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Measuring employee productivity in Indian banks : A comparative analysis

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Abstract

The performance of bank employees plays a pivotal role in ensuring operational efficiency in the banking sector. This study introduces six novel productivity ratios linked to Non-Performing Assets (NPA) to assess employee productivity. Unlike traditional research focusing solely on profit or business per employee, this paper explores a new dimension, making it the first of its kind. Through a comparative analysis of ten major Indian banks (five public and five private), the findings reveal distinctive performance patterns, with public sector banks showing greater involvement in recovery and write-offs, while private sector employees maintain lower NPAs.

Subject Classification: *G21, J24, M50.*

Keywords: *Employee productivity, Indian banks, Non-performing assets (NPA), Productivity ratios, Public vs. private sector.*

1. Introduction

The Indian banking system underpins economic growth by channeling funds across sectors. Despite digital progress, human capital remains the key driver of bank performance. With rising non-performing

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assets (NPAs), assessing employee productivity through their link to NPAs offers a novel lens, addressing gaps left by traditional performance models.

2. Literature Review

Several studies have examined employee efficiency in Indian banks. Researchers found no significant difference in business or profit per employee among private banks [1]. Similarly, [2] concluded that productivity differences across public banks were insignificant. In contrast [3] reported an upward trend in private bank performance, while [4] showed ICICI Bank leading in per-employee productivity but lagging in per-branch terms. Some observed that modern banks, including foreign and new private banks, outperformed traditional ones [5]. More recently [6] highlighted the role of emotional intelligence training in reducing costs and improving services. [7] linked NPA ratios to employee productivity, comparing outcomes across public, private, and foreign banks.

3. Research Gaps

- Most of the previous research studies have used traditional banking ratios for the measurement of employee productivity in banks. These studies are limited to profit, business, deposits, advances, and expenses.
- The most important aspect of the banking sector i.e. Non-Performing Assets (NPA) is given a miss by most of the research papers.
- Relating NPAs with employee productivity is a major gap in measuring employee productivity.

4. Objectives of the Study

Rising NPAs worldwide have drawn significant research attention, as they represent defaults in interest or principal repayments. While [8] treated NPAs as undesirable outputs and [9] excluded them, this study incorporates NPAs into measuring employee productivity. Based on identified gaps, the objectives are: (i) to analyze gross advances and NPAs per employee, (ii) to examine additions, recoveries, and write-offs per employee, and (iii) to compare these ratios across PSBs, private banks, and industry averages.

5. Research Methodology

This study adopts a comparative analytical framework to evaluate employee productivity in Indian banks using novel, NPA-linked financial ratios. The methodology involves selecting ten major banks, categorized equally between Public Sector Banks (PSBs) and Private Sector Banks (PvSBs).

The study employs a ratio-based approach using secondary data from RBI's Statistical Tables (2005–2023). The banks analyzed include: Public Sector Banks (PSBs): State Bank of India, Punjab National Bank, Bank of Baroda, Canara Bank, and Union Bank of India. Private Sector Banks (PvSBs): HDFC Bank, ICICI Bank, Axis Bank, Kotak Mahindra Bank, and Yes Bank.

Employee Productivity Ratios are designed to capture efficiency and asset quality at the employee level. *Employee per Branch* is measured as the total number of employees divided by the total number of branches, where a lower ratio indicates higher efficiency. *Advances per Employee* is calculated as total advances divided by the number of employees, with higher values reflecting better productivity. *Gross NPA per Employee* is obtained by dividing total gross NPAs by the number of employees, and here, a lower ratio signals stronger performance. Similarly, *Addition of NPA per Employee* represents the total additions to NPAs per employee, where lower values are desirable. In contrast, *Reduction of NPA per Employee*—calculated as total reductions in NPAs per employee—is preferred to be higher, as it reflects effective resolution. Finally, *Write-off of NPA per Employee* measures the total NPAs written off per employee, capturing the extent of balance sheet cleaning undertaken.

These ratios were selected to reflect a **productivity-performance-risk linkage**, especially in the post-COVID context where NPAs and operational stress are strongly interrelated. All data were sourced from the annual reports of banks and RBI publications.

5.1 *Rationale for Comparative Design*

This study adopts a descriptive, comparative approach rather than hypothesis-driven inferential statistics. Since the dataset covers entire populations of leading banks, not samples, generalizability tests are unnecessary. The focus is on tracking real-world productivity trends during phases like the slowdown, COVID-19, and rebound, where descriptive comparisons are more meaningful than statistical significance. Moreover, the constructed financial ratios (e.g., NPA per employee) often violate parametric test assumptions, and structural differences across banks make pooled variance testing unsuitable. Rigor is ensured through year-wise and sectoral (PSB vs. PvSB) comparisons, with scope for future work using ANOVA, non-parametric tests, or panel regression when extended datasets are available.

6. Data Analysis

6.1 *Advances per Employee (Table 1)*

The NPA is a result of advances given by the bank. Hence one cannot analyze the NPA concept in silos and it has to be examined with the loans given (Advances).

Table 1

Advances Per Employee (In million Rs.)

Year	Axis	HDFC	ICICI	Kotak	Yes	BOB	Canara	PNB	SBI	UBI
2023	143.35	142.37	122.79	66.67	128.93	189.01	158.36	140.40	233.91	169.43
2022	136.97	146.10	133.34	64.60	130.71	161.01	141.30	127.47	204.20	157.92
2021	126.02	145.46	124.60	74.13	122.83	139.71	130.43	130.99	184.59	137.04
2020	123.44	130.85	110.59	72.00	112.23	136.72	123.46	131.58	158.41	147.38
2019	129.32	126.91	111.16	74.99	180.18	140.89	119.07	119.01	143.09	132.59
2018	115.57	120.56	106.28	74.18	171.32	131.11	104.82	110.41	130.84	129.66
2017	106.23	102.44	93.17	65.00	106.86	134.58	104.73	104.42	129.12	122.76
2016	107.67	84.61	97.27	61.21	110.18	129.52	102.38	101.13	111.74	114.09
2015	109.38	77.41	95.22	57.82	125.97	144.80	101.51	88.35	96.04	107.46
2014	90.35	72.12	82.33	54.45	123.91	132.92	100.82	90.35	80.74	104.65
2013	81.57	57.68	86.49	64.89	141.09	126.92	96.58	81.32	68.60	98.16
2012	90.00	51.14	83.92	52.37	130.50	107.93	88.51	73.75	61.98	85.03
2011	92.14	49.75	150.85	48.89	150.18	91.00	77.41	71.23	54.89	85.05
2010	83.48	42.87	103.07	42.52	125.20	72.95	61.03	51.95	52.59	66.34
2009	71.63	34.78	109.64	34.90	85.74	62.20	49.82	45.07	46.84	55.48
2008	74.35	35.62	98.26	31.26	53.91	48.20	39.89	35.52	40.26	45.64
2007	73.40	42.48	103.44	36.63	45.45	37.08	35.80	28.34	30.56	37.29
2006	75.89	49.41	99.03	28.29	66.39	29.24	28.32	25.03	24.85	33.03
2005	79.28	56.95	92.99	31.03	61.75	23.95	23.28	21.64	22.38	28.24
Mean	100.53	82.61	105.50	54.52	114.39	107.36	88.82	83.05	98.72	97.75

The Advances per Employee ratio serves as a proxy for productivity—indicating how effectively a bank's workforce is used in extending credit.

- **Top Performers**:
  - Yes Bank (₹114.39 Mn) and ICICI Bank (₹105.50 Mn) emerge as leaders, followed closely by Bank of Baroda (₹107.36 Mn) and SBI (₹98.72 Mn).
  - These numbers point to strong operational scaling and effective lending strategies.
- **Low Performers**:
  - Kotak Mahindra (₹54.52 Mn) and HDFC Bank (₹82.61 Mn) are on the lower end, though this may reflect a conservative credit approach or higher staff intensity in non-lending services.

6.2 *NPA per Employee (Table 2)*

Gross NPA per Employee: Asset Quality Concerns reflects the average burden of bad loans per employee.

- **Lowest Gross NPAs**:
  - **HDFC Bank (₹0.62 Mn)** and **Kotak Bank (₹0.75 Mn)** continue their reputation for pristine asset quality and tight risk management.
- **Highest Gross NPAs**:
  - **Union Bank of India (₹5.34 Mn), PNB (₹4.98 Mn),** and **Bank of Baroda (₹4.00 Mn)** report significantly higher NPAs per employee—suggesting challenges in credit appraisal and recovery mechanisms.

Table 2

Gross NPA Per Employee (In million Rs.)

Year	Axis	HDFC	ICICI	Kotak	Yes	BOB	Canara	PNB	SBI	UBI
2023	01.85	01.04	02.32	0.79	01.60	04.76	05.43	07.43	03.86	08.07
2022	02.16	01.14	03.15	0.97	11.49	06.81	06.40	08.96	04.59	10.58
2021	02.90	01.26	04.14	01.44	12.85	08.06	06.82	10.85	05.15	11.48
2020	04.08	01.08	04.11	01.00	14.31	08.19	06.32	11.64	05.98	13.14
2019	04.81	01.14	05.26	01.07	03.73	08.70	06.72	12.05	06.72	13.08
2018	05.73	0.98	06.44	01.07	01.44	10.29	08.07	12.49	08.46	13.13

Contd...

2017	03.76	0.70	05.09	01.08	01.00	08.27	06.14	08.03	05.36	09.14
2016	01.21	0.50	03.54	0.90	0.50	07.82	05.86	08.46	04.65	06.81
2015	0.97	0.45	02.22	0.67	0.29	03.29	02.42	03.76	02.66	03.67
2014	0.74	0.44	01.45	0.66	0.20	02.39	01.55	03.10	02.77	02.83
2013	0.57	0.34	01.55	0.59	0.13	01.85	01.47	02.29	02.24	01.99
2012	0.57	0.30	01.63	0.49	0.15	01.08	0.95	01.40	01.84	01.77
2011	0.61	0.30	03.73	0.58	0.20	0.80	0.72	0.82	01.14	01.31
2010	0.61	0.35	02.69	0.87	0.21	0.63	0.60	0.56	0.98	0.91
2009	0.44	0.38	02.79	0.84	0.32	0.51	0.49	0.46	0.76	0.66
2008	0.34	0.24	01.86	0.50	0.03	0.53	0.28	0.59	0.72	0.61
2007	0.42	0.31	01.24	0.51	0.00	0.54	0.32	0.59	0.54	0.68
2006	0.58	0.34	0.88	0.10	0.00	0.62	0.38	0.54	0.48	0.78
2005	0.65	0.49	01.54	0.13	0.00	0.84	0.50	0.64	0.61	0.80
Mean	01.74	0.62	02.93	0.75	02.55	04.00	03.23	04.98	03.13	05.34

6.3 *Addition, Reduction and Write-off in NPA (Table 3, 4, and 5)*

Most of the research has attributed all the positive factors of a bank's progress with employees for their productivity. However, we believe that employees are also responsible for any change in NPAs. Following are the unique ratios proposed in this research which suggest that any increase/decrease and write-off in NPAs is also one of the significant aspects to measure employee productivity.

6.3.1 Addition of NPA per Employee

Flow of Bad Assets (table 3) measures the inflow of new NPAs and is a dynamic gauge of deteriorating loan book quality.

- **High Additions**:
  - o **Yes Bank (₹2.00 Mn), PNB (₹2.21 Mn)**, and **Union Bank (₹1.91 Mn)** show relatively high additions, highlighting riskier loan portfolios or inadequate screening mechanisms.
- **Controlled Additions**:
  - o **HDFC (₹0.81 Mn)**, **Kotak (₹0.50 Mn)**, and **ICICI (₹1.42 Mn)** report modest figures, indicating robust underwriting practices.

Table 3

Addition Of NPA Per Employee (In million Rs.)

Year	Axis	HDFC	ICICI	Kotak	Yes	BOB	Canara	PNB	SBI	UBI
2023	01.55	01.42	01.42	0.54	01.74	01.44	01.41	01.54	0.78	01.66
2022	02.20	01.90	01.82	0.65	02.38	01.80	01.60	02.40	01.02	03.04
2021	02.06	01.34	01.63	01.06	05.40	02.42	02.02	06.30	01.16	02.23
2020	02.69	01.50	01.39	0.68	16.22	05.31	02.57	03.29	02.00	03.99
2019	02.24	01.47	01.22	0.48	03.77	02.46	02.65	03.06	01.27	03.64
2018	05.59	01.47	03.46	0.52	04.50	04.40	04.21	06.38	06.07	05.68
2017	03.85	0.85	04.05	0.54	01.31	02.58	02.09	03.25	01.86	03.59
2016	01.46	0.65	02.26	0.91	0.61	05.37	04.58	06.40	03.04	03.65
2015	0.68	0.63	01.17	0.41	0.36	01.72	02.01	02.44	01.38	01.60
2014	0.60	0.68	0.63	0.58	0.45	01.38	01.73	01.77	01.86	01.62
2013	0.48	0.45	0.58	0.36	0.35	01.59	01.36	01.47	01.40	01.25
2012	0.58	0.24	0.51	0.24	0.11	0.83	01.09	01.07	01.15	01.22
2011	0.55	0.26	01.06	0.21	0.13	0.48	0.81	0.82	0.81	01.05
2010	0.83	0.50	01.82	0.71	0.39	0.44	0.75	0.50	0.59	0.61
2009	0.50	0.65	01.46	0.63	0.33	0.27	0.54	0.32	0.54	0.41
2008	0.26	0.32	0.91	0.28	0.03	0.27	0.32	0.35	0.44	0.28
2007	0.17	0.36	0.65	0.52	0.00	0.20	0.27	0.36	0.27	0.27
2006	0.27	0.38	0.40	0.12	0.00	0.14	0.30	0.16	0.22	0.28
2005	0.27	0.29	0.62	0.13	0.00	0.17	0.28	0.12	0.21	0.20
Mean	01.41	0.81	01.42	0.50	02.00	01.75	01.61	02.21	01.37	01.91

6.3.2 Recovery of NPA per Employee

Operational Recovery Efficiency (table 4) gauges recovery effectiveness per staff member.

- **Efficient Recovery**:
  - o **PNB (₹0.92 Mn), Canara Bank (₹0.81 Mn)**, and **Yes Bank (₹0.88 Mn)** demonstrate commendable recovery performance.
- **Lower Recoveries**:
  - o **Kotak (₹0.25 Mn)** and **HDFC (₹0.39 Mn)** lag behind—possibly due to strategic write-offs, or low exposure to risky segments (i.e., fewer NPAs to recover).

Table 4

Recovery of NPA Per Employee (In million Rs.)

Year	Axis	HDFC	ICICI	Kotak	Yes	**BOB**	**Canara**	**PNB**	**SBI**	**UBI**
2023	01.04	0.68	01.33	0.53	03.72	01.31	01.03	01.40	0.66	01.58
2022	01.62	01.16	01.58	0.61	02.24	01.06	01.16	01.43	0.81	01.81
2021	01.02	0.36	0.66	0.48	01.82	0.88	01.08	01.43	0.69	01.01
2020	01.25	0.67	0.77	0.38	02.37	0.94	01.66	01.96	0.85	01.64
2019	01.47	0.73	0.76	0.27	01.06	01.58	01.62	02.43	0.95	01.73
2018	01.46	0.79	01.11	0.34	03.78	0.99	0.54	0.81	0.34	0.59
2017	0.77	0.39	0.65	0.19	0.61	01.28	0.64	01.98	0.21	0.66
2016	0.41	0.32	0.35	0.31	0.14	0.39	0.51	0.86	0.33	0.29
2015	0.16	0.33	0.25	0.26	0.18	0.52	0.73	0.57	0.61	0.36
2014	0.21	0.36	0.20	0.27	0.28	0.59	01.46	0.89	0.81	0.39
2013	0.14	0.24	0.29	0.14	0.18	0.77	0.84	0.66	0.65	0.62
2012	0.31	0.05	0.41	0.15	0.06	0.51	0.87	0.38	0.45	0.32
2011	0.19	0.07	0.86	0.22	0.05	0.29	0.68	0.60	0.37	0.30
2010	0.16	0.10	01.87	0.20	0.19	0.29	0.66	0.37	0.30	0.18
2009	0.14	0.03	0.87	0.19	0.00	0.31	0.34	0.41	0.40	0.31
2008	0.21	0.26	0.06	0.09	0.00	0.30	0.34	0.36	0.28	0.36
2007	0.13	0.29	0.08	0.08	0.00	0.28	0.34	0.32	0.25	0.35
2006	0.19	0.34	0.62	0.09	0.00	0.38	0.42	0.26	0.32	0.26
2005	0.19	0.17	0.77	0.00	0.00	0.33	0.44	0.28	0.15	0.31
Mean	0.58	0.39	0.71	0.25	0.88	0.69	0.81	0.92	0.50	0.69

6.3.3 Write-Offs per Employee

Quality of Cleanup (table 5) reflects how much bad debt is permanently removed from books per employee—often used when recovery is not feasible.

- **High Write-Offs**:
  - **Yes Bank (₹0.90 Mn)**, **UBI (₹0.78 Mn)**, and **PNB (₹0.72 Mn)** signal frequent reliance on write-offs, pointing toward problematic credit portfolios.

- **Low Write-Offs**:
  - o **Kotak (₹0.11 Mn)** and **HDFC (₹0.31 Mn)** suggest effective preemptive credit strategies and minimal bad loans needing write-off.

Table 5

Write Off of NPA Per Employee (In million Rs.)

Year	Axis	HDFC	ICICI	Kotak	Yes	BOB	Canara	PNB	SBI	UBI
2023	0.68	0.62	0.35	0.11	06.58	02.38	01.50	01.59	01.02	02.54
2022	01.06	0.67	0.96	0.18	0.40	02.32	0.97	02.13	0.81	02.59
2021	01.53	0.77	0.96	0.12	05.50	01.87	01.03	01.65	01.40	02.17
2020	01.37	0.71	01.10	0.19	02.98	01.88	01.28	02.12	02.10	02.25
2019	01.49	0.47	01.33	0.05	0.22	02.36	02.45	01.88	02.29	02.09
2018	01.95	0.37	01.01	0.11	0.39	0.90	01.41	01.07	01.52	0.92
2017	0.39	0.28	01.47	0.13	0.07	0.87	01.00	01.33	0.98	0.34
2016	0.66	0.22	0.40	0.09	0.17	0.30	0.63	0.98	0.75	0.22
2015	0.29	0.24	0.25	0.05	0.05	0.32	0.27	0.87	01.00	0.26
2014	0.22	0.22	0.30	0.13	0.08	0.00	0.00	0.00	0.58	0.27
2013	0.20	0.17	0.27	0.10	0.15	0.00	0.00	0.00	0.25	0.36
2012	0.21	0.14	0.20	0.08	0.05	0.00	0.00	0.00	0.03	0.30
2011	0.25	0.21	0.00	0.14	0.03	0.00	0.00	0.00	0.18	0.41
2010	0.48	0.43	0.00	0.43	0.28	0.00	0.00	0.00	0.10	0.17
2009	0.17	0.42	0.00	0.14	0.05	0.00	0.00	0.00	0.00	0.00
2008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.58	0.31	0.45	0.11	0.90	0.69	0.55	0.72	0.68	0.78

6.4 *Insights by Economic Cycle*

During the Boom (2005–2008), recoveries were minimal due to low defaults and weak legal tools. In the Slowdown (2009–2015), recoveries rose gradually, led by ICICI, BOB, and PNB, largely via SARFAESI. The IBC era (2016–2019) marked a sharp improvement, with major corporate cases boosting recoveries at Canara, PNB, and ICICI. COVID-19 (2020–2021) caused mixed outcomes owing to moratoriums, though private banks-maintained momentum. In the Rebound (2022–2023), nearly all banks improved recovery efficiency, reflecting matured litigation, better monitoring, and asset sales.

6.5 *Strategic Interpretations*

High write-offs often reflect clean-ups rather than true recovery. Yes Bank's spikes show crisis response, while HDFC and Kotak's low write-offs point to prudent lending. Consistently high write-offs at SBI, BOB, and PNB signal slower recovery cycles, while banks with both high additions and write-offs (e.g., PNB, Yes) highlight chronic credit mismanagement.

6.6 *Strategic Insights*

1. **Private vs Public**: Private banks (HDFC, Kotak, Axis) show steadier asset quality, while public banks (SBI, BOB, PNB) excel in recoveries.
2. **Efficiency vs Exposure**: Aggressive lenders like ICICI and Yes generate higher NPAs, whereas Kotak and HDFC keep risks low.
3. **Recovery Lever**: PNB and Canara stand out for strong recovery efforts despite heavy NPA loads.
4. **Write-Offs as Clean-Up**: UBI and BOB rely more on write-offs, improving balance sheets but masking recovery weakness.

7. Summary and Conclusions

This study introduced novel ratios to compare employee and branch productivity across five public and five private banks. Results show public banks handle larger advances and generate higher NPAs per employee but are more effective in recovery and write-offs than private peers. Private banks, meanwhile, maintain superior asset quality through cautious lending. Overall, employee-level metrics are critical for understanding asset quality and profitability. A balanced strategy would combine prudent lending, effective recovery, and minimal reliance on write-offs.

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