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A STUDY ON NON-PERFORMING ASSETS IN BANKS AND ITS IMPACT ON THE PERFORMANCE OF THE BANKING SECTOR

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ABSTRACT
The Indian banking sector plays a crucial role in advancing the nation's socio-economic development by offering credit facilities to diverse sectors in need of financial assistance, including agriculture, industry, housing, and personal finance. This credit extension promotes growth but also exposes banks to credit risk, potentially leading to the emergence of Non-Performing Assets (NPAs). Non-Performing Assets (NPAs) denote loans that no longer produce income, presenting considerable difficulties for a bank's liquidity, profitability, and overall financial stability. Recently, the banking sector has demonstrated increased prudence in lending owing to the rising incidence of non-performing assets (NPAs). This development highlights the necessity for a comprehensive understanding of NPAs and their impact on the financial stability of banks. The existence of NPAs requires increased provisioning for potential loan losses, negatively affecting a bank's margins and limiting its capacity to offer additional credit. This issue endangers both the quality of a bank's asset portfolio and its long-term viability. The empirical investigation into the effects of credit risk on commercial banks in India reveals critical insights essential for the stability and growth of the banking sector. The study utilizes a comprehensive mixed-method approach, combining quantitative analysis and qualitative insights to explore the complex dynamics of credit risk

Keywords*: Non-Performing Assets (NPAs), Indian Banking Sector, Credit Risk, Return on Equity (ROE), Earnings Per Share (EPS), Loan Recovery Mechanisms, Bank Valuations.*

INTRODUCTION
Various nations encounter issues related to bank insolvency. Credit risks significantly affect the financial performance of loans and other domains. Credit risk constitutes one of the most significant concerns for banks. Credit risk arises from a borrower's inability to fulfil obligations. It may arise from a failure or refusal to execute the provisions of the pre-commitment contract. As banks extend credit facilities while accumulating deposits, they are intrinsically susceptible to credit risk. The banking sector is regarded as the cornerstone of an economy; without adequate financial channels, the overall business environment would deteriorate. The effective functioning of modern banking was crucial for national growth due to its placement within a very complex and intricate context. The principal asset of most banks is loans, which constitute the majority of operational revenue and represent the bank's most significant risk. Risk management is crucial to ensure that the growth of the banking sector does not jeopardize its stability. Numerous internal and external factors influence the efficacy of banks in managing credit risk**. Aceur and Omran (2011)** assert that internal factors pertain to bank-specific traits, whereas external elements are associated with the economic environment **(Mwaurah, 2013).** While deteriorating credit quality is the predominant cause of poor financial performance in financial institutions, effective credit management is essential for the stability and sustained profitability of any financial entity. The stability of the financial sector is a paramount concern for policymakers, especially in emerging countries where failures in financial intermediation can hinder development and obstruct economic advancement. Moreover, it has been established that the banking crisis is the primary catalyst for significant economic disruptions.

OBJECTIVES OF THE STUDY

a) To analyse the trend of NPAs over the past financial years and their impact on the financial performance of commercial banks, focusing on return on equity and profit before tax.

b) To evaluate the trends in the Probability of Default (PD) for selected banks and the subsequent effect on their financial stability and performance.

c) To analyse how post-loan monitoring frequency affects NPAs.

d) To analyse the impact of NPAs on the valuation of banks.

e) To evaluate internal factors within banks, including poor credit risk assessment, political influence, evergreening of loans, inadequate post-loan monitoring, and weak recovery mechanisms, and understand their impact on NPA levels.

LIMITATIONS OF THE STUDY

a) The study focuses only on the Indian banking landscape and thus does not factor in the international landscape. Therefore, the results have limited application in the global context.

b) The study tries to cover the entire banking landscape of the country, but there is little to no representation of the regional and cooperative banks.

c) The study relies on survey responses from CA Articles, CAs, and bank employees, which provide rich qualitative insights into NPA causes. However, interpretations of these responses are subjective, as different respondents may have varied professional experiences and biases.

d) The study is heavily dependent on the publicly available data; therefore, issues regarding understating of NPAs and non-validation of borrower-specific causes of NPAs can crop in.

e) The sample size is limited to 124 individuals in the Mumbai Metropolitan Region.

FUTURE SCOPE OF STUDY

a) Future research may juxtapose India's NPA resolution frameworks with worldwide best practices to ascertain which measures could enhance banking efficiency.

b) Future research may integrate borrower-specific financial data to corroborate survey results and discern patterns in intentional defaults, fund misappropriation, and mismanagement.

c) Analysing high-risk industries such as MSMEs, real estate, and infrastructure individually and in detail can facilitate the formulation of industry-specific risk mitigation solutions in the future.

d) Future research can be done to evaluate the impact of delays in Debt Recovery Tribunals (DRTs), National Company Law Tribunals (NCLT), and the Insolvency and Bankruptcy Code (IBC) framework on loan recoveries and propose expedited resolution mechanisms.

SIGNIFICANCE AND RELEVANCE OF THE STUDY

a) This study is notable as it offers data-driven and qualitative insights into the causes of Non-Performing Assets (NPAs) in Indian banks, derived from survey responses of Chartered Accountant Articles, Chartered Accountants, and Bank Employees in the Mumbai Metropolitan Region. The study uncovers significant deficiencies in credit risk assessment, post-loan monitoring, and governance frameworks by examining borrower-related issues and internal banking inefficiencies. The results are especially pertinent to banking professionals, policymakers, and regulators, as they underscore deficiencies in existing risk management frameworks and recovery procedures, providing actionable recommendations for mitigating NPAs.

b) This study, in contrast to prior research that relies exclusively on secondary data or financial reports, gathers industry insights into the causes of NPAs and the role of internal banking inefficiencies in their occurrence.

c) The study also analyses post-COVID non-performing asset (NPA) trends, demonstrating the impact of regulatory forbearance, such as loan moratoriums and restructuring programs, on real

NPA reporting. The study indicates that concealed stress in bank balance sheets may lead to a delayed emergence of non-performing assets (NPAs) in the forthcoming years, necessitating banks to enhance post-loan monitoring and real-time borrower tracking systems.

d) This study connects NPA trends with financial performance, offering measurable insights into the impact of asset quality on banks' profitability, capital sufficiency, and lending efficiency. The research serves as a crucial resource for banks, policymakers, etc. to strengthen India's banking sector.

REVIEW OF LITERATURE

1) **Khan (2020)** conducted a study aimed at quantifying the influence of credit risk management and bank-specific factors on the financial performance of commercial banks. Non-Performing Loans and Capital Adequacy. The data indicate that CAR and ALR exhibit a significantly positive correlation with the financial performance of Asian commercial banks, while NPLs, CER, and LR demonstrate a significantly negative correlation with financial performance (ROA and ROE).

2) The main objective of Bishnu Bhattarai's **(Bhattrai, 2019)** study was to investigate the impact that credit risk had on the financial stability of commercial banks in Nepal. The regression analysis indicated a significant correlation between the financial performance (ROA) of Nepal's commercial banks and the capital adequacy ratio (CAR), non-performing loan ratio (NPLR), and management quality ratio (MQR). The financial performance of commercial banks in Nepal is not substantially influenced by the loan-to-deposit ratio (CDR) or risk sensitivity (RS).

3) **Ndyagyenda Catherine (2019)** determined the connection between Bank of Africa (U) Ltd.'s financial performance and credit risk management. The study used a case study methodology and combined quantitative and qualitative methods. It was found with a 95% confidence level, the value of R Square was around 0.978, indicating that there was a variation of 97.8% in the bank's performance due to changes in client evaluation, credit risk management, and risk diversification.

4) **Selvam & Premnath (2020)** explored the impact of Covid-19 on the NPA and the GDP of the Indian economy. They discussed the prolonged Twin Balance Sheet (TBS) problem in the banking and corporate division, which was a result of significant levels of non-performing assets (NPAs). The government should make provisions towards faster settlement of pending cases and ease on the mandates of priority sector lending.

5) **Prof. Dr. Md. Ali Noor's (2019)** research aims to evaluate the impact of POCL on ROI, ROE, and ROA, as well as to investigate the cointegration of various factors. In the immediate term, POCL has an insignificant impact on ROA and ROE. Nonetheless, POCL significantly influences ROA and ROE over the long term.

6) **Santosh Kumar Das and Khushboo Uppal (2021)** have effectively examined the correlation between non-performing assets and profitability in Indian banks. This paper empirically assessed the factors influencing the profitability of Indian scheduled commercial banks. The factors influencing predictability were assessed using a collection of bank-specific and macroeconomic explanatory variables. Their analysis revealed that a rise in non-performing advances adversely affects the profit rate, as determined by panel data estimation of 39 public and private banks. Operating costs are inversely correlated with profitability. The estimations from the FE and RE models indicate that non-interest income, interest income, capital adequacy, and GDP growth rate have all positively influenced the profitability of Indian banks.

7) **Varun Agarwala and Nidhi Agarwala (2019)** discussed how the rise in NPAs disrupts the flow of credit in banks. According to their research in 2019, the overall position of NPAs in the private sector was around 72% in the year 2016-17 and kept increasing thereafter. The State Bank showed an average growth of 28% in its NPA level, and the associate banks showed a year-on-year growth rate of 160% in the year 2016-17. The nationalized banks have not been able to control their NPA

level since the financial crisis. More than 40% of nationalized banks show a mean growth rate of 50% in the NPA.

8) **Bawa, Jaslene; Goyal, Vinay; Mitra, Subrata; Basu, Sankarshan (2018):** This research investigates Indian commercial bank NPA patterns from 2007 to 2014 by analyzing a wide set of 31 financial ratios, which represent operational capability, business development capacity, solvency, capital adequacy, profitability, and liquidity. Studies show that operational efficiency together with intermediation costs has a significant effect on NPAs because higher intermediation costs result in stronger monitoring activities and reduced NPAs. The metrics of business per employee, together with return on assets (ROA), demonstrate decreasing patterns when linked to non-performing assets (NPAs), yet dual findings of quick asset expansion and past NPAs indicate elevated default risk. The capital strength of Indian banks together with the Reserve Bank of India's (RBI) stringent regulations eliminated the need for liquidity and capital adequacy assessments. The study uses a two-stage least squares (2SLS) generalized method of moments (GMM) approach to address endogeneity problems that produces 85.9% explanatory power. The research findings demonstrate banks must establish rigorous operational practices with efficient monitoring alongside strategic growth approaches to lower non-performing assets while providing relevant insights to both management and policymakers.

9) **Ravirajan and Shanmugam (2023)** confirmed that past credit growth (lagged credit growth) is positively associated with current NPAs, implying that unsustainable lending during economic upturns translates into defaults during downturns. A slowdown in GDP growth diminishes the repayment capacity of borrowers, resulting in increased defaults. The study observed a negative correlation between GDP growth and NPAs. Larger banks typically benefit from diversified loan portfolios and better risk management systems. Surprisingly, Ravirajan and Shanmugam's study yielded mixed results—while bank size reduced GNPA, it positively correlated with NNPA. This inconsistency suggests that larger banks may under-report gross NPAs due to provisioning adjustments, or diversification benefits might not be equally reflected across all NPA measures. The study reaffirmed that PSL positively contributes to NPAs, as these socially driven loans may lack robust screening and monitoring compared to commercial loans. A higher capital adequacy ratio (CAR) generally enhances a bank's capacity to absorb losses and improves credit standards. However, this study found a counterintuitive positive relationship between CAR and NPAs, indicating possible capital padding before recognizing bad loans or capital buffers being insufficient to mitigate poor lending practices. Profitability, represented by ROA, typically correlates negatively with NPAs.

RESEARCH METHODOLOGY

The research is carried out to analyse the relationship between various credit risk factors and financial indicators. In order to make some of the analysis, the data is taken from secondary sources. This is because primary data collection would not be feasible, because the data required is huge and cannot be taken from original respondents due to the availability of the respondents, the time available, and confidentiality reasons for this aspect of the research. Hence, a secondary source is considered a more effective and easier source to get reliable data for analysis for this specific aspect of the research.

1.1 Type of research:

Mixed research with elements of both qualitative and quantitative nature

1.2 Population under study:

a) For the primary component: CAs/CA articles and Bank employees (The population under study in my research consists of finance and banking professionals who have direct exposure to credit assessment, loan monitoring, and NPA resolution.)

b) For secondary research: Banks in India.

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1.3 Sample Design:

A) Sample location:
a) For the Primary research: Mumbai Metropolitan Region

b) For the secondary aspect of research: Banks across India.

B) Sampling Method:
a) Primary Research: Purposive and Convenience Sampling

b) Secondary Research: Stratified Random Sampling

C) Sample Size:
a) For primary research: 124 individuals

b) For secondary research: 25 Banks (HDFC Bank, State Bank of India, Kotak Mahindra Bank, Axis Bank, ICICI Bank, IndusInd Bank, Yes Bank, Bank of India, Punjab National Bank, Bank of Baroda Bank of Maharashtra, UCO Bank, Union Bank, Canara Bank, City Union Bank, CSB Bank, DCB Bank, Federal Bank, IDBI Bank, Karnataka Bank RBL Bank, South India Bank, Central Bank, Indian overseas Bank, and Indian Bank.)

1.4 Method of Data Collection:
a) Primary Research: Data was collected via a questionnaire circulated in the form of a "Google Form."

b) Secondary Research: Financial Statements of various banks from year 2013 to year 2024.

1.5 Statistical Methods used:
Median, chi-square test, correlation, and standard deviation were used to test hypothesis and derive insights from the data.

NOTE:
a) The following data was collected from these sample banks for a period of 11 years from 2013 to 2024: total loans & advances, total deposits, gross NPA, return on equity, and price/book value ratio.

RELATIONSHIP BETWEEN RETURN ON EQUITY RATIO & NON-PERFORMING ASSETS
Hypothesis:

Null Hypothesis (H_0): There is no or a positive correlation between Median ROE and Median NPA.

Alternative Hypothesis (H_a): There is a negative correlation between Median NPA and Median ROE.

A few assumptions made for undertaking the analysis are:
- NPA Ratio is taken as the Gross NPA ratio.
- The data is taken from 25 different banks existing under the same working conditions or environment.
- The data collected is from financial year 2012-13 to the 2023-24 financial year (median). The data collected is presented below in the following table:

Name of the Bank	HDFC Bank	State Bank of India	Kotak Mahindra Bank	Axis Bank	ICICI Bank	IndusInd Bank	Yes Bank	Bank of India	Punjab National Bank	Bank of Baroda	Canara Bank	Bank of Maharashtra	UCO Bank	Union Bank	City Union Bank	CSB Bank	DCB Bank	Federal Bank	IDBI Bank	Karnataka Bank	RBL Bank	South India Bank	Central Bank	Indian Overseas Bank	Indian Bank
Median ROE	18%	10%	14%	11%	14%	15%	11%	5%	3%	7%	8%	6%	2%	7%	15%	3%	11%	11%	4%	10%	7%	9%	-5%	1%	9%
Median NPA	1%	5%	2%	2%	4%	2%	2%	12%	12%	6%	8%	7%	9%	10%	3%	4%	2%	3%	17%	4%	1%	4%	15%	10%	7%

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DATA ANALYSIS

The results showed that the correlation between Median ROE and Median NPA was a statistically significant negative correlation, r = -0.77, p = <.001. The null hypothesis is rejected.

RELATIONSHIP BETWEEN EPS AND GROSS NPA

Hypothesis:

Null hypothesis (H_0): There is no or a positive correlation between Gross NPA% and EPS.

Alternative hypothesis (H_a): There is a negative correlation between EPS and Gross NPA %.

Gross NPA%													
Name of Bank	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	MEDIAN NPA %
HDFC Bank	1.25%	1.13%	1.18%	1.33%	1.27%	1.37%	1.31%	1.06%	0.95%	0.94%	0.99%	0.97%	1.15%
State Bank of India	2.28%	2.84%	4.10%	5.16%	6.41%	7.90%	11.55%	7.15%	6.71%	4.36%	5.09%	4.90%	5.13%
Kotak Mahindra Bank	1.40%	1.80%	2.39%	3.32%	2.29%	2.17%	2.25%	2.63%	2.39%	1.87%	2.00%	1.56%	2.21%
Axis Bank	1.57%	2.20%	3.08%	4.06%	5.29%	6.02%	7.79%	5.70%	1.80%	1.46%	1.37%	1.22%	2.64%
ICICI Bank	2.36%	3.06%	3.95%	5.64%	6.42%	7.89%	10.55%	9.17%	6.14%	3.90%	3.10%	3.31%	4.79%
IndusInd Bank	1.95%	2.01%	2.31%	2.73%	2.49%	2.12%	1.18%	0.93%	0.88%	0.82%	1.13%	1.03%	1.56%
Yes Bank	1.75%	2.16%	15.45%	17.14%	19.18%	3.26%	1.29%	1.53%	0.76%	0.41%	0.31%	0.20%	1.64%
Bank of India	5.18%	7.76%	10.84%	15.46%	16.69%	17.79%	18.26%	14.20%	13.89%	5.52%	3.20%	3.03%	12.36%
Punjab National Bank	6.03%	9.31%	12.70%	15.49%	15.57%	17.12%	19.97%	13.20%	13.54%	6.75%	5.41%	4.36%	12.95%
Bank of Baroda	2.99%	3.91%	6.96%	9.44%	10.05%	10.29%	13.21%	11.15%	10.56%	3.80%	2.99%	2.43%	8.20%
Canara Bank	4.36%	5.56%	7.91%	9.43%	8.57%	9.17%	12.44%	10.00%	9.74%	3.95%	2.51%	2.58%	8.24%
Bank of Maharashtra	1.91%	2.53%	4.06%	7.60%	13.99%	18.54%	21.48%	18.00%	9.66%	6.49%	3.22%	1.51%	7.04%
UCO Bank	3.55%	4.96%	8.34%	10.19%	19.06%	30.09%	28.43%	18.83%	16.61%	6.97%	4.43%	5.56%	9.27%
Union Bank	4.95%	8.01%	12.04%	15.19%	15.58%	16.41%	17.10%	11.77%	9.04%	5.10%	4.17%	3.03%	10.40%
City Union Bank	4.07%	4.46%	4.79%	5.24%	4.17%	2.99%	3.08%	2.86%	2.43%	1.87%	1.82%	1.14%	3.03%
CSB Bank	1.48%	1.27%	1.83%	2.73%	3.60%	5.00%	8.18%	7.39%	5.69%	5.01%	3.83%	2.38%	3.72%
DCB Bank	3.31%	3.27%	4.43%	4.17%	2.49%	1.86%	1.81%	1.61%	1.53%	1.78%	1.70%	3.26%	2.18%
Federal Bank	2.16%	2.40%	2.85%	3.49%	2.89%	2.96%	3.04%	2.35%	2.87%	2.06%	2.50%	3.52%	2.86%
IDBI Bank	4.73%	6.75%	23.40%	28.26%	36.41%	34.08%	32.37%	23.45%	11.52%	6.09%	5.04%	3.29%	17.46%
Karnataka Bank	3.61%	3.82%	3.96%	5.01%	4.92%	4.48%	5.03%	4.27%	3.48%	2.98%	2.95%	2.53%	3.89%
RBL Bank	2.70%	3.45%	4.55%	4.44%	3.68%	1.39%	1.41%	1.21%	0.98%	0.77%	0.79%	0.41%	1.40%
South India Bank	4.64%	5.31%	6.08%	7.14%	5.06%	5.00%	3.63%	2.48%	3.80%	1.72%	1.19%	1.36%	4.22%
Central Bank	4.66%	9.06%	16.74%	18.70%	21.57%	22.08%	24.36%	19.55%	12.62%	6.30%	6.49%	4.92%	14.68%
Indian Overseas Bank	3.19%	7.90%	10.61%	12.78%	16.41%	0.25%	28.82%	24.99%	18.68%	8.69%	5.13%	4.12%	9.65%
Indian Bank	41.00%	6.27%	9.05%	10.56%	7.15%	7.37%	7.66%	7.73%	6.84%	4.51%	3.73%	3.38%	7.26%

EPS OF BANKS												
Name of Bank	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
HDFC Bank	85.83	79.25	66.8	56.6	48	78.6	67.8	57.2	48.8	42.1	35.5	28.5
State Bank of India	68.44	56.29	35.49	22.87	16.23	0.97	-7.67	13.43	12.98	17.55	156.76	210.06
Kotak Mahindra Bank	69.15	54.89	43.02	35.17	30.88	25.52	21.54	18.57	11.42	24.2	19.62	18.31
Axis Bank	80.67	31.17	42.48	22.15	5.99	18.2	1.13	15.4	34.59	31.18	132.56	119.67
ICICI Bank	58.38	45.79	33.66	24.01	12.28	5.23	10.56	16.84	16.75	19.32	84.99	72.2
IndusInd Bank	115.19	95.32	59.57	38.75	63.75	54.9	60.19	48.06	39.68	33.99	26.85	21.83
Yes Bank	0.44	0.27	0.43	-1.63	-56.07	7.45	18.43	78.89	60.62	49.34	44.92	36.53
Bank of India	14.9	9.8	8.84	6.59	-9.1	-29.79	-52.55	-15.72	-83.01	26.57	44.74	47.79
Punjab National Bank	7.49	2.28	3.16	2.08	0.62	-30.94	-55.39	6.45	-20.82	16.91	93.91	139.52
Bank of Baroda	34.4	27.28	14.06	1.78	1.02	1.64	-10.53	6	-23.89	15.83	107.38	108.84
Canara Bank	80.23	58.45	32.49	16.91	-26.5	4.71	-70.47	20.63	-53.61	58.59	54.48	64.83
Bank of Maharashtra	5.78	3.87	1.72	0.88	0.67	-14.26	-8.98	-11.75	0.91	4.5	4.56	11.88
UCO Bank	1.38	1.56	0.8	0.17	-3.1	-11.16	-25.23	-13.29	-26.03	11.2	19.44	6.3
Union Bank	18.95	12.34	7.73	4.54	-12.49	-25.08	-69.45	8.08	20.42	28.05	27.99	38.93
City Union Bank	13.72	12.67	10.29	8.03	6.48	9.57	9.18	8.39	7.44	6.82	6.69	6.65
CSB Bank	32.67	31.55	26.43	12.59	0.88	-23.73	-12.04	0.21	-23.98	-10.5	6.42	8.76
DCB Bank	17.18	14.96	9.26	10.82	10.9	10.53	8.02	7.01	6.86	7.21	6.05	4.19
Federal Bank	16.75	15.01	9.52	8.34	7.94	6.65	4.92	5.04	2.83	12.36	9.93	49.85
IDBI Bank	5.38	3.45	2.36	1.44	-12.36	-30.22	-34	-24.36	-21.33	5.87	8.22	14.75
Karnataka Bank	39.84	37.88	16.36	15.52	13.89	16.89	11.52	19.38	22.04	23.96	16.51	18.48
RBL Bank	19.41	14.72	-1.25	9.35	11.16	20.47	15.79	12.59	9.6	7.23	3.63	4.21
South India Bank	5.1	3.7	0.21	0.34	0.58	1.37	1.86	2.61	2.47	2.28	3.78	4.03
Central Bank	2.94	1.82	1.27	-1.53	-1.81	-20.19	-19.5	-13.35	-8.55	4.27	-11.1	11.24
Indian Overseas Bank	2.94	1.82	1.27	-1.53	-1.81	-20.19	-19.5	-13.35	-8.55	4.27	-11.1	11.24
Indian Bank	63.23	42.41	32.38	26.61	14.33	6.7	26.21	29.27	14.81	21.62	26.07	35.8

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DATA ANALYSIS

The results showed that the correlation between EPS and Gross NPA % was a statistically significant negative correlation, r = -0.76, p = <.001. The null hypothesis is rejected.

The findings illuminate a vital correlation between the quality of a bank's assets and the returns provided to its shareholders in the Indian banking sector. An increase in the Gross NPA percentage clearly signifies a decline in the bank's asset quality. This decline is generally attributable to a rising incidence of loan defaults, necessitating augmented provisions to mitigate potential losses. These provisions diminish the bank's net earnings, consequently impacting its overall profitability. As profitability diminishes, the earnings accessible to shareholders concurrently decrease, leading to a reduction in Earnings Per Share (EPS). Consequently, banks contending with increasing NPAs are expected to experience a decline in earnings, potentially undermining investor confidence and resulting in a decrease in the bank's market value. This relationship underscores the necessity for banks to regard asset quality preservation as a fundamental aspect of their business strategy.

PROBABILITY OF DEFAULT TREND OF A BANK

Objective: To evaluate the trends in the Probability of Default (PD) for selected banks and the subsequent effect on their financial stability and performance.

Change in Probability of Default												
Name of Bank	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
HDFC Bank	0	-0.0005341	-0.00152514	0.00058688	-0.00096787	0.00062412	0.00246083	0.00115785	4.7742E-05	-0.00045814	0.0001266	0.009739
State Bank of India	0	-0.01255325	-0.01062327	-0.01251961	-0.01491269	-0.03644331	0.04396661	0.00443528	0.02343766	-0.00728673	0.00196454	0.04895618
Kotak Mahindra Bank	0	-0.00581744	-0.00934448	0.01032006	0.00115447	-0.00081843	-0.00375779	0.0023805	0.00521656	-0.00127864	0.00433788	0.01564114
Axis Bank	0	-0.00882678	-0.00975113	-0.01232274	-0.00729567	-0.01769447	0.02085811	0.03907237	0.00334656	0.00094662	0.00152463	0.01215144
ICICI Bank	0	-0.00890318	-0.01690159	-0.00778353	-0.01473749	-0.02660049	0.01384932	0.03026988	0.02243836	0.00793393	-0.00208381	0.0331017
IndusInd Bank	0	-0.00298346	-0.00417897	0.00236875	0.00371172	0.00941607	0.00243327	0.00054285	0.00060225	-0.00308285	0.0009374	0.01032883
Yes Bank	0	-0.13289961	-0.01690535	-0.02034508	0.15912942	0.01973409	-0.00235579	0.00763543	0.00347806	0.0010039	0.00113753	0.00200683
Bank of India	0	-0.03080877	-0.0462324	-0.01225526	-0.011034	-0.0046891	0.0405666	0.00314529	0.08366241	0.02318973	0.00172276	0.03029107
Punjab National Bank	0	-0.03388434	-0.02792134	-0.00085416	-0.01551242	-0.02846284	0.06771375	-0.00338064	0.06785124	0.01346719	0.01043851	0.0436174
Bank of Baroda	0	-0.0304918	-0.02483404	-0.00614056	-0.00234628	-0.02925745	0.02067731	0.0058749	0.06759847	0.00807459	0.00559031	0.02432336
Canara Bank	0	-0.02352644	-0.01524466	0.00863129	-0.00599493	-0.03265613	0.0243563	0.00257074	0.05792189	0.01436622	-0.000705	0.02584956
Bank of Maharashtra	0	-0.01530052	-0.03535672	-0.06391666	-0.04549166	-0.0294684	0.03488853	0.08340153	0.03162606	0.0327683	0.01708919	0.01507272
UCO Bank	0	-0.03380744	-0.01856711	-0.08863721	-0.11036669	0.01668371	0.09599101	0.02221449	0.09639509	0.02539883	-0.01131584	0.055581
Union Bank	0	-0.04035114	-0.0315271	-0.00387162	-0.00830679	-0.00686315	0.05328873	0.02727531	0.0394372	0.00922668	0.01140389	0.03034005
City Union Bank	0	-0.00330068	-0.00445883	0.01069958	0.0117559	-0.00084917	0.00213745	0.00430121	0.0056216	0.00048644	0.0068523	0.01135375
CSB Bank	0	-0.00559204	-0.00894714	-0.00876769	-0.01396538	-0.03184914	0.00792208	0.01700168	0.00678404	0.01182128	0.01448478	0.0238219
DCB Bank	0	-0.01167494	0.00259772	0.01681993	0.00626895	0.0005013	0.00207535	0.00079523	-0.00250467	0.00077192	-0.01563332	0.03264152
Federal Bank	0	-0.00456029	-0.00635534	0.00602087	-0.00070477	-0.00081864	0.00685149	-0.0051603	0.00808548	-0.00441015	-0.01020625	0.03524096
IDBI Bank	0	-0.16655375	-0.0485459	-0.08150185	0.02326472	0.01713505	0.08915644	0.11930129	0.05434406	0.01049139	0.01752705	0.03285669
Karnataka Bank	0	-0.00139287	-0.01043318	0.00091967	0.00435099	-0.00548394	0.00754387	0.00792392	0.00501292	0.00031386	0.0041469	0.02534386
RBL Bank	0	-0.01099029	0.00107898	0.00755321	0.02292933	-0.00017888	0.00195681	0.00231697	0.00210257	-0.00020773	0.00384343	0.00406197
South India Bank	0	-0.00768464	-0.01055748	0.0207481	0.00066586	0.01365782	0.01152513	-0.01325804	0.02081842	0.00526741	-0.00169607	0.01363705
Central Bank	0	-0.07684462	-0.01955562	-0.02869837	-0.00514448	-0.02275888	0.0480891	0.06927151	0.06322582	-0.00186176	0.01567414	0.04918218
Indian Overseas Bank	0	-0.02703074	-0.02174271	-0.03631179	0.16159681	-0.28565764	0.03829312	0.06308423	0.09991738	0.03559624	0.01007945	0.04120598
Indian Bank	0	-0.02776259	-0.01516181	0.0341339	-0.00215967	-0.00291122	-0.00067232	0.00885226	0.02334836	0.00772115	0.00358081	0.03375032

$$PD = GNPA/Total\ Advance$$

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GENERAL TRENDS

1. **Decreasing Trend in Recent Years:** From 2020 onwards, most banks show a declining trend in the probability of default (PD), indicating improved credit quality post the initial COVID-19 shock in 2020. This is likely due to government interventions, monetary policy support, and corporate deleveraging.
2. **Volatile Patterns (2016–2018):** The period between 2016 and 2018 shows increased volatility in PD changes. This aligns with the impact of demonetization (2016) and the introduction of the
3. Goods and Services Tax (GST) in 2017, both of which temporarily disrupted business operations and banking activities.

COMPARATIVE ANALYSIS: PRIVATE VS. PUBLIC SECTOR BANKS

1. **Private Banks (HDFC, Kotak, ICICI):** Exhibit more stable PD trends with limited fluctuations. This stability reflects stronger governance frameworks, diversified portfolios, and better risk management practices.
2. **Public Sector Banks (SBI, PNB, UCO Bank):** Greater volatility in PD, especially between 2016–2020, due to higher exposure to corporate NPAs and slower adoption of risk mitigation practices. Significant improvements post-2020 are linked to government reforms, merger strategies, and better capital adequacy ratios.

POTENTIAL EXTERNAL FACTORS AFFECTING PD:

1. **2016–2018:** Demonetization and GST rollout created liquidity issues, especially for SMEs, impacting banking sector health. RBI's Asset Quality Review (AQR) led to the recognition of previously hidden NPAs, causing spikes in PD.
2. **2020 (COVID-19 Impact):** The initial rise in PD due to economic disruption was followed by a sharp decline, thanks to regulatory forbearance, moratoriums, and fiscal stimulus provided by the government.
3. **Post-2020 Recovery:** Economic recovery, improved credit discipline, and regulatory measures such as the Insolvency and Bankruptcy Code (IBC) have driven improvements in PD across most banks.

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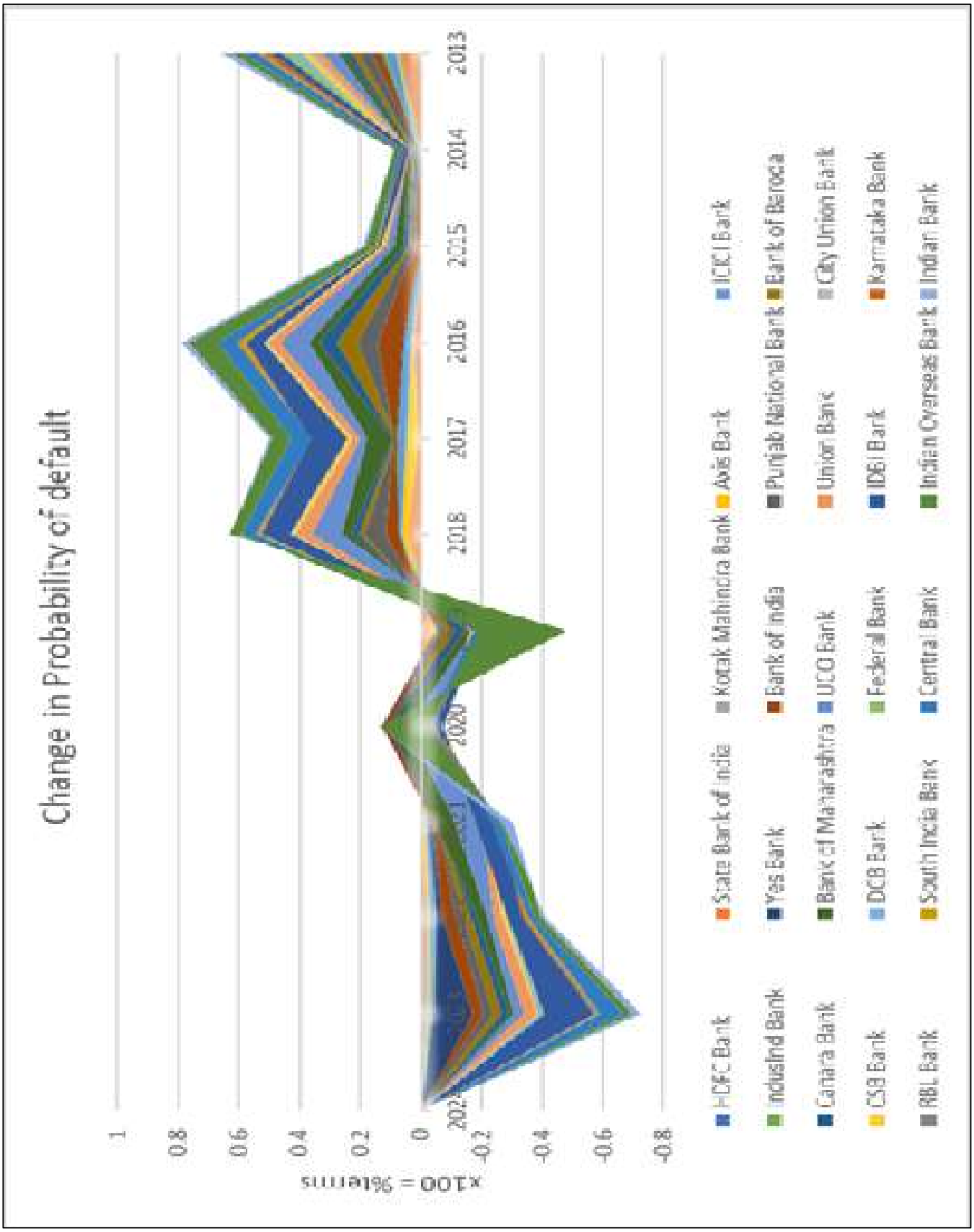

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IMPACT OF NPA ON VALUATION OF BANKS

Objective: To analyse the impact of NPAs on the valuation of banks.

Null Hypothesis (H_0): There is no or a positive correlation between Gross NPA and P/BV.

Alternative Hypothesis (H_a): There is a negative correlation between P/BV and Gross NPA.

	P/BV												
Name of Bank	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	MEDIAN P/BV
HDFC Bank	4.26	5.56	6.38	6.81	4.12	4.23	4.62	4.13	3.73	4.13	4.13	4.1	4.18
State Bank of India	1.92	1.56	1.72	1.41	0.84	1.3	1.15	1.49	1.05	1.55	12.11	1.43	1.46
Kotak Mahindra Bank	3.67	4.15	4.84	5.5	5.11	6.01	5.33	5.81	5.21	7.17	4.88	5.14	5.175
Axis Bank	2.14	2.11	2.03	2.1	1.26	2.99	2.06	2.11	1.99	2.97	1.8	1.84	2.08
ICICI Bank	3.27	3.1	3.03	2.78	1.85	2.44	1.75	1.67	1.58	2.27	1.96	1.81	2.115
IndusInd Bank	1.94	1.53	1.53	1.71	0.71	4.07	4.59	4.16	3.32	4.56	3.05	2.85	2.95
Yes Bank	1.58	1.06	0.91	1.18	1.3	2.37	2.73	3.21	2.64	2.92	2.09	2.65	2.23
Bank of India	1.01	0.59	0.39	0.56	0.28	0.81	0.6	0.48	0.26	0.41	0.49	0.75	0.525
Punjab National Bank	1.39	0.56	0.44	0.46	0.38	1.07	0.7	0.84	0.47	0.71	0.78	0.81	0.705
Bank of Baroda	1.22	0.89	0.67	0.5	0.34	0.74	0.87	0.99	0.85	0.91	0.86	0.9	0.865
Canara Bank	1.35	0.78	0.72	0.5	0.28	0.74	0.67	0.64	0.39	0.66	0.51	0.75	0.665
Bank of Maharashtra	2.42	1.18	0.91	1.24	0.55	0.86	0.36	0.64	0.45	0.59	0.57	0.72	0.68
UCO Bank	2.56	1.27	0.68	0.63	0.53	0.89	0.67	0.6	0.45	0.58	0.7	0.58	0.65
Union Bank	1.28	0.63	0.4	0.37	0.32	0.69	0.44	0.46	0.44	0.54	0.51	0.83	0.485
City Union Bank	1.19	1.25	1.45	1.97	1.8	3.1	2.76	2.55	1.86	2.14	1.44	1.52	1.83
CSB Bank	1.69	1.4	1.47	1.99	1.14	1.538	1.538	1.538	1.538	1.538	1.538	1.538	1.538
DCB Bank	0.78	0.78	0.56	0.9	0.93	2.2	1.94	2.5	1.29	2.04	1.39	1.12	1.205
Federal Bank	1.26	1.3	1.09	0.94	0.56	1.44	1.44	1.76	0.98	1.46	1.18	1.29	1.275
IDBI Bank	2.07	1.3	1.39	1.36	0.73	1.17	1.38	0.9	0.65	0.5	0.48	0.55	1.035
Karnataka Bank	0.82	0.55	0.26	0.31	0.24	0.7	0.65	0.77	0.52	0.69	0.72	0.86	0.67
RBL Bank	0.98	0.62	0.62	0.98	0.65	3.85	2.99	4.28	1.8713	1.8713	1.8713	1.8713	1.87125
South India Bank	0.81	0.46	0.27	0.32	0.2	0.59	0.82	0.84	0.64	0.99	0.92	1.15	0.725
Central Bank	1.85	0.82	0.67	0.54	0.38	0.78	1.07	1.17	0.87	1.13	0.55	0.59	0.8
Indian Overseas Bank	4.5	1.69	1.5	1.55	0.72	0.81	0.64	0.57	0.41	0.38	0.44	-0.06	0.68
Indian Bank	1.34	0.86	0.51	0.52	0.14	0.82	0.91	0.93	0.37	0.66	0.46	0.71	0.685

	GNPA (INR)											
Name of Bank	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
HDFC Bank	31173.32	18019.03	16140.96	15086	12649.97	11224.16	8606.97	5885.66	4392.83	3438.38	2989.28	2334.64
State Bank of India	84276.33	90927.78	112023.37	126389.02	149091.85	172750.36	223427.46	112342.99	98172.8	56725.34	61605.35	51189.39
Kotak Mahindra Bank	5274.78	5768.32	6469.74	7425.51	5026.89	4467.94	3825.38	3578.61	2838.11	1237.23	1059.44	758.11
Axis Bank	15127.12	18604.23	21822.32	25314.84	30233.82	29789.44	34248.64	21280.48	6087.51	4110.19	3146.41	2393.42
ICICI Bank	27961.68	31183.7	33919.52	41373.42	41409.16	46291.63	54062.51	42551.54	26720.93	15094.69	10505.84	9607.75
IndusInd Bank	6693.38	5826.27	5517.15	5794.99	5146.74	3947.41	1704.91	1054.87	776.82	562.92	620.79	457.78
Yes Bank	3982.56	4394.57	27975.98	28609.53	32877.59	7882.56	2626.8	2018.56	748.98	313.4	174.93	94.32
Bank of India	29182.77	37685.56	45605.4	56534.95	61549.93	60661.12	62328.46	52044.52	49879.12	22193.24	11868.6	8765.25
Punjab National Bank	56343.05	77327.67	92448.04	104423.42	73478.76	78472.7	86620.05	55370.45	55818.33	25694.86	18880.06	13465.79
Bank of Baroda	31833.63	36763.68	54059.39	66670.99	69381.43	48232.77	56480.39	42718.7	40521.04	16261.45	11875.9	7982.58
Canara Bank	40604.57	46159.51	55651.58	60287.84	37041.15	39224.12	47468.47	34202.04	31637.83	13039.96	7570.21	6260.16
Bank of Maharashtra	3833.05	4334	5327.21	7779.68	12152.15	15324.49	18433.23	17188.71	10385.85	6402.06	2859.85	1137.55
UCO Bank	6463.3	7726.46	10237.43	11351.97	19281.95	29888.33	30549.92	22540.95	20907.73	10265.05	6621.37	7130.09
Union Bank	43097.73	60987.29	79587.07	89788.2	49085.3	48729.15	49369.93	33712.28	24170.89	13030.87	9563.72	6313.83
City Union Bank	1,854.43	1,920.16	1,933.18	1,893.19	1,413.40	977.05	856.55	681.98	511.98	335.82	293.06	173.1
CSB Bank	361.07	262.56	289.51	393.49	409.43	530.62	764.13	600.1	446.91	474.81	333.55	210.86
DCB Bank	1,353.47	1,122.84	1,289.93	1,083.44	631.51	439.48	369.03	254.2	197.38	186.07	138.45	214.98
Federal Bank	4,528.87	4,183.77	4,136.74	4,602.39	3,530.83	3,260.68	2,795.62	1,727.05	1,667.77	1,057.73	1,087.41	1,554.01
IDBI Bank	8,916.84	10,969.29	34,114.83	36,211.95	47,272.37	50,027.94	55,588.26	44,752.59	24,875.07	12,684.97	9,960.16	6,449.98
Karnataka Bank	2,578.42	2,292.91	2,250.82	2,588.41	2,799.93	2,456.38	2,376.07	1,581.59	1,180.40	944.21	835.93	638.86
RBL Bank	2,270.97	2,419.86	2,728.39	2,601.53	2,136.52	754.62	566.73	356.84	208.05	111.23	77.75	25.9
South India Bank	3,620.34	3,708.26	3,648.09	4,143.24	3,261.77	3,131.66	1,980.30	1,149.01	1,562.36	643.45	432.62	433.87
Central Bank	11,340.34	18,386.12	28,156.22	29,276.96	32,589.08	32,356.04	38,130.70	27,251.33	22,720.88	11,873.06	11,500.01	8,456.18
Indian Overseas Bank	6,794.43	14,071.55	15,298.62	16,323.18	19,912.70	333.98	38,180.15	35,098.26	30,048.62	14,922.45	9,020.48	6,607.96
Indian Bank	2,11,106.31	28,179.53	35,214.25	38,455.35	14,150.84	13,353.45	11,990.14	9,865.14	8,827.04	5,670.44	4,562.20	3,565.47

DATA ANALYSIS

The results showed that the correlation between Gross NPA and P/BV was a statistically significant negative correlation, r = -0.33, p = <.001. The null hypothesis that there is no or a positive correlation between Gross NPA and P/BV in the population is therefore rejected.

ANALYSIS OF ASSOCIATION BETWEEN ECONOMIC CONDITIONS AND OCCURRENCE OF NPAs

Objective: To analyse whether changes in economic conditions lead to NPAs.

Null Hypothesis: (H_0): There is no significant association between economic conditions and the occurrence of NPAs.

Alternative Hypothesis (H_a): There is a significant association between economic conditions and the occurrence of NPAs.

Degree of Freedom=9

Questions	1 (least likely)	2	3	4 (Most Likely)	Row Total
Economic downturns significantly contribute to the rise in NPAs.	20	20	33	51	124
NPAs increase during periods of high inflation and low GDP growth.	10	20	30	64	124
The borrower's financial behavior is more important than external economic factors in determining NPAs.	16	31	39	38	124
Changes in government policies (e.g., taxation, subsidies) directly affect NPA levels.	10	15	41	58	124
Column Total	56	86	143	211	496

Table: Initial chi-square (response table)

The chi-square statistic is 20.822. The p-value is .013465. The result is significant at p < .05. Hence, there is a significant association between economic conditions and the occurrence of NPAs, i.e., the null hypothesis is rejected.

Interpretation: The data gathered from 124 respondents, predominantly professionals such as chartered accountants and bank employees, provides significant insights into their perceptions of the factors contributing to the increase in Non-Performing Assets (NPAs) within the banking sector. The results suggest that although borrower behaviour is acknowledged as important, it is not as universally esteemed as economic conditions, indicating that external factors are viewed as more influential than individual borrower practices. The fourth statement analysed the impact of government policies (e.g., alterations in taxation, subsidies, and loan waivers) on NPA levels. Fifty-eight respondents (47%) considered policy changes to be a highly probable cause, while 43 (35%) perceived it as moderately probable, and merely 15 (12%) deemed it unlikely. This suggests that policy interventions, especially abrupt or politically motivated changes, are viewed as significant disruptors to loan repayment behaviours. The data indicates that banking professionals predominantly attribute non-performing assets (NPAs) to external macroeconomic factors—such as economic recessions, inflation, GDP growth, and policy changes—while considering borrower behaviour as a secondary influence, often shaped by these overarching conditions.

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ANALYSIS OF ASSOCIATION POST-LOAN MONITORING FREQUENCY AND OCCURRENCE OF NPAs

Objective: To analyse how post-loan monitoring frequency affects NPAs

Null Hypothesis: (H_0): There is no significant association between post-loan monitoring frequency and the occurrence of NPAs.

Alternative Hypothesis (H_a): There is a significant association between post-loan monitoring frequency and the occurrence of NPAs.

Degree of Freedom: 9

Questions	1 (Least Likely)	2	3	4 (Most Likely)	Row Total
Regular post-loan monitoring reduces the chances of loans turning into NPAs.	14	28	29	53	124
Loans with weak post-disbursement monitoring have a higher chance of default.	20	18	27	59	124
Effective monitoring can prevent a loan from becoming an NPA even if the borrower faces financial difficulties	24	10	32	58	124
Banks often neglect post-loan monitoring after disbursing large loans.	28	13	29	54	124
Column Total	117	125	125	129	496

Table: Initial chi-square (response table)

The chi-square statistic is 16.703. The p-value is .053575. The result is significant at $p < .10$. Hence, there is a significant association between post-loan monitoring frequency and the occurrence of NPAs, i.e., the null hypothesis is rejected.

Interpretation: The data reflects a strong perception among banking professionals that post-loan monitoring is a vital safeguard against loans turning into Non-Performing Assets (NPAs). A majority of respondents rated "Most Likely" (4) for statements emphasizing that regular and effective monitoring reduces default risk. This indicates widespread agreement that consistent oversight after loan disbursement allows banks to detect early signs of financial stress in borrowers and take corrective action before a default occurs. Furthermore, the belief that weak post-disbursement monitoring leads to a higher chance of default is also strongly supported, suggesting that gaps in monitoring practices are viewed as a direct contributor to rising NPAs. Additionally, many respondents agree that banks often neglect monitoring large loans after disbursement, indicating a perceived inconsistency in monitoring standards depending on loan size. This implies a possible overconfidence in large borrowers or a lax attitude toward high-value accounts, which could expose banks to significant risks. Overall, the data clearly aligns with the alternative hypothesis, suggesting that frequent and diligent post-loan monitoring is perceived as crucial for reducing the occurrence of NPAs. It also highlights concerns about uneven monitoring practices, especially for large loans, pointing to the need for stricter, standardized post-loan follow-ups across all loan categories.

RESULTS AND FINDINGS

1. **Negative Correlation Between ROE and NPA Ratio:** A strong negative correlation was observed, indicating that as the NPA ratio rises, banks experience a decline in their return on equity. This is because increasing NPAs reduces profitability by lowering interest income and increasing provisioning costs.
2. **Declining Probability of Default (PD) After 2020:** A clear decline in PD was observed after 2020, following a period of volatility between 2016 and 2018. This improvement reflects the positive impact of regulatory measures, economic recovery post-COVID, and strengthened credit assessment processes.

3. **Inverse Relationship Between Gross NPA and Bank Valuation:** Higher NPA levels were found to correlate with lower Price-to-Book Value (P/BV) ratios, indicating that poor asset quality diminishes investor confidence and negatively affects bank valuation in the stock market.
4. **Negative Impact of NPAs on EPS:** A strong negative relationship was noted between Gross NPAs and Earnings Per Share (EPS), demonstrating that rising NPAs reduce profitability, lowering returns distributed to shareholders.
5. **Internal Bank Deficiencies Contributing to NPAs:** Poor credit appraisal, political interference, evergreening of loans, inadequate post-loan monitoring, and weak recovery mechanisms within banks were identified as major internal drivers of NPA accumulation.

RECOMMENDATIONS AND CONCLUSION

Risk management is an important exercise that needs to be undertaken by not only commercial banks but also other entities as well. However, for banks the degree of credit risk is the highest in comparison to any other type of entity, and hence its impact on the financial performance is also huge. The various factors of credit risk of a bank, like probability of default, non-performing asset ratio, etc., are going to affect the financial performance of the business in the long run. Hence, these factors have to be controlled in order to minimize the impact of credit risk on the returns earned by the commercial bank to its equity shareholders. The degree of relation between various factors of credit risk and the measure of financial performance is different. Factors like the non-performing assets ratio have a significant impact on the return on equity of a commercial bank in present times. Other factors like exposure at default & probability of default also have a considerable impact on the returns; however, they are not that significant. The non-performing assets in India are increasing drastically for all commercial banks. The changing economy and rapid development are complemented by the fact that people are defaulting on their credit taken. Post the pandemic, the NPA ratio in the country has decreased initially but can increase significantly because most individuals will be unable to repay the loans taken due to the severity of the pandemic & lack of resources. Thus, NPA has a huge impact on the Indian economy as a whole in the long run. Appropriate credit risk management methods and practices are very essential in commercial banks. It is observed that the banks with better risk management practices are likely to be more profitable than those with poor policies. The risk management practices, therefore, not only impact the commercial bank but also other industries and sectors, and in turn, the Indian economy.

REFERENCES

1. Mittal, Raj & Suneja, Deeksha. (2017). The Problem of Rising Non-performing Assets in Banking Sector in India: Comparative Analysis of Public and Private Sector Banks. International Journal of Management, IT & Engineering. 7. 384-398.
2. Singh, Ekta. (2022). Impact of NPA on economy in India. International Journal of Financial Management and Economics. 5. 40-43. 10.33545/26179210.2022.v5.i1.114.
3. Bepari, R., & Sarkar, S.C.: Impact of nonperforming assets on profitability performance of selected public sector banks and private sector banks in India: a comparative study. Int. J. Multidisc. Educ. Res. 9, 5(5), 54–60 (2020)
4. Das, S.K., Uppal, K.: NPAs and profitability in Indian banks: an empirical analysis. Future Bus. J. 7(1), 53 (2021). https://doi.org/10.1186/s43093-021-00096-3
5. Kumar, S., & Singh, V. (2018). An empirical study on credit risk management practices and financial performance: Evidence from Indian commercial banks. *Journal of Finance and Banking, 6*(4), 167-180. https://doi.org/10.11648/j.jfb.20180604.15

6. Sudip Basu. " A Study on Credit Risk Management Practices in Indian Banks.". IOSR Journal of Business and Management (IOSR-JBM), Vol. 21, No. 5, 2019, pp. -.01-03
7. Singh Asha, “Performance of Non-Performing Assets in Indian Commercial Banks” published in International Journal of Marketing, Financial Services &Research Management” vol. 2, issue 9 2013, pp. 86-94
8. Siddesh Saraf, IJSR - INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH "A Study of Non-Performing Assets (NPA's) of Public Sector Banks in India-an Intersectoral Comparison"
9. https://cimsdbie.rbi.org.in/DBIE/#/dbie/reports/Statistics/Financial%20Sector/Banking%20-%20Performance%20Indicators
10. https://erepository.uonbi.ac.ke/bitstream/handle/11295/5749/Muthee_The%20relationship%20between%20credit%20risk%20management%20and%20profitability.pdf?sequence=1
11. http://www.srjis.com/pages/pdfFiles/163375924318.%20AKHILESH%20KUMAR%20DIXIT.pdf
12. Catherine, N. (2019). Credit Risk Management and Financial performance: A case of Bank of Africa (U) Limited. Open Journal of Business and Management, 08(01), 30–38. https://doi.org/10.4236/ojbm.2020.81002
13. (Homepage - Welcome to European/American Journals - EA Journals. (2024, September 10. Welcome to European/American Journals - EA Journals. https://www.eajournals.org/)
14. Reserve Bank of India - reports. (n.d.). https://rbi.org.in/scripts/PublicationReportDetails.aspx?ID=1270
15. Natarajan, S. (2025, January 8). Indian Banking Sector Performance: RBI Report 2023-2
16. Narayan, S. (2024, November 12). Public sector banks grew 11% in first half of FY25, finance ministry data shows. Mint. https://www.livemint.com/industry/banking/public-sector-banks-growth-finance-ministry-psu-banks-non-performing-assets-npas-banking-reforms-finance-minister-11731407489291.html
17. Credit risk | CEB. (n.d.). https://coebank.org/en/investor-relations/risk-management/credit-risk/
18. Dutta, B. (n.d.). Credit Risk: Types, assessment, and Reduction | Analytics Steps. https://www.analyticssteps.com/blogs/credit-risk-types-assessment-and-reduction
19. (Verma, A. (2022, November 4). Non performing assets. https://www.linkedin.com/pulse/non-performing-assets-abhay-verma/)
20. GITONGA MUTHEE, J. (2006). THE RELATIONSHIP BETWEEN CREDIT RISK MANAGEMENT AND PROFITABILITY: A STUDY OF COMMERCIAL BANKS IN KENYA [MBA Thesis, UNIVERSITY OF NAIROBI]. https://erepository.uonbi.ac.ke/bitstream/handle/11295/5749/Muthee_The%20relationship%20between%20credit%20risk%20management%20and%20profitability.pdf?sequence=1
21. RAYMOND MUTETI, S. (2013). RELATIONSHIP BETWEEN FINANCIAL RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA [Msc Thesis, UNIVERSITY OF NAIROBI]. https://erepository.uonbi.ac.ke/bitstream/handle/11295/75072/Muteti%2cSammy%20R_Relationship%20between%20financial%20risk%20management%20and%20financial%20performance%20of%20commercial%20banks%20in%20kenya.pdf?isAllowed=y&sequence=3
22. Singhal, R., & Arora, Dr. P. (2023). Comparative analysis of credit risk ratio with reference to public and private sector banks [Journal-article]. SKIPS Anveshan, 4(1), 46–67. https://skipspublications.edu.in/wp-content/uploads/2023/08/SKIPSAnveshanVol4Issue1June2023.pdf

23. (Bhattacharyya, S. (n.d.). A Gentle Introduction to Credit Rating | Analytics Steps. https://www.analyticssteps.com/blogs/gentle-introduction-credit-rating)
24. Rao, G. S., Chand, K. P., & Purushotham, J. (2018). Causes and Effects of Non-Performing Assets in the Banking sector. International Journal of Management, Technology and Engineering, XII–XII, 4001. https://ijamtes.org/gallery/451f-dec.pdf)
25. SAMANTARAYA, A. (2016). Procyclical Credit Growth and Bank NPAs in India. Economic and Political Weekly, 51(12), 112–119. http://www.jstor.org/stable/44004144
26. Jaslene Kaur Bawa, Vinay Goyal, S.K. Mitra, Sankarshan Basu, An analysis of NPAs of Indian banks: Using a comprehensive framework of 31 financial ratios, IIMB Management Review, Volume 31, Issue 1,2019, Pages 51-62, ISSN 0970-3896, https://doi.org/10.1016/j.iimb.2018.08.004 (https://www.sciencedirect.com/science/article/pii/S0970389618304579)
27. Burman, A. (2021). India's Economic Slowdown and Why the IBC Matters. In India's Sustained Economic Recovery Will Require Changes to Its Bankruptcy Law (pp. 2–4). Carnegie Endowment for International Peace. http://www.jstor.org/stable/resrep31120.4
28. Das, J. K., & Dey, S. (2011). Non-Performing assets of public and private sector banks in India: an empirical study [Journal-article]. University of Calcutta, Kolkata. https://www.caluniv.ac.in/dj/BS-Journal/vol-38/Non-Performing.pdf
29. Ravirajan, K., Shanmugam, K. R., & MADRAS SCHOOL OF ECONOMICS. (2023). Determinants of Non-Performing Assets of Commercial Banks in India. In MADRAS SCHOOL OF ECONOMICS. https://www.mse.ac.in/wp-content/uploads/2024/01/Working-Paper-251.pdf
30. Kandpal, V. (2020). Non-performing assets in India: A critical analysis of public and private sector banks. Corporate Governance and Sustainability Review, 4(1), 65–73. https://doi.org/10.22495/cgsrv4i1p6
31. Varma S. & Lohani J. (2022). Analysis of non-performing assets in COVID– 19 periods. In AGPE the Royal Gondwana Research Journal of History, Science, Economic, Political and Social Science (Vol. 3, Issue 3, pp. 46–60) [Journal-article]. https://www.agpegondwanajournal.co.in
32. Ronghangpi, M., Naveen Kumar, & Neeraj Tiwari. (2023). EFFICIENCY OF NON-PERFORMING ASSETS (NPA) RECOVERY CHANNELS IN INDIAN BANKS: A STUDY. In ILI Law Review Winter Issue 2023 (pp. 189–190). https://ili.ac.in/pdf/9win23.pdf
33. Financial Statements of Banks.
34. https://www.bis.org/fsi/fsisummaries/ifrs9.pdf
35. PANDEY, S. J., TILAK, V. G., & DEOKAR, B. (2013). Non-Performing Assets of Indian Banks: Phases and Dimensions. Economic and Political Weekly, 48(24), 91–93. http://www.jstor.org/stable/23527401
36. RBI- Bank Wise and Bank Group-Wise Gross Non-Performing Assets, Gross Advances and Gross NPA Ratio of Scheduled Commercial Banks (31/03/2004 –31/03/2023)
37. RBI- Composition of NPAs of Public Sector Banks (31/03/2003 - 31/03/2023)
38. https://www.investopedia.com/terms/n/non-performing-assets.asp
39. RBI Report on Trend and Progress of Banking in India

40. Indira Rajaraman, Sumon Bhaumik, & Namita Bhatia. (1999). NPA Variations across Indian Commercial Banks: Some Findings. Economic and Political Weekly, 34(3/4), 161–168. http://www.jstor.org/stable/4407577