

Impact of Non-Performing Assets on the Profitability of Public Sector Banks: A Case Study of Punjab National Bank

Ms. Kasturi Khorgade¹, Prof. Prashant Sawarkar²

¹Student, Department of Business Management, SBJITMR, Nagpur

²Assistant Professor, Department of Business Management, SBJITMR, Nagpur

ABSTRACT:

Non-Performing Assets (NPAs) are one of the major factors influencing the profitability and financial performance of banks. This research paper analyzes the impact of NPAs on the profitability of Punjab National Bank during the period 2018–2026. The study is based on secondary data collected from the bank's annual reports and financial statements. Key financial indicators such as Net Profit, Equity, Total Assets, Net NPA Ratio, Return on Assets (ROA) and Return on Equity (ROE) have been used to evaluate the relationship between asset quality and profitability. The findings reveal that higher NPA levels during the initial years adversely affected the bank's profitability, resulting in negative returns and financial losses. However, a consistent reduction in the Net NPA ratio in subsequent years led to a significant improvement in net profit, ROA, and ROE. The study highlights an inverse relationship between NPAs and profitability, indicating that efficient credit risk management and recovery practices contribute positively to financial performance. The research concludes that effective management of NPAs is essential for improving the profitability, operational efficiency, and financial stability of banks.

KEY WORDS: Non Performing Assets, Profitability, Net NPA, ROE, ROA

I. INTRODUCTION

The banking sector plays a significant role in the economic development of a country by mobilizing savings, providing credit, and supporting industrial and commercial growth. In recent years, the performance of banks has increasingly been influenced by the quality of their assets, particularly the level of Non-Performing Assets (NPAs). NPAs arise when borrowers fail to repay interest or principal amounts within the stipulated time, affecting the liquidity, profitability, and overall financial stability of banks. As a result, the management of NPAs has become one of the most important concerns for both public and private sector banks in India.

Among Indian public sector banks, Punjab National Bank has experienced significant fluctuations in profitability and asset quality over the past decade. The bank faced substantial financial stress due to rising NPAs, which adversely affected its earnings and operational efficiency. However, through various recovery measures, improved credit monitoring, and reforms in banking operations, the bank gradually strengthened its financial position in the later years. This transformation makes Punjab National Bank an important case for understanding the relationship between NPAs and profitability in the banking industry.

Profitability indicators such as Return on Assets (ROA), Return on Equity (ROE), Net Profit and Total Assets provide valuable insights into the financial health and operational performance of a bank. At the same time, the Net NPA Ratio reflects the effectiveness of credit risk management and loan recovery practices. A higher NPA ratio generally reduces profitability because banks are required to make provisions for bad loans, thereby lowering earnings and shareholder returns. Therefore, studying the connection between NPAs and profitability is essential for evaluating the efficiency and sustainability of banking institutions.

This research paper focuses on analyzing the impact of NPAs on the profitability of Punjab National Bank during the period 2018–2026. The study uses secondary data obtained from annual reports and financial statements of the bank. By examining trends in Net Profit, Equity, Total Assets, Net NPA Ratio, ROA, and ROE, the research aims to understand how changes in asset quality influence the financial performance of the bank over time.

The study is significant because it helps in understanding the importance of effective NPA management in improving profitability and maintaining financial stability. The findings may be useful for banking professionals, policymakers, researchers, investors, and management students who seek to understand the practical relationship between asset quality and banking performance in the Indian banking sector.

II. LITERATURE REVIEW

Sharma and Kumar (2023) analyzed the financial performance and asset quality of Punjab National Bank specifically, focusing on the immediate operational timeline following its mega-merger with Oriental Bank of Commerce and United Bank of India in 2020. Using pre- and post-merger accounting ratios, the authors assessed whether the consolidation achieved its targeted economies of scale. Their study reveals that while the immediate post-merger years brought severe asset classification stress and provisioning friction, the consolidation ultimately laid a robust foundation for a cleaner balance sheet. The research highlights that the structural transition enabled better centralized risk management and a more aggressive write-off framework, priming the bank for long-term recovery.

Jain and Sharma (2022) analyzed the specific tracking and deployment of funds in public sector banking. They noted that the continuous deterioration of asset quality in banks like PNB requires a rigid transition toward advanced risk evaluation systems rather than basic credit appraisals, as traditional methods fail to capture modern corporate default warning signs.

Sarkar and Das (2021) conducted an empirical investigation into Non-Performing Asset (NPA) management and its direct consequences on the profitability of Indian public sector banks. Employing ratio analysis and panel data regression, the authors examined how rising defaults depress earnings quality. Their findings reveal that higher NPA levels damage commercial banks in two distinct ways: by severely cutting off active interest income streams and by locking up critical capital in mandatory credit provisioning. The study concludes that aggressive asset quality restoration is the primary prerequisite for improving any public sector bank's net interest margins and structural stability.

Kumar Das and Utpal (2021) deployed a Random Effects econometric model incorporating macroeconomic variables (like GDP growth and inflation) alongside bank-specific data. Their findings conclusively proved that an increase in Gross NPAs causes a substantial dip in the Return on Assets (ROA) for Indian commercial banks due to mandatory provisioning norms.

Sharma (2020) utilized correlation and regression analysis over a 13-year period to assess the financial health of leading commercial banks, including SBI and PNB. The empirical findings demonstrated a highly significant negative correlation between NPAs and core profitability metrics. The study concluded that ballooning NPAs severely impair a bank's solvency and liquidity positions, leaving them vulnerable during economic downturns.

Banerjee and Mitra (2018) examined the operational challenges of scheduled commercial banks and noted that escalating NPAs act as a direct roadblock to liquidity management. They argued that because funds are locked up in non-earning assets, a high NPA volume disrupts the cyclical rotation of credit, slowing down both bank profitability and broader economic progress.

Prakash (2014) conducted a comparative analysis of asset quality between public and private sector banks in India. The study revealed that a rising trend in NPAs directly drains a bank's capital reserves and weakens its overall financial health. The researcher emphasized that Public Sector Banks (PSBs) require a more proactive, well-structured NPA prevention policy rather than relying solely on post-default recovery mechanisms.

Bhandari (2016) evaluated the specific impact of asset quality on the financial performance of Punjab National Bank (PNB). The study revealed that aggressive credit expansion without stringent risk appraisal led to a disproportionate rise in Net NPAs. The researcher concluded that this surge in bad loans severely eroded PNB's net profit margins due to the combined effect of halted interest income and heavy regulatory provisioning.

PROBLEM STATEMENT

While Punjab National Bank's asset quality has been heavily scrutinized, existing academic literature suffers from a severe chronological blind spot. The majority of empirical studies rely on datasets that cut off around or before 2020, completely missing the turbulent financial cycle that followed. This leaves a critical gap regarding how PNB navigated the pandemic's economic shocks, managed its massive multi-bank merger, and executed its subsequent recovery phase. Relying on these outdated, pre-2020 benchmarks risks drawing obsolete conclusions about the bank's fiscal health. By examining a comprehensive nine-year window from 2018 to 2026, this study bridges this gap. It captures the entire trajectory from PNB's peak NPA crisis through its modern restructuring, providing a much-needed, updated analysis of how contemporary asset quality directly dictates the bank's current financial performance.

III. OBJECTIVES OF STUDY

- To analyze the overall financial performance of Punjab National Bank
- To study the trend and level of Non-Performing Assets (NPAs) of PNB.
- To examine the impact of NPAs on profitability of PNB.

IV. HYPOTHESIS

Null Hypothesis (H0): There is no statistically significant relationship between Net Non-Performing Assets (NPAs) and the financial profitability (measured by ROA and ROE) of Punjab National Bank.

Alternative Hypothesis (H1): There is a statistically significant relationship between Net Non-Performing Assets (NPAs) and the financial profitability (measured by ROA and ROE) of Punjab National Bank.

V. RESEARCH METHODOLOGY

This study primarily rely on secondary data sources. These include information gathered from the internet, official websites of the bank under scrutiny, their balance sheets, annual reports, as well as press releases. Fundamental tools are used to analyze the data of Punjab National Bank.

SCOPE OF STUDY

The scope of this research is limited entirely to Punjab National Bank, intentionally excluding comparative data from other institutions. Chronologically, the evaluation is tightly bound to PNB's financial performance and asset quality between the fiscal years 2018 and 2026.

VI. DATA ANALYSIS

Table 1: Trend Analysis of Net Profit, Equity, Total Assets, Net NPA Ratio, ROA and ROE

Year	Net Profit (Cr.)	Equity (Cr.)	Total Assets (Cr.)	Net NPA Ratio (%)	ROA (%)	ROE (%)
2018	-12113.4	41517	777528	11.24%	-1.56%	-29.18%
2019	-9570.1	46084	790120	6.56%	-1.21%	-20.77%
2020	438.5	63876	851457	5.78%	0.05%	0.69%
2021	2562.0	92534	1279725	4.73%	0.20%	2.77%
2022	3860.7	97582	1339301	4.80%	0.29%	3.96%
2023	3348.5	102881	1493649	2.72%	0.22%	3.25%
2024	9107.2	110387	1598636	0.73%	0.57%	8.25%
2025	18480.3	133138	1857544	0.40%	0.99%	13.88%
2026	18392.7	149972	2033331	0.29%	0.90%	12.26%

Source: PNB Financial Reports

Table 1 presents a year-wise analysis of key financial and profitability indicators, including Net Profit, Equity, Total Assets, Net NPA Ratio, Return on Assets (ROA) and Return on Equity (ROE), to examine the relationship between Non-Performing Assets (NPAs) and profitability performance during the period 2018–2026.

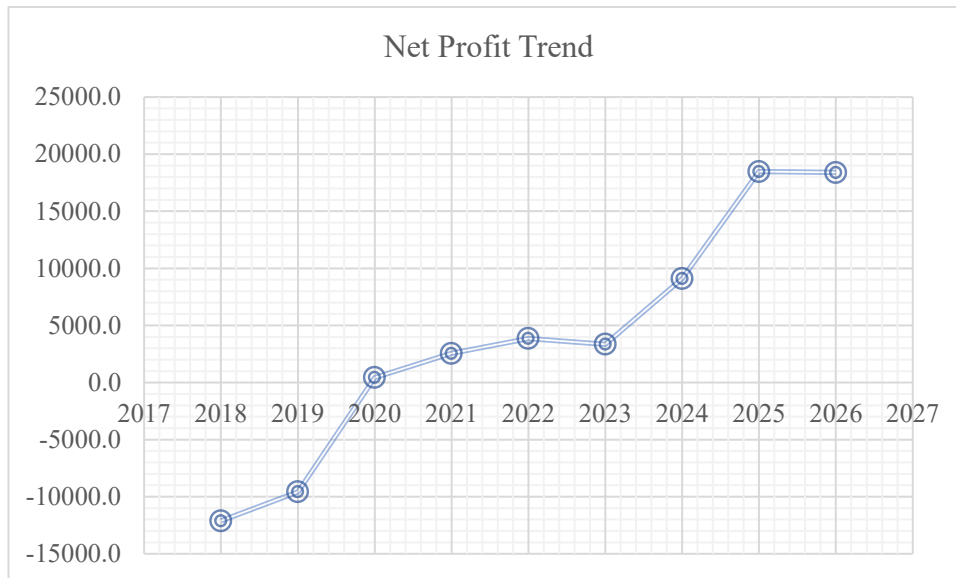


Fig 1: Net Profit Trend

In Figure 1, Net Profit Trend shows that the Punjab National Bank hit a rock bottom with a massive loss of Rs.12,113 crore in 2018. This was caused by the aggressive recognition of bad loans (NPAs) and the heavy provisioning required to cover them. In 2020, PNB broke its losing streak to post a modest profit of ₹438.5 crore. Over the next three years, despite a mega-merger and pandemic disruptions, profits stabilized and grew into the ₹3,000 crore range.

Profits skyrocketed in 2024 (₹9,107.2 crore) and peaked in 2025 at an unprecedented ₹18,480.3 crore. The slight leveling off in 2026 (₹18,392.7 crore) shows that the bank has officially shed its toxic legacy debt and entered a mature phase of highly sustainable earnings.

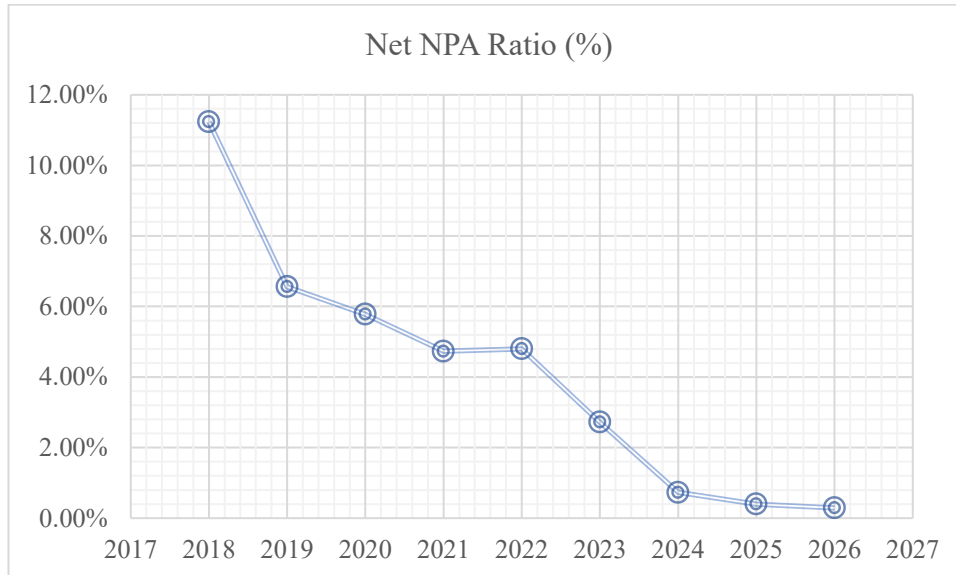


Fig 2: Net NPA Ratio Trend

As shown in the Figure 2, Punjab National Bank's Net NPA ratio went through a massive, steady decline over these nine years, signaling a huge improvement in asset quality. In 2018, the bank was under severe stress with a dangerously high bad loan ratio of 11.24%. Through aggressive clean-up strategies and strict loan monitoring, PNB steadily cut this number down to 5.78% by 2020, and further down to 2.72% in 2023. The most impressive recovery happened between 2024 and 2026, where the ratio completely collapsed well below the safe 1% mark, bottoming out at just 0.29% in 2026. This sharp drop in bad loans is the exact reason why PNB's net profits skyrocketed during the same period; by freeing its balance sheet from toxic debt, the bank no longer had to lock away massive funds for loan losses, allowing its core revenues to flow directly into net profits.

Correlation Matrix:

Table 2: Correlation Matrix between Net NPA and Profitability Metrics (ROA and ROE)

Variables	Net NPA	ROA	ROE
Net NPA	1	-	-
ROA	-0.918	1	-
ROE	-0.914	0.897	1

This correlation matrix shows how Punjab National Bank's bad loans (Net NPAs) connect to its main profitability measures: Return on Assets (ROA) and Return on Equity (ROE).

Net NPA and ROA (-0.918): There is a very strong negative relationship between Net NPAs and Return on Assets. The value of -0.918 means that as bad loans increase, the bank's asset profitability drops drastically. This happens because non-performing assets stop bringing in interest income, while the bank is forced to set aside extra money to cover those bad debts.

Net NPA and ROE (-0.914): Similarly, Net NPAs show a very strong negative connection with Return on Equity at -0.914. This proves that high levels of bad loans directly hurt the returns generated for the bank's shareholders, severely weakening equity performance.

Regression Analysis:

Table 3: Regression Results (Impact of Net NPA on ROA and ROE)

Dependent Variable	Beta Coefficient (β)	t-Value	p-Value	R-Square (R^2)	Adjusted R^2	Model Significance (F)
ROA	-0.2257	-6.1166	0.0004	0.8424	0.8199	0.0005
ROE	-3.7569	-5.9726	0.0006	0.836	0.8125	0.0006

Table 3 evaluates how much Punjab National Bank's bad loans (Net NPAs) statistically drive its two primary profitability indicators: Return on Assets (ROA) and Return on Equity (ROE).

1. Impact of Net NPA on ROA

- Explanatory Power ($R^2 = 0.8424$):** The R-Square value indicates that 84.24% of the variance in PNB's ROA is directly explained by changes in its Net NPAs. The Adjusted R^2 (0.8199) confirms this model is highly reliable even with a smaller sample size ($N=9$).
- Direction and Magnitude ($\beta = -0.2257$):** The negative Beta coefficient proves an inverse relationship. Specifically, for every 1% increase in Net NPAs, PNB's ROA drops by approximately 0.23%.
- Statistical Significance ($t = -6.1166$, $p = 0.0004$):** Because the p-value (0.0004) is well below the standard 0.05 threshold, the negative impact of bad loans on asset profitability is highly significant and not a result of random chance. The overall model significance ($F = 0.0005$) further validates this setup.

2. Impact of Net NPA on ROE

- Explanatory Power ($R^2 = 0.8360$):** Net NPAs account for 83.60% of the fluctuations in PNB's Return on Equity, leaving only about 16.4% to be influenced by external market factors.
- Direction and Magnitude ($\beta = -3.7569$):** The impact on equity is much steeper. The Beta value shows that a 1% increase in Net NPAs triggers a sharp 3.76% decrease in ROE, indicating that bad loans aggressively damage shareholder returns.
- Statistical Significance ($t = -5.9726$, $p = 0.0006$):** A p-value of 0.0006 establishes that Net NPAs are a rock-solid, statistically sound predictor of equity degradation for the bank.

HYPOTHESIS TESTING:

The study tested the hypothesis regarding the relationship between asset quality and the financial profitability of Punjab National Bank. The findings from the regression analysis reveal exceptionally low p-values of 0.0004 for the ROA model and 0.0006 for the ROE model. This indicates that changes in Net Non-Performing Assets (NPAs) have a highly

significant, direct impact on both asset and equity returns, meaning that the bank's profitability is deeply dependent on its control over bad loans.

Therefore, the null hypothesis stating that there is no significant relationship between Net NPAs and bank profitability is rejected, while the alternative hypothesis is accepted. The study concludes that asset quality significantly affects the financial performance of Punjab National Bank, proving that aggressively lowering the Net NPA ratio was the primary factor that positively influenced the bank's massive profit turnaround.

VII. CONCLUSION

The empirical evaluation of Punjab National Bank (PNB) from 2018 to 2026 confirms that asset quality is the single most critical determinant of the institution's financial performance. Over the investigated nine-year timeline, the bank underwent a major structural turnaround, transitioning from a severe net loss of ₹12,113.4 crore in 2018 to a resilient, high-volume profit phase stabilizing above ₹18,300 crore by 2026. The statistical data demonstrates that this earnings recovery was directly achieved by clearing toxic legacy debt and optimizing credit risk frameworks.

The correlation analysis establishes an incredibly strong, inverse relationship between asset degradation and profitability metrics, yielding coefficients of -0.918 with Return on Assets (ROA) and -0.914 with Return on Equity (ROE). This tight negative correlation proves that any accumulation of non-performing assets acts as an immediate drain on operational earnings, systematically choking off interest income channels while forcing mandatory capital allocations toward provisioning.

Furthermore, the regression models validate the overwhelming impact of credit risk, showing that Net NPAs alone explain 84.24% of the variance in ROA ($R^2 = 0.8424$) and 83.60% of the variance in ROE ($R^2 = 0.8360$). Both models demonstrate high statistical significance ($p < 0.001$), confirming that asset quality is a dominant, reliable predictor of the bank's fiscal health rather than a product of random market fluctuations.

The empirical evidence also reveals that equity returns are exceptionally vulnerable to credit defaults; the Net NPA beta coefficient for ROE is remarkably steep at -3.7569 , compared to -0.2257 for ROA. This indicates that while a 1% increase in bad loans reduces asset efficiency marginally, it aggressively erodes shareholder value by 3.76%. Ultimately, the explosive profit growth observed in the 2024–2026 fiscal window mathematically proves that reducing the Net NPA load directly unblocks trapped capital reserves, allowing core banking operations to convert efficiently into sustainable bottom-line revenue.

VIII. FUTURE SCOPE

While this study offers an updated look at Punjab National Bank's structural turnaround up to 2026, it leaves open several key areas for future research. First, while the nine-year dataset captures the immediate operational stabilization following the 2020 mega-merger, future studies should focus on long-term structural alignment. Specifically, researchers can analyze whether the asset quality and cost-to-income synergies observed during this recovery phase can be sustained over a longer, ten-to-fifteen-year horizon. Second, given that Net NPAs were found to explain over 83% of the variations in both ROA and ROE, future research should integrate specific macro-institutional variables—such as shifting Reserve Bank of India (RBI) monetary policy rates, inflation shocks, or sector-specific credit defaults in infrastructure and retail lending—to build more complex, multi-variable forecasting models. Finally, future research could utilize the CAMEL framework to contrast PNB's performance against private sector competitors, exploring how aggressive digital transformations, automated credit risk assessments, and artificial intelligence help prevent future loan defaults across the wider Indian banking industry.

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