International Journal of Economics, Business and Management Research

Vol. 10, No.11; 2026

ISSN: 2456-7760

Credit Risk Management Practices in Commercial Banks: A Comparative Study of Public and Private Sector Banks in India

Dr. Suman Kalyan Chaudhury[1], Dr. Saroj Kumar Dash[2], Dr. Pradeep Kumar Acharya[3]
Faculty Member, PG Department of Business Administration, Berhampur University, Bhanjabihar, Odisha.
[2]Assistant Registrar, Berhampur University, Bhanjabihar, Odisha.
[3]Lecturer, Department of Commerce, Nayagarh Autonomous College, Nayagarh, Odisha

doi.org/10.51505/IJEBMR.2026.11106 URL: https://doi.org/10.51505/IJEBMR.2026.11106

Received: Oct 10, 2026 Accepted: Oct 21, 2026 Online Published: Nov 13, 2026

Abstract

Credit risk management (CRM) is a critical function of commercial banks because the quality of credit appraisal, approval, monitoring, early-warning mechanisms, recovery, governance, and data capabilities directly influences the management of credit exposures and asset quality. This study comparatively examines credit risk management practices in selected public- and private-sector commercial banks in India using a descriptive and comparative mixed-source approach. Primary evidence was obtained through a structured 20-item questionnaire covering five dimensions of CRM: appraisal and approval, monitoring and early warning, mitigation and recovery, governance and escalation, and data and staff capability. The study also examines five years of publicly reported banking-sector data on gross and net non-performing assets (NPAs), supplemented by Reserve Bank of India publications. The employee-response analysis indicates generally positive perceptions of CRM practices, with internal credit grades informing decisions receiving the highest mean score (3.74), while prompt remedial or recovery action recorded the lowest (3.23). Private-sector respondents reported higher mean scores across all five CRM dimensions; however, bank-level comparisons did not provide convincing evidence of a statistically significant difference in ownership. The secondary data analysis shows a substantial improvement in reported asset quality across both banking groups from 2020–21 to 2024–25. Public-sector gross NPA ratios declined from 9.1% to 2.6%, while private-sector ratios declined from 4.8% to 1.8%, indicating a narrowing of the sectoral gap. The findings highlight the importance of strengthening independent review of credit exceptions, documenting and tracking early-warning cases through to resolution, improving the timeliness of remedial action, and monitoring NPA stocks alongside additions, recoveries, upgrades, and write-offs. The study emphasises that ownership-based differences should not be interpreted as causal without institution-level longitudinal evidence linking CRM practices with subsequent asset-quality outcomes.

Keywords: Credit Risk Management, Commercial Banks, Credit Appraisal, Non-Performing Assets, Credit Monitoring.

Vol. 10, No.11; 2026

ISSN: 2456-7760

1. Introduction

Despite common prudential supervision, banks may differ in how they assess borrowers, approve exceptions, monitor exposures, and respond to signs of distress. Existing comparisons often focus on NPA or profitability ratios, which describe outcomes but reveal little about the processes that preceded them. Other work documents governance, scoring or provisioning in isolation, without linking employee-level practice to comparable bank-level trends. This creates a practical and research problem: the relative strengths and weaknesses of selected public and private banks cannot be reliably inferred from ownership labels or a one-year NPA ratio. A meaningful comparison requires a common set of process dimensions, consistently defined indicators, and explicit attention to the portfolio and macroeconomic context. The study addresses that problem by combining a structured employee questionnaire with five years of publicly reported secondary information.

2. Review of Literature

According to the Basel Committee (2025), there are four interrelated knowledge areas: Credit Risk Environment, Sound Credit Risk Granting, Ongoing Administration and Measurement, and Adequate Controls. The structure begins with a board-approved strategy and clear senior management accountability, then progresses to borrower assessment, limits, independent review, and remedial action. This is a normative approach, rather than a proof that adherence to any single principle will ensure a fixed reduction in an NPA ratio. In this study, Kedia and Mishra (2024) trace studies on CRM, highlighting the range of factors examined; Singh (2015) explicitly compares public and private banks in India; and Sahoo and Kaur (2017) investigate the practices of public banks. While the institutional or geographical nature of the latter studies can be beneficial in posing questions for fieldwork, the conclusions of any one state/bank group cannot be extrapolated to all commercial banks.

Sahoo and Kaur (2017) have looked into a public bank case, giving details on the processes but lacking cross-bank comparability. These works seem to warrant consideration of that question: how does credit policy work in practice? Does it have written rules? Are exceptions independent of the rules? Are borrowers reviewed regularly? When is escalation performed? These are all variables that are worthy of consideration. These are organised into appraisal, monitoring and mitigation, governance and capability in the present questionnaire, rather than being captured in a generic 'risk management' score.

Gross NPA ratio relates the stock of classified problem advances to gross advances, while the net ratio adjusts for specified provisions and other deductions included under the definition of reporting for NPA (RBI, 2025). These are useful public indicators, but have timing and denominator effects. Those who are under stress over the rising NPAs should know that new lending growth is occurring despite new loan originations not yet being seasoned, write-offs are reducing assets in the stock, and transparency is improving even as the number of NPAs increases. The design of a default definition is important for scoring, as Harris (2013) indicates: changing the outcome label also changes the evaluation task. When assessing bank efficiency, Li

Vol. 10, No.11; 2026

ISSN: 2456-7760

et al. (2024) explicitly model uncertainty in the presence of non-performing loans, while Fukuyama et al. (2022) incorporate non-performing loans in a bank production analysis. Both the way they approached the impaired loan and the results themselves were confirmation that an impaired loan was an outcome of past decisions and an input into measures of current efficiency. The dissertation thus details the numerators, denominators, and reporting dates, and compares gross NPAs with net NPAs, provisioning, and loan growth. If one sector is found to have a lower ratio, this is a description, and the appraisal system is not necessarily better. The test of practices needs independent process evidence and careful consideration of portfolio composition.

3. Research Objectives

The study has four objectives. First, it examines the credit risk management practices of selected public- and private-sector commercial banks in India, focusing on appraisal, approval, monitoring, mitigation, and governance. Second, it compares employee assessments of the effectiveness of these processes across the two ownership groups, including information systems and early warning mechanisms. Third, it compares bank-level asset quality and financial indicators over five financial years and explores whether reported CRM practices are associated with NPA outcomes. Fourth, it develops recommendations that follow from the observed evidence on processes and outcomes while recognizing the limits of a small purposive sample.

4. Research Hypotheses

Three pairs of testable hypotheses are specified before inspecting the responses.

H_{01}: The distribution of employee-rated credit appraisal and approval effectiveness is the same in the sampled public and private sector banks.

H_{11}: The distribution of employee-rated credit appraisal and approval effectiveness differs between the sampled public and private sector banks.

H_{02}: The distribution of employee-rated monitoring and early warning effectiveness is the same in the two sampled groups.

H_{12}: The distribution of employee-rated monitoring and early warning effectiveness differs between the groups.

H_{03}: The distribution of the selected banks' annual gross NPA ratios over the study period is the same in the public and private groups.

H_{13}: The distribution of those annual gross NPA ratios differs between the groups. Each alternative is two-sided: there is no presumption that either sector is superior.

5. Significance of the Research

The study is significant for academic understanding because it connects a process-based view of credit risk management to outcomes from the same selected institutions. Previous studies often estimate broad relationships across many banks or discuss individual tools. A compact mixed-source comparison can show how reported differences in appraisal, monitoring, and governance align with asset-quality trends, where they do not, and what alternative explanations remain plausible. It also makes ownership comparisons more precise. Public and private banks share core regulatory rules but may have different histories, customer segments, and organisational

Vol. 10, No.11; 2026

ISSN: 2456-7760

routines; contrasting them in India makes the institutional context visible without assuming that ownership alone is causal.

6. Conceptual Framework

The independent explanatory constructs are the five employee-rated CRM dimensions: appraisal and approval, monitoring and early warning, mitigation and portfolio control, governance and independent challenge, and data capability and staff training. The ownership group is a comparison or contextual variable, not an assumed cause. Intermediate mechanisms are the quality of credit decisions, timely detection, escalation and loss containment. The principal observed outcome is the annual gross NPA ratio; net NPA, coverage, capital adequacy, and ROA provide supplementary context. Bank size, loan growth, portfolio mix, common macroeconomic conditions and recognition or write-off practices can confound the observed relation. The framework proposes plausible pathways to be examined descriptively, not a causal model established by the available data. Its flows are shown below.

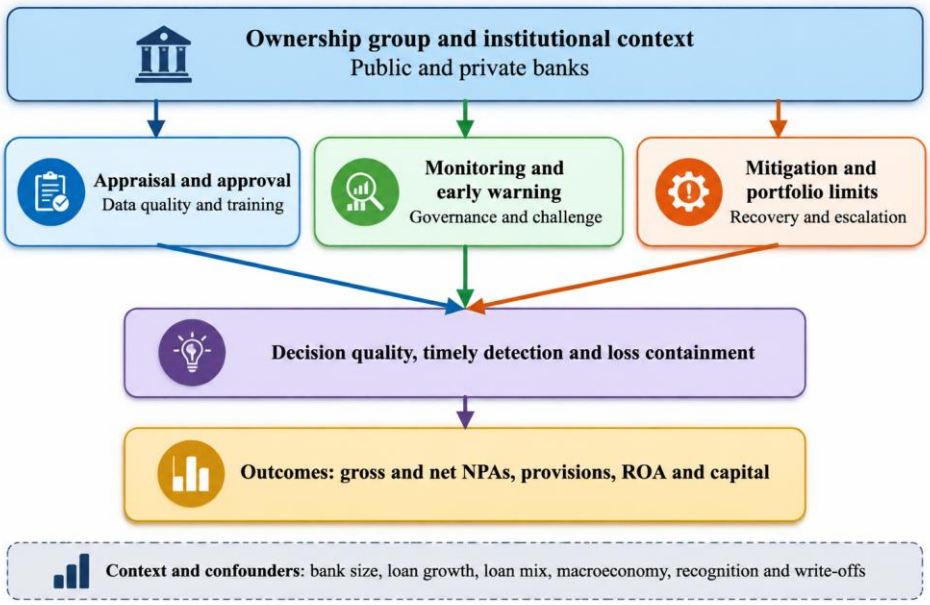


Figure 2.1 Conceptual framework and observed variables

The arrows represent hypotheses about mechanisms. An arrow from stronger monitoring to lower future impairment, for example, may be interrupted by a severe common shock or hidden by delayed recognition. The employee construct scores and bank-year ratios also differ in level of measurement. The study, therefore, compares each strand within its own unit and then integrates them into a joint discussion. It does not merge individual responses with bank-year observations as though they were independent rows in a single regression. This explicit separation gives the framework practical value: every proposed link can be matched to the evidence actually available, and unobserved links can be identified as limitations.

Vol. 10, No.11; 2026

ISSN: 2456-7760

7. Research Methodology

The type of research in this study is descriptive and comparative, using mixed sources. The employee questionnaire is a structured 20-item survey that provides primary evidence of the implementation of credit risk management, and published bank and regulatory materials provide secondary evidence of reported asset quality and performance over the past five financial years. The sources refer to various units and must be combined during interpretation, not treated as distinct observations. The main types of designs are cross-sectional for employee responses and longitudinal descriptive for bank-year ratios. It can determine patterns, differences, and plausible explanations; it cannot determine whether an ownership structure or a stated practice led to the subsequent NPAs.

The target survey participants are employees whose work involves credit appraisal, risk monitoring, recovery, and branch credit operations. This is the instrument length (20 items) and not evidence that 20 employees responded. Where the researcher wishes to include 20 employee participants in total, this separate target should be specified alongside the number of participants realised in each sector and in each bank.

The study information page, the voluntary consent question, the role- and bank-sector screening questions, and the 20 substantive items can all be presented in a Google Form. 3.5 Secondary data and source hierarchy. The audited annual reports and investor disclosures of each selected bank, RBI publications such as the Report on Trend and Progress of Banking in India and the Financial Stability Report, and current RBI prudential circulars are the main secondary sources.

8. Results and Data Analysis

8.1 Response profile and data preparation

Table 1 Respondent Profile

Characteristic	Category	Number	Percent
Sector	Public sector	90	50.0
Sector	Private sector	90	50.0
Role	Risk management	44	24.4
Role	Branch credit operations	37	20.6
Role	Recovery	33	18.3
Role	Credit appraisal	33	18.3
Role	Account monitoring	33	18.3
Age band	31–40	49	27.2
Age band	41–50	49	27.2
Age band	21–30	44	24.4
Age band	51–60	38	21.1
Gender	Woman	66	36.7
Gender	Man	60	33.3

Vol. 10, No.11; 2026

ISSN: 2456-7760

Gender	Prefer not to say	54	30.0
Experience band	3–5 years	39	21.7
Experience band	Less than 3 years	38	21.1
Experience band	11–15 years	37	20.6
Experience band	More than 15 years	34	18.9
Experience band	6–10 years	32	17.8
Education	Professional qualification	63	35.0
Education	Master's degree	60	33.3
Education	Bachelor's degree	57	31.7

Source: SPSS

There is an equal distribution of the response file between public and private ownership, and the resulting side-by-side tabulation is easy to read. It is not evidence of population balance: constructed sector totals. There are 18 responses per coded bank, and the allocation of roles and characteristics within each bank may affect the composite means, so the composite means may differ from those calculated in the sections above. The mix of roles involves risk management, branch credit, and recovery & appraisal staff. A positive appraisal score from a recovery employee is not the same as a positive score from an approval officer – they will see different aspects of the lending process.

Table 2 Measurement Map

Construct	**Items**	**Operational interpretation**
Appraisal and approval	Q1, Q2, Q3, Q4	Application evidence, financial analysis, grades and exceptions
Monitoring and early warning	Q5, Q6, Q7, Q8	Review frequency, detection, escalation and recorded follow-up
Mitigation and recovery	Q9, Q10, Q11, Q12	Exposure limits, concentration, collateral and remediation
Governance and escalation	Q13, Q14, Q15, Q16	Authority, challenge, information and overrides
Data and staff capability	Q17, Q18, Q19, Q20	System reliability, data checks, training and explainability

Vol. 10, No.11; 2026

ISSN: 2456-7760

Objective 1 and RQ1 Analysis of reported practices

Table 3 Item descriptives and favourable response share

Item	Practice statement summary	Mean	SD	Agree %
Q1	Application information sufficient	3.65	1.33	68.3
Q2	Cash flow and financial analysis	3.67	1.30	68.9
Q3	Internal grades inform decisions	3.74	1.27	71.1
Q4	Exceptions independently reviewed	3.48	1.39	62.2
Q5	Risk-based account review	3.60	1.28	65.0
Q6	Deterioration detected promptly	3.53	1.30	64.4
Q7	Early warning escalation	3.62	1.30	65.0
Q8	Early warning follow-up recorded	3.34	1.42	60.6
Q9	Borrower and group limits	3.69	1.28	69.4
Q10	Concentration reviewed	3.59	1.38	66.7
Q11	Collateral revaluation	3.69	1.24	70.0
Q12	Prompt remedial or recovery action	3.23	1.45	53.3
Q13	Delegated authority clarity	3.59	1.29	67.8
Q14	Effective risk function challenge	3.53	1.36	64.4
Q15	Management information timeliness	3.67	1.31	71.1
Q16	Accountable overrides	3.56	1.38	66.1
Q17	Reliable risk information systems	3.69	1.33	68.3
Q18	Borrower data checks	3.69	1.38	68.3
Q19	Staff training	3.63	1.31	65.0
Q20	Staff understanding of tools	3.57	1.34	65.6

Source: SPSS

Vol. 10, No.11; 2026

ISSN: 2456-7760

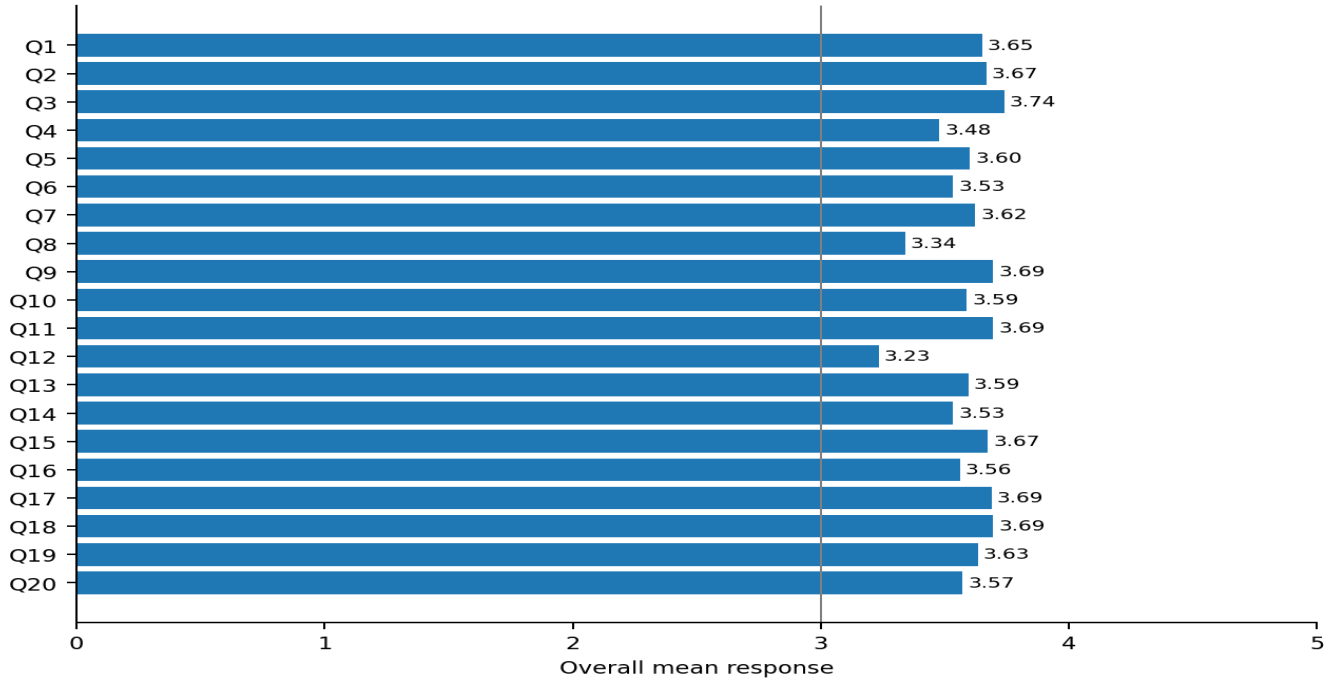


Figure 1. Overall item means on the five-point scale

All twenty means exceed the scale midpoint of 3, but the range from 3.23 to 3.74 is material for prioritisation. Q3, the use of internal grades, is highest at 3.74; Q12, prompt remedial or recovery action, is lowest at 3.23. The distance is 0.51 scale points. It would be inaccurate to call Q12 a universal failure because its mean remains above neutral, and individual response categories overlap. Equally, a favourable overall mean should not obscure the lower relative score. The table retains standard deviations and favourable shares precisely because two items with a similar mean can have different spreads and different proportions of employees selecting agreement.

9. Detailed Analysis

9.1 Appraisal and Approval

Questions 1–4 assess the initial credit decision process. The mean scores for repayment information, cash-flow analysis, internal credit grading, and independent review of exceptions are 3.65, 3.67, 3.74, and 3.48, respectively. Q4 has the lowest score, highlighting the need for better documentation, proper authorization, and independent scrutiny of credit exceptions. Overall, the results suggest that underwriting quality depends on both sound assessment and effective oversight.

Vol. 10, No.11; 2026

ISSN: 2456-7760

9.2 Monitoring and Early Warning

Questions 5–8 examine post-approval monitoring, with mean scores of 3.60, 3.53, 3.62, and 3.34, respectively. The lowest score for Q8 indicates scope to improve the recording and closure of early-warning cases. Although warning signals may be identified and escalated, their resolution should be documented through clear responsibilities, timelines, and closure records.

9.3 Mitigation, Concentration and Recovery

The mean scores for borrower or group exposure limits, sector or product concentration, collateral review, and timely recovery action are 3.69, 3.59, 3.69, and 3.23, respectively. The 0.46-point gap between Q9 and Q12 suggests that preventive controls are rated more favourably than responses to distressed accounts. Strengthening restructuring, recovery, and legal follow-up could improve credit risk management.

9.4 Governance, Data and Capability

Governance-related scores range from 3.53 to 3.67, covering delegated credit authority (3.59), independent risk challenge (3.53), timely information to senior management (3.67), and accountability for recording overrides (3.56). These results indicate a generally functional control framework, although the documentation for independent challenge and override requires attention. Effective governance should ensure that risk concerns influence lending decisions and that exceptions are properly recorded and reviewed.

Objective 2 and RQ2: Ownership comparison of employee assessments

Table 4 Composite means, consistency and comparison p values

Construct	Public	Private	Difference	Alpha	Person p	Bank p
Appraisal and approval	3.519	3.747	+0.228	0.612	0.047	0.405
Monitoring and early warning	3.431	3.617	+0.186	0.673	0.175	0.460
Mitigation and recovery	3.428	3.678	+0.250	0.631	0.097	0.357
Governance and escalation	3.561	3.619	+0.058	0.620	0.733	0.833
Data and staff capability	3.608	3.686	+0.078	0.616	0.592	0.810

Source: supplemental calculations from the illustrative synthetic response workbook.

Vol. 10, No.11; 2026

ISSN: 2456-7760

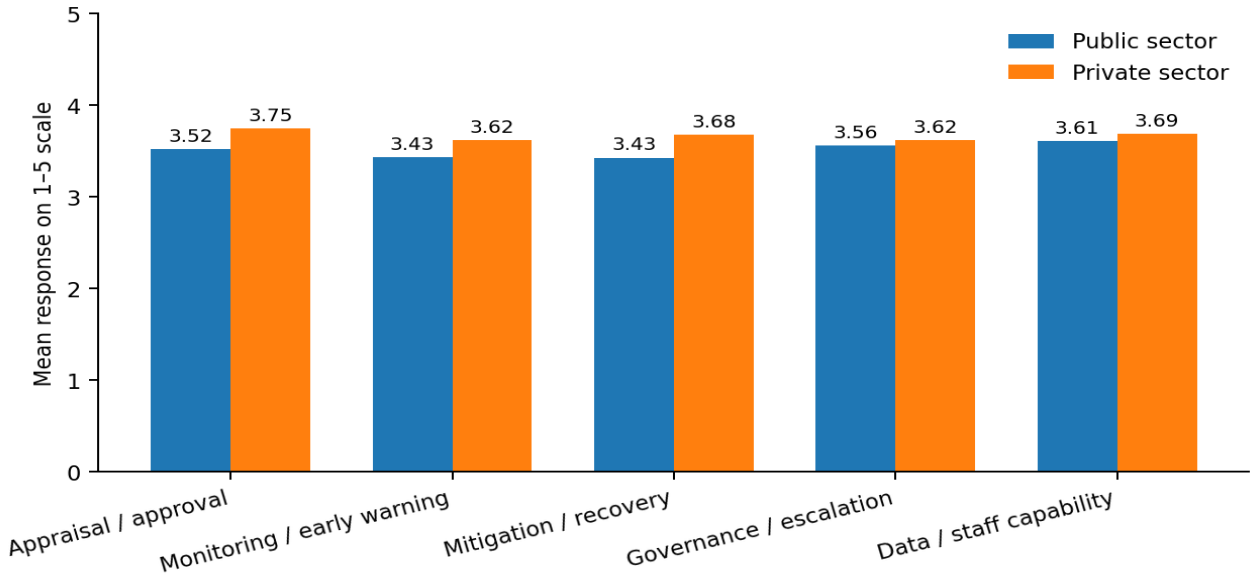


Figure 2: Five process dimension means by ownership group

The private-sector group recorded higher mean scores across all five domains, with the largest differences in mitigation and recovery (+0.250) and appraisal and approval (+0.228), while governance showed the smallest gap (+0.058). However, these differences are descriptive and do not establish statistically significant ownership-based differences. When the bank was treated as the independent unit, none of the exact permutation tests reported in Table 4.4 reached the 5% significance level. The findings should therefore be interpreted cautiously, given the small sample of five banks per ownership group. Cronbach's alpha values of approximately 0.61–0.67 for four-item composites indicate moderate internal consistency. Since each domain combines different stages of credit risk management, a single average may conceal meaningful differences between individual practices. Future studies should assess item correlations, consult practitioners to establish content validity, and pretest questionnaire wording before using composite scores to evaluate institutional performance.

The respondent-level Mann–Whitney test for appraisal produced a p-value of approximately 0.047, suggesting a difference at the conventional 5% level. However, responses from employees within the same bank are not fully independent. The bank-level analysis yielded a p-value of approximately 0.548, indicating insufficient evidence of a statistically significant ownership effect. These results are not contradictory; they reflect different analytical units and highlight the risk of pseudo-replication. Similarly, the sector difference in monitoring and early warning was approximately 0.186 points, with respondent-level and bank-level p-values of 0.175 and 0.548, respectively. Neither result provides sufficient evidence of a significant sector difference. Nevertheless, the small number of banks limits statistical power, so the findings do not establish equality between ownership groups. Further investigation should examine Q8 follow-up practices and actual institutional workflows rather than relying solely on composite scores to rank ownership groups.

Vol. 10, No.11; 2026

ISSN: 2456-7760

Bank clustering and sensitivity

Table 5 Bank code means used in the exact comparisons

Sector	Code	n	Appraisal	Monitoring
Private sector	PVB01	18	3.32	3.22
Private sector	PVB02	18	4.24	3.96
Private sector	PVB03	18	3.97	3.86
Private sector	PVB04	18	3.65	3.75
Private sector	PVB05	18	3.56	3.29
Public sector	PSB01	18	3.62	3.58
Public sector	PSB02	18	3.24	3.18
Public sector	PSB03	18	2.90	2.92
Public sector	PSB04	18	3.83	3.50
Public sector	PSB05	18	4.00	3.97

Source: SPSS

The coded bank table clarifies what is and is not replicated. There are 18 people per code, but only 5 coded banks per sector. When bank averages differ within a sector, a difference between sectors may partly reflect which five codes were included. A cluster-aware estimate based on 10 banks has much wider practical uncertainty than a calculation that pretends to draw from 180 independent institutions. Exact permutations enumerate every division of ten bank averages into two sets of five; the p-value is the share whose absolute average difference is at least the observed one. This procedure is transparent but depends on the conceptual exchangeability of the coded banks, which an actual purposive sample would not fully satisfy. The questionnaire is cross-sectional. It cannot resolve whether employees with a positive view of controls work in banks with better asset quality, nor whether good recent results encourage positive survey responses. The bank codes are not linked to actual NPA disclosures, and there is no unique bank identifier or survey year to enable alignment. Consequently, a person-level regression predicting an NPA ratio from these scores cannot be fitted from the supplied material. The appropriate synthesis is a comparison of patterns and a statement of the missing link, not an invented coefficient or a false causal interpretation.

Vol. 10, No.11; 2026

ISSN: 2456-7760

The past SPSS correlations and exploratory regression

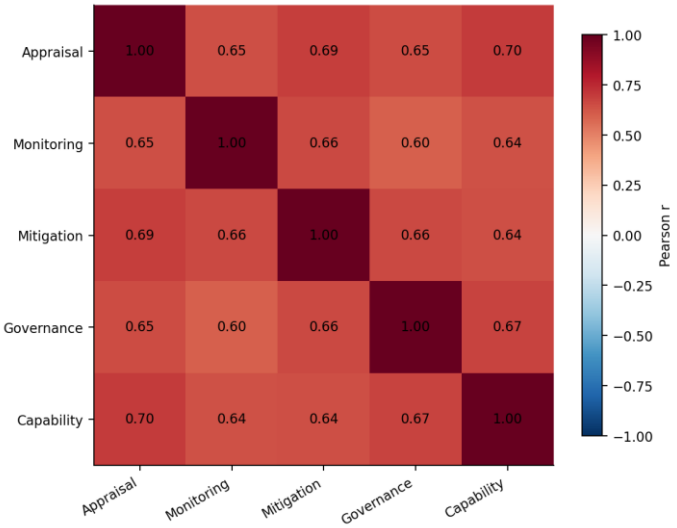


Figure 3: Correlation heatmap of five questionnaire dimensions

Table 6 Pearson correlations among questionnaire dimensions

Dimension	Appraisal	Monitoring	Mitigation	Governance	Capability
Appraisal and approval	1.00	0.65	0.69	0.65	0.70
Monitoring and early warning	0.65	1.00	0.66	0.60	0.64
Mitigation and recovery	0.69	0.66	1.00	0.66	0.64
Governance and escalation	0.65	0.60	0.66	1.00	0.67
Data and staff capability	0.70	0.64	0.64	0.67	1.00

Source: SPSS

The coded bank table explains what is and is not being replicated. Fifteen people are coded per sector, and 5 coded banks per person. A difference between any two banks may be partly due to the difference between the bank averages in any particular sector if any. The practical uncertainty is much greater for the cluster-aware estimate than for an estimate that assumes 180 independent institutions. Exact permutations count all ways of dividing 10 bank averages into two sets of 5, and p is the proportion of the resulting set that has an average difference of at least the difference observed. This procedure is clear, but it relies on the conceptual exchangeability of the coded banks; an actual purposive sample would not fully meet this requirement. This

Vol. 10, No.11; 2026

ISSN: 2456-7760

questionnaire is in a cross-sectional format. It can't determine if positive ideas about controls are associated with better asset quality among bank employees, or if better recent results lead to more positive survey responses. There is no unique bank identifier or survey year that would allow alignment with the bank codes, nor is there a link to actual NPA disclosures. Therefore, based on the provided information, a person-level regression predicting the NPA ratio from these scores cannot be fitted. The synthesis is meant as a comparison of patterns and a statement of what is missing, not an invented coefficient or a spurious causal analysis.

Table 7 regression is shown in the pasted SPSS output

Statistic	**Reported value**	**Interpretation**
Dependent variable	Q20	Understanding and questioning tool outputs
Predictors	Q1 to Q19	Nineteen contemporaneous questionnaire items
Valid observations	180	One response per case in that fitted table
R and R-squared	.523 and .274	In the sample association, 27.4% of the variance was accounted for
Adjusted R-squared	.188	Adjustment for nineteen predictors
F test	F(19,160) = 3.177; p < .001	Overall model against the intercept only
Q4 coefficient	B = .179; p = .030	Conditional association in this fitted specification
Q11 coefficient	B = .199; p = .023	Conditional association in this fitted specification

Source: SPSS

The heatmap presents all ten pairwise correlations among the five composite domains. Appraisal and approval show the strongest correlation (0.70), while data and staff capability have the weakest (0.60). All correlations are positive, indicating that respondents who rate one domain favourably also tend to rate others positively. However, these associations may reflect shared control processes, response patterns, or similar wording on questionnaires rather than causal relationships. They do not establish that better appraisal improves monitoring or reduces NPAs. Pearson's correlation was applied to the four-item domain averages as approximately continuous variables. These descriptive associations differ from the ownership-based hypothesis tests conducted using bank-level means. Although the SPSS output also includes correlations among all 20 individual questionnaire items, isolated significance levels should be interpreted cautiously because of multiple comparisons and possible response bias. With 190 item pairs examined, some apparently significant relationships may arise by chance. Accordingly, the analysis focuses on the five predefined composite domains rather than selectively highlighting individual correlations as evidence of effective credit risk management.

Vol. 10, No.11; 2026

ISSN: 2456-7760

Objective 3 and RQ3: Five-year secondary data analysis

The RBI series offers an observed institutional context. The 2020–21 through 2022–23 figures come from the Handbook of Statistics on Indian Economy table on bank group gross and net NPAs; 2023–24 and 2024–25 come from the RBI Report on Trend and Progress of Banking in India 2024–25, Table IV.9. These are public and private banking group aggregates covering institutions beyond the ten coded survey banks. Different RBI editions may revise earlier figures, and the handbook marks some recent historical entries as provisional. The analysis keeps the reported one-decimal precision and avoids claiming unreported precision from chart readings.

Table 8 RBI bank group gross and net NPA ratios, per cent

Year	Public gross	Private gross	Gap pp	Public net	Private net
2020–21	9.1	4.8	4.3	3.1	1.4
2021–22	7.3	3.8	3.5	2.2	1.0
2022–23	5.0	2.3	2.7	1.2	0.5
2023–24	3.5	1.9	1.6	0.8	0.5
2024–25	2.6	1.8	0.8	0.5	0.5

Sources: RBI Handbook of Statistics on Indian Economy, Table 53 (2020–21 to 2022–23), and RBI Report on Trend and Progress of Banking in India 2024–25,

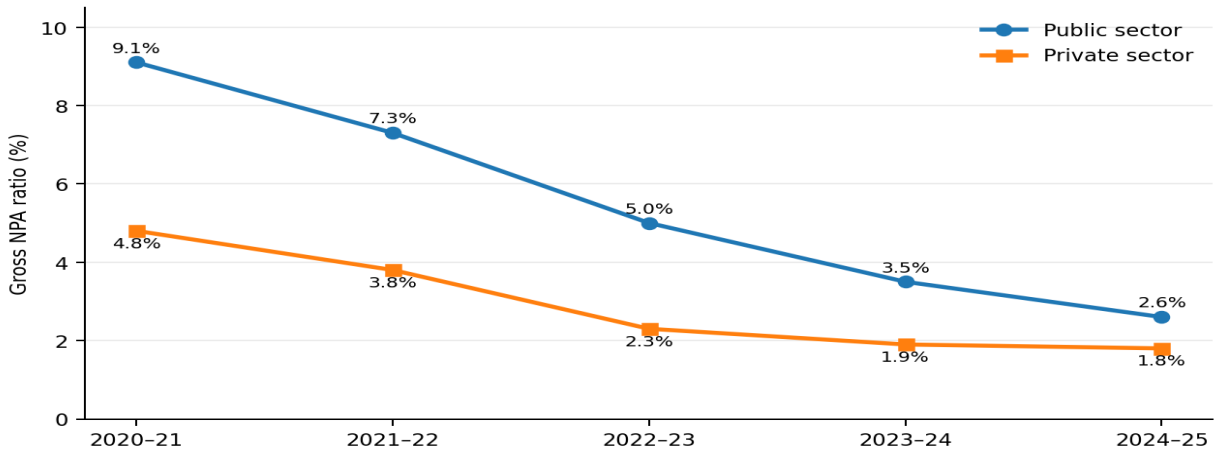


Figure 4 Gross NPA ratios by banking group from 2020–21 to 2024–25

Vol. 10, No.11; 2026

ISSN: 2456-7760

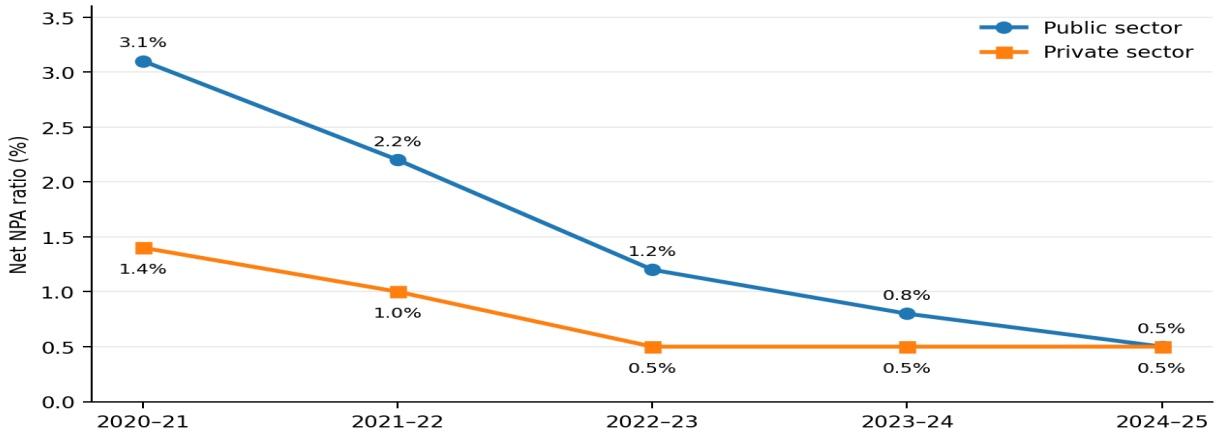


Figure 5 Net NPA ratios by banking group from 2020–21 to 2024–25

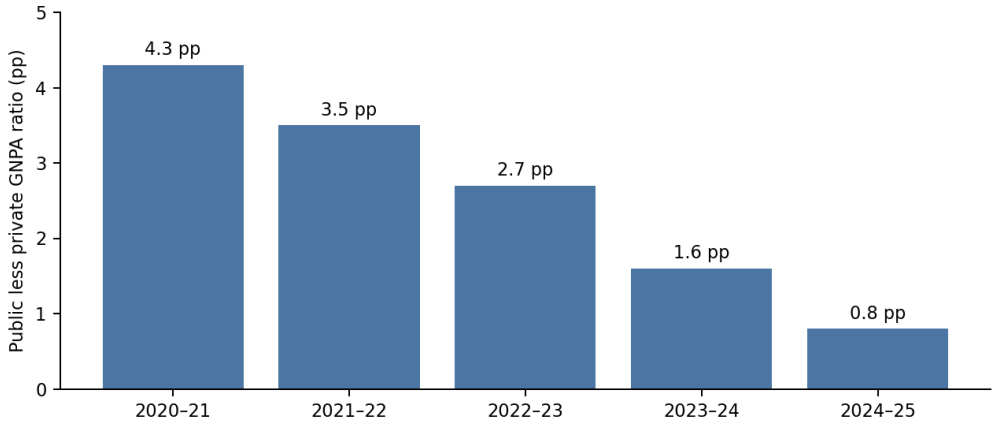


Figure 6: Public less private gross NPA ratio gap in percentage points

The gross NPA ratio of public-sector banks declined from 9.1% in 2020–21 to 2.6% in 2024–25, a reduction of 6.5 percentage points. Private-sector banks recorded a decline from 4.8% to 1.8%, equivalent to 3.0 percentage points. Although public-sector banks maintained higher ratios throughout the period, the gap narrowed from 4.3 to 0.8 percentage points. This convergence reflects improvement from different starting positions and does not necessarily indicate superior current appraisal practices. Gross NPA ratios are influenced by changes in NPAs, advances, and asset classification. The Ministry of Finance reported gross NPA ratios of 9.11% in March 2021 and 2.58% in March 2025 for public-sector banks (Press Information Bureau, 2025). These figures corroborate the rounded values presented in the RBI series. Annual reductions also indicate a gradual slowdown in improvement. Public-sector banks recorded declines of 1.8, 2.3, 1.5, and 0.9 percentage points, while private-sector banks recorded reductions of 1.0, 1.5, 0.4, and 0.1 percentage points. The public-sector ratio fell by approximately 71% relative to its initial level, which differs from the absolute decline of 6.5 percentage points.

Vol. 10, No.11; 2026

ISSN: 2456-7760

Net NPA ratios also converged during the study period. Public-sector banks declined from 3.1% to 0.5%, while private-sector banks fell from 1.4% to 0.5%. Although both groups reached the same reported ratio in 2024–25, this does not imply identical portfolio quality or provisioning practices. Net NPA ratios account for specified deductions and use net advances as the denominator; therefore, the difference between gross and net ratios is not equivalent to the official provision coverage ratio. These findings provide a descriptive comparison of sector-level trends rather than evidence of a causal ownership effect. The five annual observations for each group are insufficient for reliable inference if treated as independent observations, particularly because macroeconomic conditions, regulatory changes, and credit cycles affect both sectors. Moreover, aggregate data cannot directly test H03, which requires bank-level observations. Future research should construct an annual panel of individual banks, account for mergers and changes in definitions, and use bank-level clustering to obtain more reliable estimates.

NPA stock, additions and resolution in 2024–25

Table 9 RBI gross NPA movement in 2024–25, ₹ crore

Movement	**Public**	**Private**
Opening gross NPAs	339,541	129,164
Additions	82,762	121,735
Total reductions	138,653	118,224
Of which recoveries	33,630	29,320
Of which upgrades	13,847	30,360
Of which write-offs	91,176	58,544
losing gross NPAs	283,650	132,674

Source: RBI Report on Trend and Progress of Banking in India 2024–25, Table IV.9.

Constituents may differ from totals by rounding. The categories under reductions are components and must not be added again to total reductions.

Vol. 10, No.11; 2026

ISSN: 2456-7760

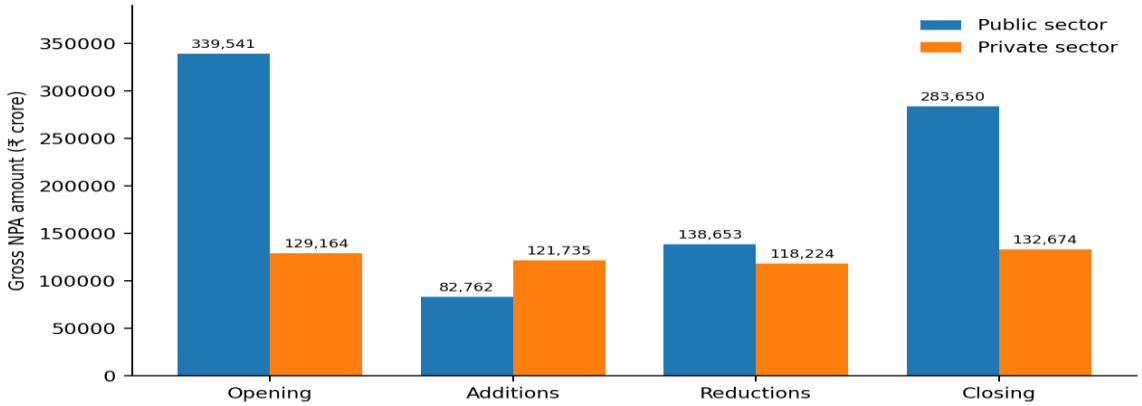


Figure 7. Gross NPA stocks and movements in 2024–25, ₹ crore

The movement data provide additional insight into changes in gross NPAs. Public-sector banks recorded gross NPA reductions to ₹2,83,650 crore, following additions of ₹82,762 crore and reductions of ₹1,38,653 crore. In contrast, private-sector gross NPAs increased from ₹1,29,164 crore to ₹1,32,674 crore, even as the gross NPA ratio declined from 1.9% to 1.8%. This indicates that a declining NPA ratio does not necessarily correspond to a fall in the absolute value of stressed assets, as changes in advances and reporting factors also influence the ratio. During the year, public-sector banks reported write-offs of ₹91,176 crore and recoveries of ₹33,630 crore, while private-sector banks recorded write-offs of ₹58,544 crore and recoveries of ₹29,320 crore. Upgrades amounted to ₹13,847 crore for public-sector banks and ₹30,360 crore for private-sector banks. Write-offs reduce the reported gross NPA stock under applicable accounting and prudential treatment but do not necessarily represent cash recovered from borrowers. Therefore, write-offs, recoveries, and upgrades must be examined separately when assessing improvements in asset quality.

Private-sector banks recorded fresh NPA additions of ₹1,21,735 crore, compared with ₹82,762 crore for public-sector banks. These absolute amounts are influenced by differences in portfolio size and composition and cannot independently establish relative performance without appropriate exposure-based measures and consistent definitions. Private-sector additions were largely offset by reductions during the same period. Although these aggregate figures help explain movements in asset quality, they cannot establish a direct relationship between individual survey responses on monitoring or recovery practices and specific changes in NPA amounts. Such conclusions would require bank-level data linking risk-management practices to annual NPA movements.

Interpreting a five-year improvement

Gross NPA ratios capture recognised impaired loans rather than all credit risks in performing portfolios. Borrowers with weak cash flows may trigger early-warning mechanisms without meeting the criteria for NPA classification. Conversely, existing NPAs may remain in the reported stock even after underwriting policies improve. Therefore, cross-sectional survey findings cannot directly explain five-year asset-quality trends, particularly when the

Vol. 10, No.11; 2026

ISSN: 2456-7760

questionnaire lacks policy-adoption dates, loan-originating cohorts, and time-lag analysis. Differences in institutional mandates, sectoral exposure, business mix, and historical balance-sheet composition between public- and private-sector banks further complicate comparisons.

The weighting methods also differ. RBI group-level NPA ratios reflect aggregate advances and are therefore influenced more heavily by larger banks, whereas survey averages give equal weight to individual respondents. Bank-level sensitivity analysis assigns equal weight to each sampled bank code. These approaches address different analytical questions, and differences in weighting cannot be eliminated merely by improving numerical accuracy. Consequently, group-level NPA ratios alone are insufficient to determine the overall quality of credit management in either sector.

Nevertheless, the observed improvement provides useful context for practical recommendations. With public-sector gross NPAs declining from 9.1% to 2.6%, greater attention may be directed towards resolving existing stressed accounts while sustaining preventive controls. For private-sector banks, the 2024–25 ratio of 1.8%, alongside a slight increase in gross NPA stock, highlights the importance of monitoring fresh additions. These interpretations are indicative rather than universally applicable to every bank. Effective institution-specific recommendations require detailed evidence on portfolio segments, lending practices, and recovery performance.

Formal testing of the three hypotheses

Table 10: Prespecified hypothesis tests and bank-level sensitivity

Hypothesis	Person n	U statistic	Person p	Bank p	Decision
H01	90 / 90	3359.0	0.047	0.405	Do not reject at the bank level
H02	90 / 90	3577.0	0.175	0.460	Do not reject at the bank level

U statistics compare the 90 public and 90 private person composite scores; two-sided asymptotic Mann–Whitney p-values are shown. Bank p is exactly over 252 reallocations of ten bank means.

Table 11 Findings against the three prespecified hypothesis pairs

Pair	Specified contrast	Evidence and disposition
H01 / H11	Appraisal and approval ratings by sector	Person p ≈ .047; bank exact p ≈ .548. Insufficient cluster-aware evidence to reject H01.
H02 / H12	Monitoring and early warning ratings by sector	Person p ≈ .175; bank exact p ≈ .548. Insufficient evidence to reject H02.
H03 / H13	Annual gross NPA ratios of selected banks by sector	Selected bank-year observations absent. H03 cannot be tested; RBI aggregates provide context only.

Vol. 10, No.11; 2026

ISSN: 2456-7760

H01: Appraisal and Approval Effectiveness

H01 examines differences in employee-rated appraisal and approval effectiveness between public- and private-sector banks. The private-sector mean (3.747) exceeded the public-sector mean (3.519). Although the respondent-level test was marginally significant, the bank-level comparison was not. Therefore, the available clustered data do not provide sufficient evidence to reject H01. This does not establish equality between the groups but reflects the limitations of the sample and study design.

H02: Monitoring and Early Warning

The private-sector monitoring mean (3.617) was higher than the public-sector mean (3.431), but neither respondent-level nor bank-level testing showed a statistically significant difference. The results remain inconclusive rather than demonstrating equivalence. The comparatively low overall score for Q8 highlights scope to strengthen the documentation and closure of early-warning cases in both sectors, irrespective of ownership-based differences.

H03: Non-Performing Asset Ratios

Official aggregate data show that public-sector banks had higher gross NPA ratios than private-sector banks throughout the five years, although the gap narrowed. However, the specified hypothesis concerns annual NPA ratios for selected individual banks, and the required bank-level data have not been provided. Sector-level observations cannot substitute for bank-level measurements, particularly when annual observations are interrelated. Accordingly, H03 and H13 remain untested. Future analysis should use verified annual data for the selected banks, appropriate bank-level statistical methods, effect sizes, and year-wise sensitivity checks.

Overall Hypothesis Assessment

The findings distinguish statistical evidence from substantive interpretation. H01 and H02 lack convincing evidence of ownership-based differences after accounting for bank-level clustering, while H03 and H13 remain untested because the necessary bank-specific data are unavailable. Nevertheless, the questionnaire identifies areas for process improvement, and the RBI data reveal meaningful NPA trends. Establishing a reliable relationship between credit-management practices and actual NPA outcomes requires identified banks, comparable exposure measures, consistent time periods, documented control implementation, and appropriate consideration of confounding factors.

Vol. 10, No.11; 2026

ISSN: 2456-7760

Objective 4 and RQ4 Evidence-led improvements

Table 12: Practical implications traced to specific findings

Finding	Verification in an actual bank	Improvement to assess
Q4 lower than other appraisal items	Sample exception files and approval trail	Independent exception review and reason codes
Q8 low relative to Q5–Q7	Trace warning trigger to closure	Case owner, timestamps and closure evidence
Q12 lowest item mean	Audit distressed case milestones	Escalation and workout response targets
Q14 and Q16 moderate	Review challenge and override minutes	Document challenge and accountable overrides
Gross and net ratios converged	Segment NPA inflows and deductions	Track new stress and resolution separately
Private NPA stock rose despite the ratio fall	Reconcile stock and denominator movement	Use both ratio and amount dashboards

10. Practical Implications and Recommendations

10.1. Strengthen Credit Approval Exceptions

Q4 recorded the lowest mean among the appraisal items, while Q3 indicated positive perceptions of credit grading. Banks should review exceptions to standard approval criteria, including risk grades, authorization, independent review, documented justification, and subsequent loan performance. A searchable exception register and periodic oversight can improve accountability. Actual file reviews are necessary to identify bank-specific weaknesses.

10.2. Improve Early-Warning Follow-up

Q8 recorded a mean of 3.34, lower than Q5–Q7. Banks should document warning dates, assigned officers, escalations, decisions, customer contact, and case closure. Tracking response times and overdue cases can help identify gaps in staffing, escalation thresholds, and workflow management.

10.3. Strengthen Recovery and Resolution Processes

Q12 had the lowest mean among the twenty statements (3.23). Banks should track the time between distress identification, initial action, resolution planning, and recovery outcomes. Separating controllable delays from legal proceedings and collateral realization would support realistic, risk-based response targets.

Vol. 10, No.11; 2026

ISSN: 2456-7760

10.4. Enhance Risk Challenge and Override Accountability

Q14 and Q16 suggest scope to strengthen independent risk challenge and override accountability. Reviews of high-risk approvals should document risk opinions, management responses, approval authority, and reasons for overrides. Analysing overrides by product, credit grade, and subsequent performance can identify recurring weaknesses. Recommendations should be based on verified file evidence, as justified overrides may be appropriate when supported by adequate safeguards.

10.5. Monitor NPA Ratios and Their Drivers Separately

The RBI data show that public-sector gross NPAs declined in both amount and ratio in 2024–25, whereas private-sector gross NPAs increased in amount despite a slight fall in the ratio. Banks should monitor gross and net NPA ratios alongside fresh additions, recoveries, upgrades, write-offs, and gross advances. This provides a clearer picture of asset-quality movements without attributing every improvement to recovery efforts. The aggregate data do not establish whether individual surveyed banks follow these practices.

10.6. Develop a Stronger Bank-Level Research Design

Future studies should select identifiable banks with appropriate permissions, survey employees across relevant roles, and collect consistent annual outcome data for the same institutions. The analysis should distinguish differences in perceived credit practices, NPA ratios, and relationships between control implementation and subsequent outcomes. Broader conclusions about Indian banking would require a more representative sample and a longer observation period.

10.7 Overall Recommendations

The findings suggest prioritising recovery follow-up (Q12), early-warning closure (Q8), approval exceptions (Q4), and governance controls (Q14 and Q16). These priorities should be validated against actual bank records. Official NPA movement data should also be used to distinguish the effects of fresh additions, recoveries, upgrades, and write-offs. Ultimately, bank-specific improvements must reflect verified control gaps, portfolio characteristics, staffing, and risk appetite rather than survey averages alone.

11. Conclusion

The first two objectives assessed credit risk management (CRM) practices and compared public- and private-sector banks. All 20 questionnaire items recorded mean scores above the neutral point. Internal credit grading received the highest score (Q3 = 3.74), while documentation of approval exceptions (Q4 = 3.48), early-warning follow-up (Q8 = 3.34), and remedial or recovery action (Q12 = 3.23) were comparatively weaker. These findings highlight the need to strengthen follow-through rather than focus solely on the existence of credit controls. Private-sector respondents reported slightly higher appraisal and monitoring scores. However, despite a marginally significant respondent-level appraisal result ($p \approx .047$), bank-level comparisons ($p \approx$

Vol. 10, No.11; 2026

ISSN: 2456-7760

.548) provided insufficient evidence of ownership-based differences. The small, illustrative sample and moderate reliability coefficients (0.61–0.67) limit generalisability. Correlations and regression results indicate associations within the survey data, not causal relationships between CRM practices and asset quality. The third objective examined asset-quality trends, while the fourth developed practical recommendations. RBI data show that gross NPA ratios declined from 9.1% to 2.6% for public-sector banks and from 4.8% to 1.8% for private-sector banks between 2020–21 and 2024–25. Net NPA ratios also fell to 0.5% in both groups, indicating substantial improvement in reported asset quality. However, these aggregate trends do not establish that ownership or specific CRM practices caused the decline. The 2024–25 figures further highlight the importance of examining NPA amounts alongside ratios. Public-sector gross NPAs fell from ₹3,39,541 crore to ₹2,83,650 crore, whereas private-sector gross NPAs increased from ₹1,29,164 crore to ₹1,32,674 crore despite a lower gross NPA ratio. Write-offs and recoveries must also be assessed separately. As the required bank-level annual data were unavailable, H03 could not be conclusively tested, and no direct relationship between individual banks' CRM practices and NPA outcomes could be established. Overall, the study recommends stronger scrutiny of credit exceptions, documented closure of early-warning cases, timely remedial action, and integrated reporting of NPA ratios, additions, recoveries, upgrades, and write-offs. These measures should be prioritised following bank-specific reviews rather than applied uniformly across ownership groups.

References

Fukuyama, H., Matousek, R., Tzeremes, N. G. (2022). Bank production with nonperforming loans: A minimum-distance directional slack-inefficiency approach. Omega. https://doi.org/10.1016/j.omega.2022.102706

Harris, T. (2013). Default definition selection for credit scoring. Artificial Intelligence Research. https://doi.org/10.5430/air.v2n4p49

Jacobs,, M. (2018). The validation of machine-learning models for the stress testing of credit risk. Journal of Risk Management in Financial Institutions. https://doi.org/10.69554/shkp5605

Jahn, N., Memmel, C., Pfingsten, A. (2013). Banks' Concentration Versus Diversification in the Loan Portfolio: New Evidence from Germany. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2796948

Kedia, P., Mishra, L. (2024). Credit risk management: a systematic literature review and bibliometric analysis. The Journal of Credit Risk. https://doi.org/10.21314/jcr.2024.002

Li, X., Xu, G., Wu, J., Xu, C., Zhu, Q. (2024). Evaluation of bank efficiency by considering the uncertainty of nonperforming loans. Omega. https://doi.org/10.1016/j.omega.2024.103069

Sahoo, B. P., Kaur, K. (2017). Risk Management in Indian Public Sector Banks-Analysis of Credit Risk-I on State Bank of India. Asian Journal of Management. https://doi.org/10.5958/2321-5763.2017.00050.6

Singh, A. (2015). Effect of Credit Risk Management on Private and Public Sector Banks in India. International Journal of Academic Research in Business and Social Sciences. https://doi.org/10.6007/ijarbss/v5-i1/1404

Vol. 10, No.11; 2026

ISSN: 2456-7760

Srivastav, A., Hagendorff, J. (2016). Corporate Governance and Bank Risk-taking. Corporate Governance: An International Review. https://doi.org/10.1111/corg.12133

Tarchouna, A., Jarraya, B., Bouri, A. (2021). Do board characteristics and ownership structure matter for bank non-performing loans? Empirical evidence from US commercial banks. Journal of Management and Governance. https://doi.org/10.1007/s10997-020-09558-2

Basel Committee on Banking Supervision. (2025). Principles for the management of credit risk. https://www.bis.org/bcbs/publ/d595.pdf

Reserve Bank of India. (2024). Handbook of Statistics on Indian Economy, Table 53, Non-Performing Assets of Scheduled Commercial Banks. https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=22527

Reserve Bank of India. (2025). Financial Stability Report, June 2025. https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/0FSRJUNE20253006258AE798B4484642AD861CC35BC2CB3D8E.PDF

Reserve Bank of India. (2025). Master Circular: Prudential norms on income recognition, asset classification and provisioning pertaining to advances. https://rbi.org.in/scripts/NotificationUser.aspx?Id=12822