International Journal of Financial Management and Economics

P-ISSN: 2617-9210
E-ISSN: 2617-9229
IJFME 2025; 8(1): 476-480
www.theeconomicsjournal.com
Received: 09-04-2025
Accepted: 12-05-2025

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Evaluating the impact of non-performing assets (NPAs) on functionality and profitability of public sector banks in India

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DOI: https://www.doi.org/10.33545/26179210.2025.v8.i1.535

Abstract
The study aimed to assess the consequences of Non-Performing Assets (NPA) on profitability and the operational effectiveness of public sector banks in India. The main objectives contain summaries of the impact that NPAs have on money performance and the advantages of operational efficiency. The methodology is mixed using qualitative and quantitative data. The target population consists of bankers with the sample size of 150 responses through stratified random. The use of the structured questionnaires to the entire of the survey of the two functions as primary and secondary methods. These statistical tools are used by descriptive and exploratory study like MS Excel and SPSS. We have used mean, standard deviation, and regression for data analysis.

Keywords: Non-Performing Assets (NPAs), public sector banks, functionality, profitability, banking sector, financial performance

1. Introduction
"Non-Performing Assets (NPA)" refer to loans or advances issued by financial companies that fail to yield income for the lender, usually after the debtor has defaulted for 90 days or more. These assets are then identified into toxic assets as a substandard, doubtful, or loss category based on the degree of severity of an individual default. Financial institutions employ a variety of different techniques to solve the problem of NPA, including loan modification, asset selling and legal action (Ravindra 2024) [13]. Regulators impose stringent standards to guarantee that banks uphold a robust loan portfolio, mitigating the contrary effects of NPA on the overall constancy of the financial system. The banking sector is essential to a nation's economy, significantly contributing to growth and stability. The increase in NPA and their impact on bank profitability has garnered recent attention (Bajaj *et al.* 2024) [1]. Public sector banks, regarded as fundamental to financial inclusion and social welfare, operate alongside "Private Sector Banks (PSB)" in India.

PSBs are quite agile in the way they operate, and they give priority to serving their customers. Both of the groups were affected by the existence of the NPAs; however, one group was more affected than the others. Understanding the variation of the elimination of NPAs on the banks of the private and public sectors is necessary for the creation of policies and strategies that will alleviate the negative effects in the banking industry and the national economy (Sharma 2021) [15]. NPA have become a common issue in PSB, making it difficult for them to operate efficiently, manage credit risks and the public to have confidence in them. Nonperforming loans represent at least a large part of the problem since they can either deter liquidity management or prevent performing borrowers from gaining access to the funds they need (Saluja 2017) [14]. The presence of NPA also exposes inadequacies in credit risk management practices, as easy bank lending policies result in higher default rates among borrowers. This, along with political interference and a lack of accountability, makes it worse.

The increasing NPA pose a risk of withdrawn deposits and investments in the sector, which will impact individual banks and consequently the stability and growth of the economy (Rahaman 2022) [12]. To solve this problem, a bank should have strong risk management policies, make stricter lending, and probably also should have systemic reforms.

As the economy changes, PSBS should also evolve their strategies for dealing with NPAs more effectively. The Indian banking system consists of "84 scheduled commercial banks (SCB), including 21 public sector banks (PSB), and 43 foreign banks (FBs)". These banks constitute 98% of the banking sector in India (Miyan 2017) [9]. Following the reforms, the Indian banking sector observed substantial growth in deposit mobilization, loan approvals, and overall banking operations. The proportion of commercial bank credit relative to GDP rose from 24% in 2001 to 55% by 2017, while the relation of bank deposits increased from 44% to 68%. The majority of banks in both the public and private sectors are publicly traded on stock exchanges and engage in active transaction on these platforms. The Indian economy and banking sector have undergone substantial transformations since the implementation of financial reforms in the 1990s (Kantharia 2023) [6].

The "Reserve Bank of India (RBI)" implemented various reorganizations, such as lowering reserve necessities, deregulating interest rates, establishing sensible norms, enhancing bank supervision, and increasing system effectiveness by permitting the entry of private banks. The RBI has implemented Basel III standards for minimum capital necessities to enhance the overall stability of the banking sector. The Indian banking system is regarded as one of the finest globally, with four subsidiaries of the State Bank of India merged into the "State Bank of India (SBI)" in 2016-17 (Brahmaiah 2019) [3].

2. Literature Review

Nikam (2024) [10] examined that the banking sector is essential for a nation's economic development and stability, particularly in developing countries such as India. Banks serve as principal financial intermediaries, transforming deposits into productive investments to foster economic growth. In the 21st century, savers and borrowers have access to options such as stock markets and mutual funds, which provide substantial returns but entail considerable risks. Notwithstanding these alternatives, banks continue to be vital for financial stability. Bank failures and fraud highlight system vulnerabilities, emphasizing the importance of banking in economic development and ongoing efforts to improve efficiency and profitability.

Gunasekaran *et al.* (2024) [5] indicated that the gross NPA ratio of Indian banks has decreased to 3.9% as of March 2023, representing a decade low. Banks are focusing on supporting "micro, small, and medium enterprises" and agricultural financing. However, the issue of NPA negatively impacts banks' profitability and the financial sector. The NPA rate, which reached its peak in 2018, remains above the 2011 level, despite government efforts to reduce it from 9% to 5.8% between 2019 and 2022. The NPA rate has been a considerable concern for banks in India, as it adversely affects their performance and GDP growth.

Pancha (2024) [11] examined 53 banks from 2004-05 to 2018-19 revealed no significant disparities in non-performing asset levels, return on assets, return on equity, average wage, and profit per employee among public sector banks. India's developing market is anticipated to rank as the second-largest economy by purchasing power, with a strong banking system being essential for sustained growth. The study found that PSB had superior recovery rates, with DRTs and SARFAESI achieving higher recovery rates. It also revealed an inverse correlation between NPA and profitability metrics, potentially benefiting stakeholders in decision-making and policy development.

Kaur *et al.* (2023) [7] analyzed the influence of NPA on the profitability of eight banks from both public and private sectors, namely Punjab National Bank, Bank of India, UCO Bank, Punjab and Sind Bank, HDFC Bank, Axis Bank, ICICI Bank, and Yes Bank, over the period from 2009/2010 to 2017/2018. The study employed SPSS version 20 for statistical analysis, encompassing measures of central tendency, variability. This highlights the significant risk posed by NPA to Indian banks, highlighting the country's economic condition and the dependence on efficient operation for economic advancement. The study reveals PSB have a higher trend of NPA compared to PSB, which significantly affects profitability.

Vibhute *et al.* (2021) [17] elucidated the moderate and mediating roles of these indicators on the prevalence of NPA. Since 1991, a number of important changes have been implemented in the Indian banking sector to enhance asset quality, productivity and performance. These involve anteing up prudential standards for "income recognition, asset classification", provision, and capital adequacy, and the primary aim of reducing NPAs. This practice very closely examines the trend of NPAs in the Indian PSB from 2000-01 to 2011-12, scrutinizing the efficiency of NPA management in the post-millennium era. NPA is changed by different bank performance metrics and macroeconomic factors.

Gaur and Mohapatra (2021) [4] investigated the relationship between NPA and profitability within the sector, analyzing the effect of NPAs on bank profitability. The Indian banking sector is opposite difficulties arising from the increasing trend in NPA, which is threatening its health. A well-balanced panel dataset consisting of 37 SCB from 2005 to 2018 was employed for the study. The results presented a strong inverse association between NPA and both "return on assets (ROA) and return on equity (ROE)". The investigation identified NPA as a principal hindrance to the banking sector's profitability, which is proven by a large negative regression coefficient, meaning that deteriorating credit quality adversely affects banks' presentation and precipitates their failure.

Banu and Vepa (2018) [2] examined the detrimental impact of NPA on the performance and profitability of the banking sector identified a significant upward trend over a decade from 2008 to 2017 among public, private, foreign, and SCB. This has necessitated improved management and oversight of these assets, especially in evaluating credit risk for loan disbursement. The t-test was employed to evaluate the hypothesis, revealing an inverse correlation between NPA and "both return on assets and return on equity" across all banking sectors. To mitigate NPA, an effective and ongoing monitoring system is essential, accompanied by measures such as post-sanction follow-up and verification of intended use.

Tandon *et al.* (2017) [16] analyzed the macroeconomic factors influencing non-performing loans and their effect on banking profitability. The "Indian banking sector" is encountering a declining profit due to the bad debts, willful defaulters, and the non-profitable assets. Accordingly, this has led to tougher regulatory measures, the restructuring of corporate debt, the making of substantial provisions as well as the harsh penalties for the loan defaulters. In order to achieve it, the analysis of multivariate data on 35 Indian public and PSB data for the period 2007 to 2016 was conducted. The report suggested that the non-performing assets of public sector banks are crucially the main area of concern with regard to the impact on efficiency and profitability.

Kumar (2016) [8] examined that the banking sector is crucial for a nation's capital and performance, with loans being a significant part of a bank's assets. The NPA ratio is a key metric for evaluating a bank's performance. Banks accept deposits as liabilities and extend loans that generate income, and the quality of loan assets is crucial for the banking system's sustainability. A reduced NPA level fortifies a bank's standing and improves managerial efficacy. Consistent oversight of borrowers can mitigate NPA levels. In the age of globalization, Indian banks encounter intrinsic vulnerabilities that impede their competitive capacity. The study seeks to examine the correlation between NPA and banking performance.

3. Objectives

- To assess the impact of NPA on the functionality of public sector banks in India.
- To assess the impact of NPA on the profitability of public sector banks in India.

4. Hypothesis

- **H_1:** There is a significant impact of NPA on the functionality of public sector banks in India.
- **H_2:** There is a significant impact of NPA on the profitability of public sector banks in India.

5. Research Methodology

The study employs both quantitative and qualitative methods to investigate into the utility of and the profitability of PSB in India in conjunction with the impact of NPA. This study covers of banking professionals from different parts of India, which is done by stratified random sampling with a sample size of 150 participants. The research design is qualitative and exploratory, with data collected from two different sources, primary and secondary. A structured questionnaire is the main research instrument, and the researchers examine how NPAs (independent variables) affect Functionality of PSB in India, Profitability of PSB in India (dependent variables). Data analysis is conducted using the statistical tools MS Excel and SPSS, with the techniques including mean, standard deviation, and regression.

6. Result and Interpretations

This section provides a concise summary of the data’s findings and interpretation. To categorize the outcomes, demographic characteristics, objectives, and hypotheses have been employed. A table that illustrates the findings and clarification of those findings has been incorporated into the objectives as well as hypotheses.

Table 1: Demographic profile of the respondents

Sr. No.	Demographic Variables	Characteristics	N	%
1	Age	25-30 Years	45	30.0
		31-35 Years	30	20.0
		36-40 Years	38	25.3
		Above 40 Years	37	24.7
2	Gender	Male	64	42.7
		Female	86	57.3
3	Education Level	Bachelor's Degree	40	26.7
		Master's Degree	32	21.3
		Doctorate	47	31.3
		Professional Degree	31	20.7
4	Experience in the Banking Sector	0-5 Years	29	19.3
		6-10 Years	34	22.7
		11-15 Years	48	32.0
		Above 16 Years	39	26.0
5	Designation	Middle Management	42	28.0
		Senior Management	25	16.7
		Executive	42	28.0
		Top Management	41	27.3

The demographic information shows that the age of the people asked is more or less the same, the biggest group is those who are 25-30 years old (30%), the ones that are between 36 and 40 years old (25.3%) follow them. Concerning gender, the 57.3% of the surveyed people are females, while the 42.7% are males. The majority in terms of qualifications holds a Doctorate (31.3%), and then there are the ones with a bachelor’s degree (26.7%). The banking experience is mainly focused among those with 11-15 years (32%) and those with 6-10 years (22.7). Lastly, the participants' titles are distributed across several management positions. The Middle management and the executive positions each represent 28%, while senior management accounts for 16.7%, and top management is 27.3%.

7. Objective based Analysis

Objective 1: To assess the impact of NPAs on the functionality of public sector banks in India.

H_1: There is a significant impact of NPAs on the functionality of public sector banks in India.

Table 2: Regression Analysis

Hypothesis	Regression Weights	Beta Coefficient	R2	F	T-Value	P-Value	Hypothesis Result
H_1	Non-Performing Assets (NPAs) > Functionality of Public sector banks in India	.210	0.035	5.329	2.308	0.022	Supported

The hypothesis (H1) which maintains that the NPA have a deteriorating impact on the efficiency of PSB in India is successfully backed by the statistics. The regression of 0.210 reflects a direct and positive relationship between NPA and the efficiency of these banks, with a Beta coefficient of 0.035 measuring its strength. The R-squared value of 5.329 indicates that a considerable part of the diversity in the profitability of government-owned financial institutions is determined by NPA. The t-value of 2.308 and the p-value of 0.022 add extra evidence to this connection since the p-value is less than the typical significance level of 0.05, meaning that the outcome is statistically important. So, the hypothesis is accepted.

Objective 2: To assess the impact of NPAs on the profitability of public sector banks in India.
H_2: There is a significant impact of NPAs on the profitability of public sector banks in India.

Table 3: Regression Analysis

Hypothesis	Regression Weights	Beta Coefficient	R2	F	T-Value	P-Value	Hypothesis Result
H_2	"Non-Performing Assets (NPAs) > Profitability of Public sector banks in India"	.391	.152	26.449	5.143	0.000	Supported

The hypothesis (H2) that NPA negatively impact the profitability of PSB in India is supported by the data. The regression of 0.391 is positive along with NPAs' profitability of the banks, and also, Beta coefficient of 0.152 tells a moderate effect. An R-squared value of 26.449 is missing a significant part, so you get to see variability in banks. All the t-value of the data shows 5.143 and having a p-value of 0.000 below the 0.05 threshold, show that the results are highly statistically significant, so the hypothesis is confirmed.

8. Discussion

In India, the NPA trend is on the rise and has been a big issue for the banks unveiling their position in terms of profits. For instance, research work like Gaur and Mohapatra (2021) [4] and Banu and Vepa (2018) [2] are indicative in the argument that NPA and ROI are directly correlated. Gaur and Mohapatra (2021) [4] study probe into 37 SCB over a period of 14 years (2005-2018), applied solid regression models to advocate the effect of NPA on bank performance, revealing that the increase in NPAs hinders the profit of the bank without the slightly. Similarly, Banu and Vepa (2018) [2] also notice the increase in NPAs in more than ten years in the sector and it is a key factor in the obscuration of public and private banks. Numerous initiatives made to manage credit risk for the past few years have not been very successful, as the continuous increase in NPA still needs stricter measures, such as the frequent supervision of loan portfolios and more careful monitoring of loans before their approval to prevent further damage to asset quality.

The author of the study Gunasekaran *et al.* (2024) [5] observes that even with the efforts the government and banks apply fighting NPA, the risks they pose to banks' profits have not reduced that much and in turn it has negatively impacted the banks' financial stability and the economy as a whole. According to some other scholars, the theory of NPAs being inversely related to bank profits is also acceptable. One of such scholars is Nikam (2024) [10] who raises the point that the banking sector's profitability is an important issue when we speak of the overall economic growth and stability of India. Kumar (2016) [8] emphasizes the significance of assessing the quality of loan assets as a critical factor in the sustainability of banks. PSB, which are more susceptible to credit risk and consequently more prone to NPA, encounter the most significant challenges in managing their loans. This is visible in Kumar's study and the findings of Gunasekaran *et al.* (2024) [5], which confirm that the increase in NPA triggers the deterioration of the financial health of banks, weakening their capacity to efficiently back economic activities.

9. Conclusion

The study under examination concerns the impact of NPA on the functionality and profitability of PSB in India. The study uses a combination of qualitative and quantitative approaches, which involves a structured questionnaire to obtain data from 150 banking professionals (respondents). The analytical approach involves the use of statistical tools like MS Excel and SPSS, and findings disclose a positive correlation between NPA and both functionality and profitability. The study as well as the loss-making effects on profitability is also reported by the study, where the NPAs increase resulting in profitability falling significantly. The results derive out the close and negative association between NPA and major profitability metrics such as "Return on Assets (ROA) and Return on Equity (ROE)". The growing scenario of NPAs, besides being well managed, is a major issue for the banks and is the main cause of instability and financial health of PSB, which consequently leads to bad credit supply and a slowdown of economic development. The conclusions made stress the significance of dealing with the NPA issue, which would stand as the guarantee for continued operation, profitability. Such action becomes even more relevant in the case of the Indian vibrant financial sector.

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