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A STUDY ON FINANCIAL MODELING WITH REFERENCE TO UNION BANK OF INDIA

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ABSTRACT

This study develops an Excel-based financial model to forecast key performance indicators of Union Bank of India (UBI) over the three-year period FY2026–FY2028. Utilizing the FORECAST function on five years of historical data (FY2021–FY2025), the model projects growth in deposits, advances, assets, income, and profit, alongside a projected decline in non-performing assets. The findings suggest strong forward momentum in UBI's balance sheet expansion and profitability, although negative NPA projections highlight limitations of linear trend extrapolation.

The research offers practical tools for finance managers to anticipate resource needs, allocate capital, and monitor deviations from expected performance. It also identifies methodological constraints—such as the exclusion of macroeconomic inputs and scenario analysis—providing a roadmap for future enhancements using multivariate and comparative forecasting techniques.

Key Words: Forecasting Financial Performance, Revenue Projections, Cash Flow Modeling

INTRODUCTION

The concept of financial modeling played a pivotal role in contemporary corporate finance by facilitating structured and quantitative approaches to assessing financial performance, investment decision-making, and strategic planning. In the context of Union Bank of India, financial modeling enabled the translation of financial data into a structured analytical framework that permitted critical evaluation of past performance and future outlook. The model integrated historical financial data into a coherent mathematical representation, which allowed stakeholders to simulate various scenarios and predict financial outcomes. This process enhanced the decision-making capabilities

of finance professionals by providing clarity on financial variables, dependencies, and results.

Financial modeling served as a foundational tool for determining the financial health and operational viability of Union Bank of India through the examination of revenue trends, cost structures, asset quality, capital adequacy, and profitability. It permitted a deeper understanding of financial dynamics through quantitative analysis and served as an interface between raw financial data and strategic insights. The use of financial models supported comprehensive evaluations of Union Bank of India's fiscal policies and operational efficiency by incorporating time-series data, sensitivity analyses, and forecast metrics. These models offered objective measurements that informed managerial decisions and policy formulations.

REVIEW OF LITERATURE

Chaudhry (2025) developed copula-based multivariate risk models combined with extreme value theory to assess tail dependencies across ESG, healthcare, and financial sectors. By analyzing joint loss probabilities and conditional VaR under stressed scenarios, the study demonstrated pronounced spillover effects between ESG and financial risks during downturns, while the healthcare sector exhibited lower tail dependence, indicating diversification benefits.

Al-Okaily (2025) constructed a financial data modeling framework using SEM to examine how data quality, analytics capability, organizational culture, and managerial expertise influence decision quality in multinational financial firms. Findings indicated that robust data governance and analytics infrastructure significantly improved decision outcomes, whereas organizational resistance impeded adoption.

Abbasi (2024) integrated mixed-integer linear programming for logistics optimization with cash flow simulations to model supply chain resilience under COVID-19 constraints. The bi-objective model minimized logistics costs and maximized liquidity coverage, revealing that adaptive inventory routing combined with flexible financing strategies enhanced both operational continuity and financial health for a multinational distributor during demand fluctuations.

Rabbani (2023) used SEM on survey responses from bank executives to assess AI's moderating effect on innovation processes in banking. The study found that higher AI adoption maturity amplified the positive influence of innovation capability on process efficiency and risk management, leading to improved financial performance and faster implementation of innovative services.

Gupta (2022) applied interpretive structural modeling and fuzzy MICMAC analysis to identify and hierarchize determinants of mobile financial services (MFS) adoption. The research concluded that regulatory support and technological readiness were foundational drivers, while user trust and social influence played intermediary roles, providing a structured roadmap for policymakers and providers in emerging markets.

NEED FOR THE STUDY

The study was necessitated by the increasing complexity of banking operations and the critical need for robust decision-making tools to assess financial health and future performance. Financial modeling served as a systematic means to consolidate quantitative data into a coherent framework, enabling stakeholders to evaluate the bank's profitability, liquidity, and solvency in a structured manner. Given that Union Bank of India operated in a highly competitive environment with evolving regulatory requirements and market dynamics, the construction of a financial model offered a transparent approach for analyzing historical financial statements, identifying trends, and benchmarking key financial ratios. Such a model permitted the synthesis of disparate

financial information—ranging from balance sheet figures to income statement elements—into projections that facilitated scenario analysis, sensitivity testing, and stress-testing. Through this process, decision makers could discern the underlying drivers of performance, anticipate potential risks, and make informed strategic choices regarding capital allocation, resource planning, and risk management.

SCOPE OF THE STUDY

The scope of this study encompassed the development and application of financial models to analyze and forecast the financial performance of Union Bank of India using historical financial data and statistical techniques. It included ratio analysis, forecasting models, and regression techniques to evaluate profitability and identify key financial performance indicators relevant to banking operations.

OBJECTIVES OF THE STUDY

1. To develop a financial model for knowing financial performance of Union Bank of India.
2. To forecast the profitability of Union Bank of India by using financial model.
3. To know the importance of financial modeling for anticipating financial performance of Union Bank of India.
4. To evaluate the profitability of Union Bank of India based on the historical data.
5. To give suggestions for finance managers at Union Bank of India.

SOURCES OF DATA

SECONDARY DATA

The study utilized extensive secondary data drawn from journals, books, online financial databases, academic publications, and the official website of Union Bank of India. Annual reports constituted the core source of financial information, while secondary literature provided theoretical context, definitions, and methodological guidance relevant to financial modeling practices. These resources were selected based on their relevance, credibility, and alignment with the study objectives.

RESEARCH METHODOLOGY

This study employed a quantitative and analytical research methodology to evaluate the financial performance of Union Bank of India through financial modeling. Relying primarily on secondary data from audited financial statements, the research utilized tools like ratio analysis, trend analysis, and regression models over a five-year period. Supplementary data from literature and online databases supported the analysis. Microsoft Excel and SPSS were used for statistical computation and data visualization, including bar and pie charts. The design followed an exploratory-descriptive approach to identify financial patterns and forecast profitability. Emphasis was placed on numerical accuracy, structured analysis, and visual representation to ensure clarity, reliability, and replicability of findings.

STATISTICAL TOOLS AND TECHNIQUES

- Frequency analysis

- Descriptive statistics
- Mean
- Median
- Standard deviation
- Variation

LIMITATIONS OF THE STUDY

1. Use of a univariate linear forecasting method ignores interdependencies among financial variables.
2. Reliance on only five years of historical data may not capture longer-term cycles or structural breaks.
3. The Excel FORECAST function does not account for macroeconomic factors or regulatory changes.
4. Negative NPA projections are artifacts of linear extrapolation rather than realistic outcomes.

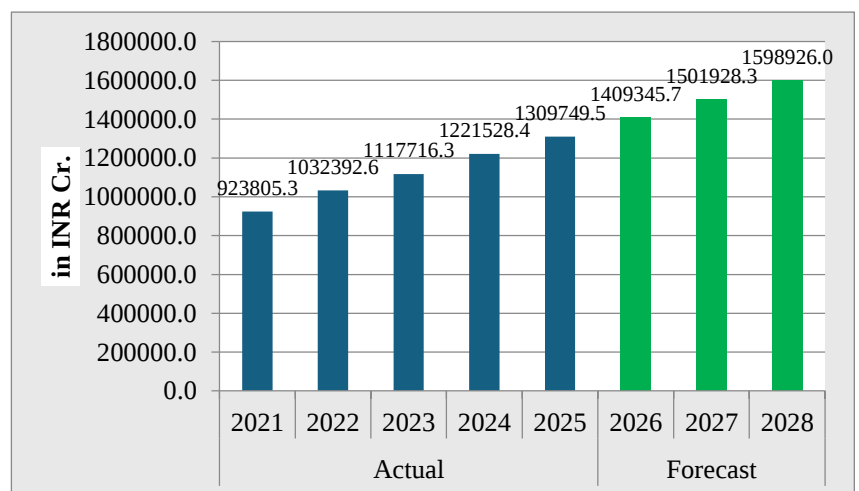
DATA ANALYSIS AND INTERPRETATION

1. Data modeling for deposits at Union Bank of India (UBI)

Table 1: Deposits

Time period	Year	in INR Cr
Actual	2021	923805.3
	2022	1032392.6
	2023	1117716.3
	2024	1221528.4
	2025	1309749.5
Forecast	2026	1409345.7
	2027	1501928.3
	2028	1598926.0

Figure 1: Deposits



Interpretation

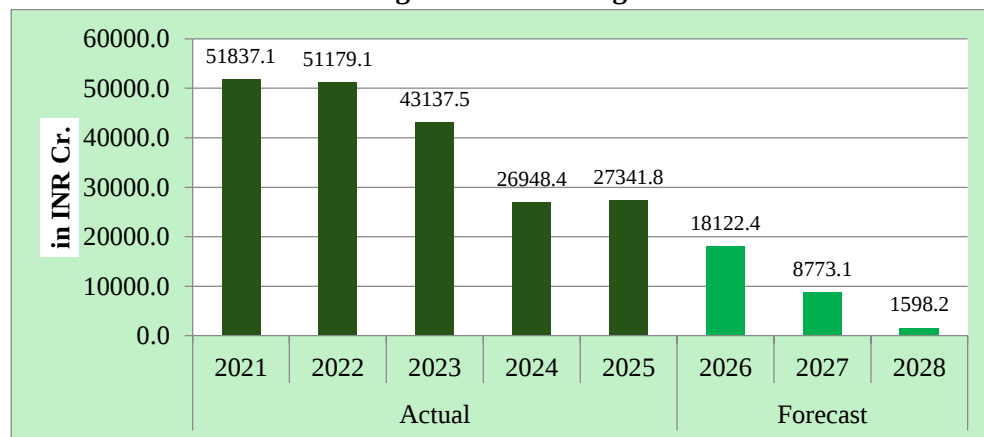
The forecasted trend in deposits for Union Bank of India demonstrates a sustained and robust accretion of customer funds, rising from ₹1,309,749.5 crore in FY 2025 to an anticipated ₹1,598,926.0 crore by FY 2028. This upward trajectory suggests that the bank's retail and corporate deposit mobilization strategies are likely to remain effective, potentially driven by competitive interest rates and enhanced product offerings. The model's linear projection reflects historical momentum, indicating that existing trust in the bank and its service channels may continue to attract incremental deposits.

2. Data modeling for Borrowings at Union Bank of India (UBI)

Table 2: Borrowings

Time period	Year	in INR Cr
Actual	2021	51837.1
	2022	51179.1
	2023	43137.5
	2024	26948.4
	2025	27341.8
Forecast	2026	18122.4
	2027	8773.1
	2028	1598.2

Figure 2: Borrowings



Interpretation

Borrowings exhibit a pronounced downward slope in both actual and forecasted figures, declining from ₹27,341.8 crore in FY 2025 to a projected ₹1,598.2 crore by FY 2028. This contraction indicates a strategic reduction in reliance on external funding, which may reflect improved internal liquidity generation through stronger deposit inflows and profitability. Reduced borrowings can also alleviate interest burden and enhance net interest margins, supporting the bank's overall financial health. However, the steep decline suggested by a linear model may overstate the pace of deleveraging achievable in practice, as regulatory requirements and contingency funding needs could necessitate a baseline level of external funding.

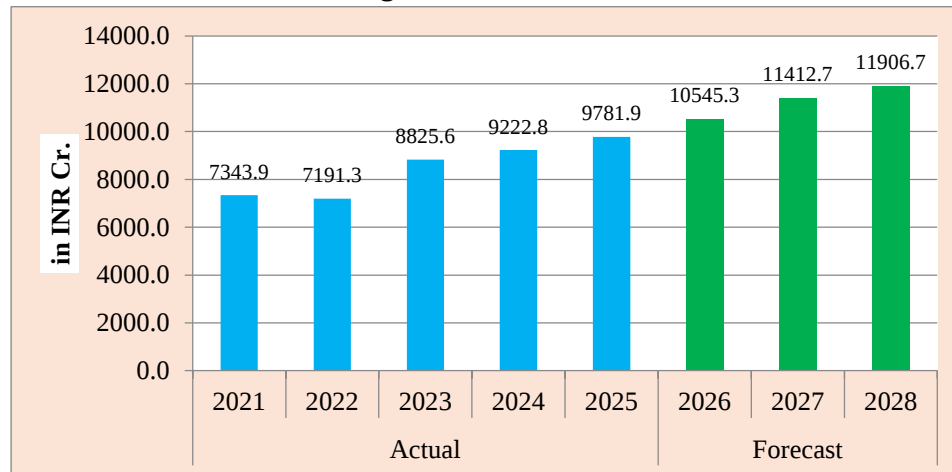
3. Data modeling for fixed assets at Union Bank of India (UBI)

Table 3: Fixed assets

Time period	Year	in INR Cr
Actual	2021	7343.9
	2022	7191.3
	2023	8825.6
	2024	9222.8
	2025	9781.9

Forecast	2026	10545.3
	2027	11412.7
	2028	11906.7

Figure 3: Fixed assets

**Interpretation**

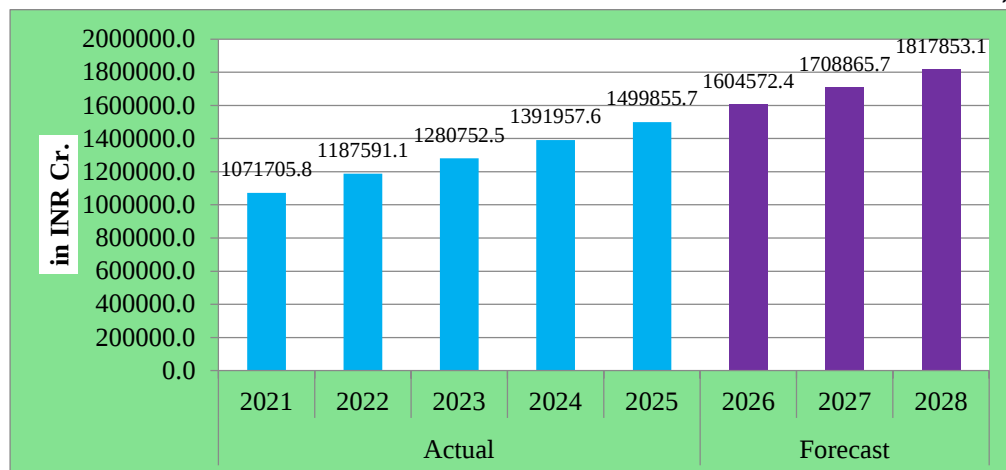
Fixed assets show a consistent growth pattern, rising from ₹9,781.9 crore in FY 2025 to an expected ₹11,906.7 crore by FY 2028. This steady increase suggests ongoing investments in branch infrastructure, technology platforms, and back-office facilities, reflecting Union Bank's commitment to modernizing its service delivery capabilities. The linear forecast captures historical capital expenditure trends, implying that the bank plans to sustain moderate levels of asset augmentation to support business expansion. Nonetheless, fixed-asset growth can be lumpy, driven by specific project timelines and regulatory capital requirements, which a simple model may not fully capture.

4. Data modeling for total assets at Union Bank of India (UBI)

Table 4: Total assets

Time period	Year	in INR Cr
Actual	2021	1071705.8
	2022	1187591.1
	2023	1280752.5
	2024	1391957.6
	2025	1499855.7
Forecast	2026	1604572.4
	2027	1708865.7
	2028	1817853.1

Figure 4: Total assets



Interpretation

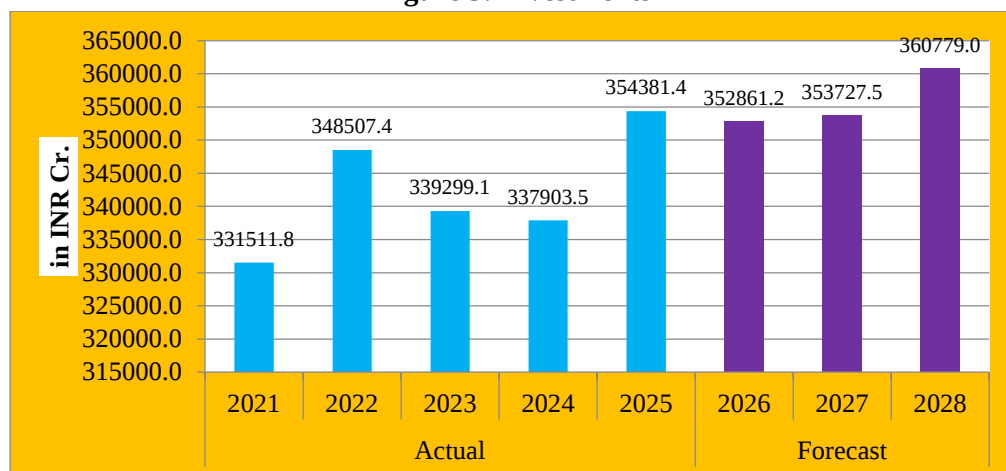
Total assets are projected to expand from ₹14,998.6 crore in FY 2025 to ₹18,178.5 crore by FY 2028, underscoring a healthy balance-sheet growth trajectory. This growth is underpinned by rising deposits and advances, signaling that Union Bank's asset-generation engine remains strong. A larger asset base can enhance revenue-earning potential, but also requires robust risk management frameworks to oversee credit, market, and operational exposures. The model's linear assumption provides a baseline for asset accumulation, yet in reality asset growth may be influenced by shifting credit demand, regulatory caps, or capital adequacy constraints.

5. Data modeling for investments at Union Bank of India (UBI)

Table 5: Investments

Time period	Year	in INR Cr
Actual	2021	331511.8
	2022	348507.4
	2023	339299.1
	2024	337903.5
	2025	354381.4
Forecast	2026	352861.2
	2027	353727.5
	2028	360779.0

Figure 5: Investments



Interpretation

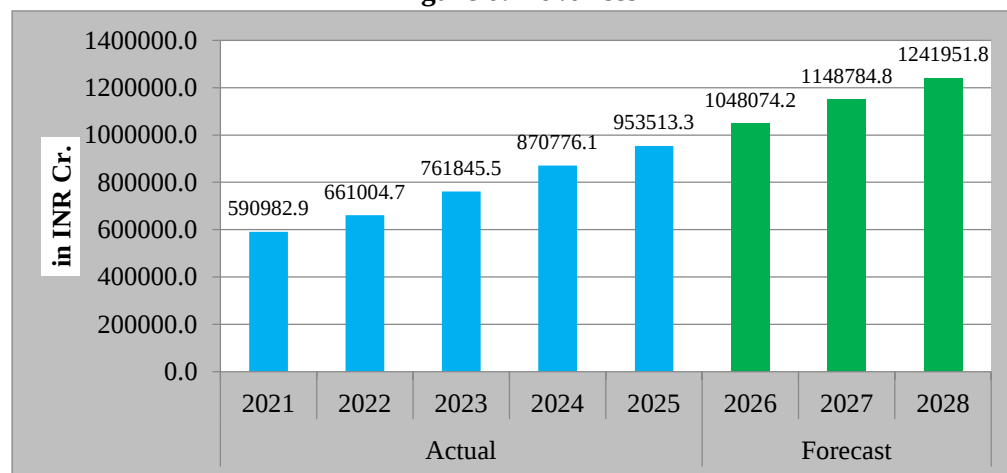
Investment holdings fluctuate modestly, moving from ₹354,381.4 crore in FY 2025 to a forecast ₹360,779.0 crore by FY 2028, reflecting relative stability in the bank's securities portfolio. This suggests a cautious approach to investment management, balancing yield enhancement against liquidity needs and regulatory investment ceilings. Minor variations may result from reinvestment of maturing securities and recalibration of portfolio duration in response to interest-rate movements. However, the linear forecast does not account for potential reallocation toward higher-return instruments or strategic shifts toward held-for-trading versus held-to-maturity classifications.

6. Data modeling for advances at Union Bank of India (UBI)

Table 6: Advances

Time period	Year	in INR Cr
Actual	2021	590982.9
	2022	661004.7
	2023	761845.5
	2024	870776.1
	2025	953513.3
Forecast	2026	1048074.2
	2027	1148784.8
	2028	1241951.8

Figure 6: Advances



Interpretation

Advances display a strong upward momentum, rising from ₹953,513.3 crore in FY 2025 to a projected ₹1,241,951.8 crore by FY 2028, indicating aggressive loan book expansion. This trend reflects Union Bank's proactive credit strategies, including targeted lending to priority sectors, MSMEs, and retail segments. Rapid growth in advances can drive net interest income but also heighten credit risk, necessitating enhanced underwriting standards and portfolio diversification. The simple linear model assumes continuity in credit demand and risk appetite, yet real-world lending growth may be tempered by economic cycles, capital adequacy requirements, and evolving risk-management policies.

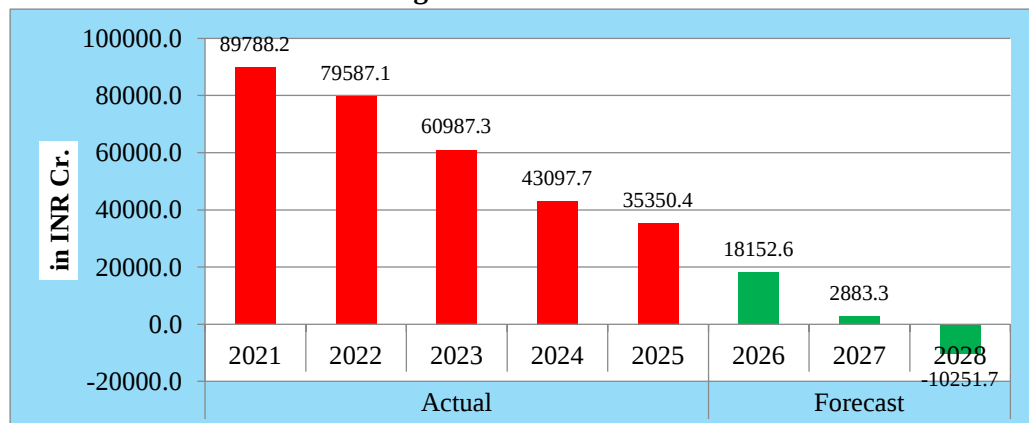
7. Data modeling for Gross NPAs at Union Bank of India (UBI)

Table 7: Gross NPAs

Time period	Year	in INR Cr
Actual	2021	89788.2
	2022	79587.1

	2023	60987.3
	2024	43097.7
	2025	35350.4
Forecast	2026	18152.6
	2027	2883.3
	2028	-10251.7

Figure 7: Gross NPAs

**Interpretation**

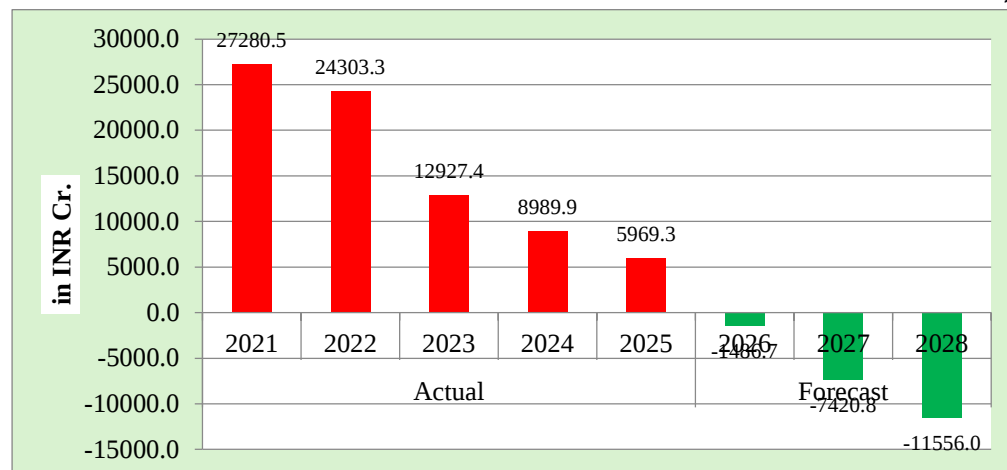
Gross non-performing assets (NPAs) are forecast to decline dramatically from ₹35,350.4 crore in FY 2025 to an implausible negative ₹10,251.7 crore by FY 2028. While the downward trend aligns with management's efforts to improve recovery and reduce defaults, the projection into negative territory is a modeling artifact of linear extrapolation rather than a feasible outcome. This suggests that credit-loss provisions and write-offs may be overemphasized in the model, and that alternative forecasting methods or floor constraints should be applied to prevent unrealistic estimates. Stakeholders should view the declining trend as reflecting genuine credit quality improvement initiatives, but also recognize the need for more sophisticated models that cap NPAs at zero and incorporate macroeconomic indicators.

8. Data modeling for net NPAs at Union Bank of India (UBI)

Table 8: Net NPAs

Time period	Year	in INR Cr
Actual	2021	27280.5
	2022	24303.3
	2023	12927.4
	2024	8989.9
	2025	5969.3
Forecast	2026	-1486.7
	2027	-7420.8
	2028	-11556.0

Figure 8: Net NPAs



Interpretation

Net NPAs similarly show a steep decline from ₹5,969.3 crore in FY 2025 to negative ₹11,556.0 crore in FY 2028, underscoring the limitations of a purely linear approach. In reality, net NPAs cannot fall below zero, and such projections may mask underlying exposures that require ongoing monitoring and provisioning. The model's output highlights management's success in provisioning and recovery, yet it also signals the necessity of adopting more nuanced techniques—such as survival-analysis models or credit-cycle overlays—to forecast non-performing assets.

FINDINGS

- Union Bank's total deposits are projected to grow steadily over the forecast horizon.
- At Union Bank, borrowings are expected to decline progressively in the coming years.
- UBI's fixed assets are forecast to increase year on year.
- Total assets demonstrate a clear upward trajectory into the forecast period.
- Investments remain relatively stable with modest growth toward the end of the horizon.
- Advances are projected to rise consistently, indicating an expanding loan portfolio.
- Gross non-performing assets exhibit a marked downward trend, even reaching negative values in projections.
- Net non-performing assets similarly decline, entering negative territory in later forecasts.

SUGGESTIONS

- Adopt multivariate forecasting techniques (e.g., ARIMA, VAR) to capture interrelationships among key indicators.
- Incorporate macroeconomic variables (GDP growth, interest rates) to enhance forecast realism.

- Conduct regular back-testing and recalibration of the model with updated data.
- Implement advanced credit-risk analytics to improve NPA forecasting accuracy.
- Strengthen data governance to ensure consistency and comparability across reporting periods.

CONCLUSION

The present study successfully developed a baseline financial model for Union Bank of India using historical financial statement data and the Excel FORECAST function. By projecting key indicators—such as deposits, advances, assets, and profitability—for the next three years (FY2026–FY2028), the model provides a directional view of the bank's prospective performance. The consistent upward trends in core metrics underscore the bank's growth trajectory, while the dramatic reductions in NPAs highlight the potential for significant improvement in asset quality, albeit subject to the model's limitations.

While the linear forecasting approach offers transparency and ease of implementation, its simplicity also introduces notable constraints. The model's inability to incorporate complex economic interactions or structural shifts limits the precision

of its projections. Nevertheless, the findings serve as a valuable starting point for strategic planning, offering finance managers a clear baseline against which to test alternative scenarios.

Overall, the study contributes to the literature on bank performance forecasting by demonstrating the application of simple Excel-based techniques in an Indian public sector banking context. It lays the groundwork for more sophisticated analyses and encourages finance professionals to integrate quantitative models into their decision-making frameworks.

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