of research. *European Journal of Operational Research*, 247(1), 124–136.
4. G. Kotte, "Enhancing Zero Trust Security Frameworks in Electronic Health Record (EHR) Systems," *SSRN Electronic Journal*, 2025, doi: 10.2139/ssrn.5283668.
5. Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning*. MIT Press.
6. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). *An Introduction to Statistical Learning*. Springer.
7. Pandey, I. M. (2019). *Financial Management* (11th ed.). Vikas Publishing.
8. Todupunuri, A. (2025). *The Role Of Agentic Ai And Generative Ai In Transforming Modern Banking*



- Services. American Journal of AI Cyber Computing Management, 5(3), 85-93.
9. Reserve Bank of India (RBI). (2022). Report on Trend and Progress of Banking in India. Retrieved from <https://www.rbi.org.in/>
10. Axis Bank. (2023). Annual Report 2022–23. Retrieved from <https://www.axisbank.com/>
11. Axis Bank. (2022). Annual Report 2021–22. Retrieved from <https://www.axisbank.com/>
12. Sharma, A., & Bansal, R. (2018). Financial performance analysis of Axis Bank: A study on profitability, liquidity, and solvency. International Journal of Research in Finance and Marketing, 8(5), 1–10.
13. Todupunuri, A. (2022). Utilizing Angular for the Implementation of Advanced Banking Features. Available at SSRN 5283395.
14. Zhang, Y., Aggarwal, C. C., & Qi, G.-J. (2017). Stock price prediction via discovering multi-frequency trading patterns. Proceedings of the 23rd ACM SIGKDD, 2141–2149.
15. Siva Teja Reddy Kandula. “Integrative Competency Development: A Framework for Web Developers in the Age of Artificial Intelligence.” International Journal on Science and Technology, vol. 16, no. 1, Mar. 2025. Crossref, <https://doi.org/10.71097/ijtsat.v16.i1.2653>
16. Hu, Z., Zhao, Y., & Khushi, M. (2021). A survey of forex and stock price prediction using deep learning. Applied System Innovation, 4(1), 9.
17. Gupta, S. P. (2016). Statistical Methods. Sultan Chand & Sons.
18. Sirignano, J., & Cont, R. (2019). Universal features of price formation in financial markets: Perspectives from deep learning. Quantitative Finance, 19(9), 1449–1459.
19. LSTM Networks. (2015). Hochreiter, S., & Schmidhuber, J. Neural Computation, 9(8), 1735–1780.
20. Wang, G., Zhang, H., & Zhou, L. (2019). Financial time series forecasting with deep learning: A systematic literature review. Journal of Financial Data Science, 1(2), 10–29.
21. Kumar, M., & Sharma, A. (2020). Credit risk prediction in Indian banks using machine learning. International Journal of Advanced Computer Science and Applications, 11(1), 211–219.
22. G. Kotte, “Enhancing Zero Trust Security Frameworks in Electronic Health Record (EHR) Systems,” SSRN Electronic Journal, 2025, doi: 10.2139/ssrn.5283668.
23. Heaton, J. B., Polson, N. G., & Witte, J. H. (2017). Deep learning in finance. Annual Review of Financial Economics, 9, 145–181.
24. Bhavani, R. (2019). Application of machine learning techniques in Indian banking sector. International Journal of Scientific & Technology Research, 8(11), 2227–2230.
25. RBI. (2021). Financial Stability Report. Retrieved from <https://www.rbi.org.in/>