Analyzing The Performance Of Private And Public Sector Banks In India

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Abstract
This study presents a comprehensive analysis of the performance differentials between public sector banks (State Bank of India, Punjab National Bank, Bank of Baroda, Indian Overseas Bank, and Union Bank of India) and private sector banks (HDFC Bank, ICICI Bank, Axis Bank, Kotak Mahindra Bank, and Yes Bank) in India over a ten-year period from 2014-2015 to 2023-2024. The research examines operational efficiency through employee-level and branch-level performance metrics, including Interest Income/Employee, Net Profit/Employee, and Business/Employee ratios. Utilizing secondary data and quantitative analysis tools, the study calculates descriptive statistics, Compound Annual Growth Rate (CAGR), and Average Annual Growth Rate (AAGR) to evaluate growth trends and comparative performance. Findings reveal that public sector banks, particularly State Bank of India, demonstrated robust performance with the highest CAGR across multiple metrics (9.60% for Interest Income/Employee, 15.65% for Net Profit/Employee, and 10.65% for Business/Employee), while private sector performance varied considerably with Yes Bank showing negative growth in some parameters. The significant variations between CAGR and AAGR values across banks highlight the year-to-year volatility in the banking sector's operational performance, suggesting the need for comprehensive evaluation approaches when assessing banking efficiency in the post-liberalization era.

Introduction
The Indian banking system boasts a rich and transformative history that reflects the economic and social evolution of the country. Banking in India can be traced back over two centuries, beginning with the establishment of the Bank of Hindustan in 1770. This was a pivotal moment, marking the advent of organized banking practices. Following this, three Presidency Banks were founded under British rule: the Bank of Bengal in 1806, the Bank of Bombay in 1840, and the Bank of Madras in 1843. These institutions served as key financial pillars during the colonial era, handling government transactions and facilitating trade and

commerce in the respective presidencies. In 1921, these Presidency Banks were amalgamated to form the Imperial Bank of India, which later became the State Bank of India after its nationalization in 1955 (Reserve Bank of India, 2022).

Banking in India has been changed a lot by the social, economic, and political events in the country. After gaining independence in 1947, the Indian government saw how important banking was for developing the nation. The goal became to create a banking system that involved more people, mainly those in rural places and those with less wealth. The focus changed to building a banking system that included the poor and rural communities. To achieve this, the government undertook a major reform in 1969, nationalizing 14 large commercial banks. This decision was transformative, as it redirected the flow of credit to priority sectors such as agriculture, small industries, and rural development, which were previously underserved. This initiative sought to reduce the concentration of economic power and promote equitable economic development (Pandit, 1973).

A second phase of nationalization occurred in 1980, during which six additional banks were brought under government ownership. This step further strengthened the public banking system, making it an instrument for socio-economic progress. During this period, cooperative banks and regional rural banks also emerged to cater to local financial needs. The emphasis was on extending banking services to the unbanked regions, thereby increasing financial inclusion and rural credit penetration (Reserve Bank of India, 2022).

Post-nationalization, the Indian banking sector entered a next phase, where the Reserve Bank of India (RBI), as the central banking authority, played a crucial role in guiding and overseeing banking operations while they did a consolidation and regulation job. With an emphasis on prudential norms and risk management practices, this period laid the groundwork for a robust financial ecosystem. Innovations such as the introduction of Automated Teller Machines (ATMs) and the establishment of the National Bank for Agriculture and Rural Development (NABARD) in 1982 further enhanced the efficiency and reach of banking services.

The economic liberalization of 1991 marked another turning point in the evolution of banking in India. Faced with a balance of payments crisis, the government initiated structural reforms to modernize the financial sector. Banking reforms included deregulation of interest rates, reduction of statutory pre-emptions, and the entry of private and foreign banks. These changes brought competitiveness, efficiency, and innovation into the sector. The emergence of private banks such as HDFC Bank, ICICI Bank, and Axis Bank, along with foreign banks like Citibank and Standard Chartered, diversified the landscape and introduced global banking practices to India (Narasimham Committee Report, 1991).

Technological advancements have been a defining feature of the banking industry since the 1990s. The adoption of core banking solutions (CBS), internet banking, mobile banking, and digital payment platforms has transformed the way banking services are delivered. The implementation of the Aadhaar-based identification system has further streamlined the customer on boarding process, promoting financial inclusion at an unprecedented scale. Banks are now leveraging data analytics and artificial intelligence to personalize services, manage risks, and enhance customer experiences (Kumar, 2023).

Reviews of Literature
Gupta et al. (2018) case study on HDFC Bank explores the application of the Balanced Scorecard model in the banking industry. The research highlights how integrating financial

and non-financial metrics can provide a more comprehensive performance evaluation. The findings indicate that HDFC Bank's strategic focus on customer satisfaction, internal processes, learning, and growth, alongside financial performance, has contributed to its success. The study suggests that other banks can adopt this model to achieve balanced and sustainable growth.

Gupta et al. (2021) evaluated the financial performance of public sector banks (PSUs) in India using a hybrid Multi-Criteria Decision Making (MCDM) approach, specifically CRITIC-TOPSIS[1]. The CRITIC method was applied to assign weights to nine financial parameters, while TOPSIS was used to rank PSU banks based on their financial standings between 2013-2014 and 2017-2018. The study emphasized the crucial role of banks in economic stability and growth. Using interval-valued TOPSIS (IV-TOPSIS), the research compared PSU banks with private and international banks, highlighting the limited risk of PSU closures but underscoring the need for financial evaluation.

Bueno et al. (2024) explored the effects of digitization on banking operations, focusing on critical areas such as Industry 4.0 technologies, strategic partnerships, digital business models, and improvements in customer experience. Their findings reveal that integrating automation, artificial intelligence, and data analytics has significantly enhanced financial operations by minimizing manual errors and refining decision-making processes. The study also highlights how the COVID-19 pandemic acted as a catalyst for the rapid adoption of digital banking. Financial institutions were compelled to swiftly implement remote services, online transactions, and contactless payment systems to align with evolving customer demands and regulatory standards. This transformation has further emphasized the necessity for banks to refine their digital offerings to maintain a competitive edge.Additionally, Bueno et al. (2024) stress the significance of Digital Operational Efficiency (DOE), noting that elements such as break-even analysis, risk evaluation, and the quality of customer service are pivotal to the success of digital banking initiatives. Their research agenda advocates for further investigation into the sustainability of digital banking, particularly in domains like financial inclusion, cybersecurity, and collaboration with fintech entities (Gomber, 2017).

Tamatam et al. (2019) examined the relative efficiencies of Indian banks using DEA (Data Envelopment Analysis) with panel data from 2008 to 2017 and two non-parametric tests[1]. The study segmented banks by ownership and size, examining performance trends over a decade. Using Malmquist indices, researchers analysed 21 public sector and 17 private sector banks, comparing efficiency estimates through descriptive statistics. Results showed only 9 of 35 banks achieved technical efficiency, with a 5% overall inefficiency, primarily due to scale inefficiency. Private banks demonstrated superior efficiency and productivity improvements, while public banks lagged in technology-driven growth. The study highlighted limitations, such as a single input-output model, and suggested alternative approaches like regression-based feedback mechanisms and second-stage regression models to assess efficiency determinants. Findings indicated private banks outperform public sector banks in technological advancements and efficiency, making DEA-based analysis a valuable tool for evaluating bank performance and recommending strategic improvements in the Indian banking sector.

Research Methodology
Period of Study and Banks Covered

The period covered from the year 2014 - 2015 to 2023 – 2024. Secondary data was collected for the public sector banks (State Bank of India (SBI), Punjab National Bank (PNB), Bank of Baroda (BoB), Indian Overseas Bank (IOB), and Union Bank of India) and private sector banks, namely (HDFC Bank, ICICI Bank, Axis Bank, Kotak Mahindra Bank, and Yes Bank).

Research Objectives
1. To examine the public sector banks, and private sector banks, for its Per Employee Performance and Per Branch Performances using descriptive statistics (Mean, S.D., and C.V.) along with CAGR and AAGR.
2. To identify the performance of the selected banks using employee level performance and branch level performance for the selected period.

Limitation and Scope of the Study
In this article we studied only handful of public sector and private sector banks, covered for the period 2014 - 2015 to 2023 – 2024. In this article the Banks performance was investigated using Per employee performance, and Per branch performance. The findings of study will guide the investors, shareholders, researchers, and decision makers in their decisions over banks.

Sources of Data
Data was collected using online resources like research articles, company writeups, websites, library reference books and annual reports. Along with the help of analyzing tools Microsoft Excel, (to calculate the Mean, SD, CV and Bar charts); SPSS (26v) (to analyze the CAGR & AAGR).

The Compound Annual Growth Rate (CAGR) –
The Average Annual Growth Rate (AAGR) represents the arithmetic mean of a series of growth rates, expressed as a percentage. It does not account for compounding.
Banks commonly use AAGR to evaluate growth trends in key financial indicators such as total assets, loan portfolios, deposits, or net income over a specific period.

$$CAGR = (Ending\ Value\ /\ Beginning\ Value)\ \wedge\ (1/\ Number\ of\ Years) - 1$$
$$To\ express\ CAGR\ as\ a\ percentage,\ multiply\ the\ result\ by\ 100$$

The formula for Average Annual Growth Rate (AAGR)

$$AAGR = \frac{Growth\ Rate_{Year1} + Growth\ Rate_{Year2} + \cdots + Growth\ Rate_{Year\ n}}{Number\ of\ Years}$$

• Analyzing Interest Income/Employee, stakeholders can gain insights into a bank's operational efficiency and employee productivity in generating interest revenue.
• Net Profit/Employee, stakeholders can gain insights into a bank's operational efficiency and ability to generate profits per employee.
• Business/Employee stakeholders can understand the insights into a bank's operational efficiency and ability to generate business per employee.
• Interest Income/Branch helps to determine the bank's operational efficiency and ability to generate interest revenue per branch over time.

- By analyzing Net Profit/Branches help to find how bank's operational efficiency and ability to generate profits.
- Business/Branches provides a bank's operational efficiency and ability to generate business.

Analysis and Interpretations

A comprehensive data analysis and interpretation with the aim to assess the financial and operational performance of public and private sector banks over ten years, from 2015 to 2024. The banks include five public sector banks State Bank of India, Punjab National Bank, Bank of Baroda, Indian Overseas Bank, and Union Bank of India and five private sector banks HDFC Bank, ICICI Bank, Axis Bank, Kotak Mahindra Bank, and Yes Bank. The study measures the growth trends and comparative performance across both banking sectors during the post-liberalization period.

Interest Income/ Employee-

Bank	Mean	Rank	S.D.	Rank	Indicator
SBI	10,445,795.36	1.00	3,156,337.17	1.00	
PNB	7,516,648.35	5.00	1,144,999.73	5.00	
BoB	9,529,132.84	3.00	2,112,525.44	2.00	
IOB	7,626,980.20	4.00	1,348,271.07	3.00	
UBI	9,646,098.06	2.00	1,304,545.20	4.00	Interest Income/
HDFC	9,096,546.44	2.00	1,572,639.89	2.00	Employee (Rs.)
ICICI	7,765,890.01	4.00	996,666.75	3.00	
AXIS	8,517,805.91	3.00	800,606.51	4.00	
KMB	4,953,380.18	5.00	683,335.85	5.00	
YES	9,927,770.91	1.00	1,811,999.14	1.00	

Interpretation of Rankings for Mean and Standard Deviation (S.D.)
Public Sector Banks:
Mean Rankings: SBI leads with the top rank (1.00), followed by UBI (2.00), BoB (3.00), IOB (4.00), and PNB (5.00). This indicates SBI has the highest average interest income per employee, while PNB has the lowest among public sector banks.
**S. D. Rankings:** SBI ranks highest in variability (1.00), followed by BoB (2.00), IOB (3.00), UBI (4.00), and PNB (5.00). The S.D. rankings largely align with the mean rankings, except for UBI and IOB, which swap positions, suggesting that banks with higher interest income per employee generally show greater variability, though UBI has less variability relative to its mean rank.

Private Sector Banks:
Mean Rankings: YES holds the top rank (1.00), followed by HDFC (2.00), AXIS (3.00), ICICI (4.00), and KMB (5.00). This shows YES generates the highest average interest income per employee, while KMB has the lowest among private sector banks.
S.D. Rankings: YES leads in variability (1.00), followed by HDFC (2.00), ICICI (3.00), AXIS (4.00), and KMB (5.00). The S.D. rankings align closely with the mean rankings, indicating that banks with higher interest income per employee also tend to have greater variability in this metric across employees.

Clustered Bar Mean of Compounded Annual Growth Rate, Mean of Average Annual Growth Rate by Bank...

Business Performance Indicator: Interest Income/ Employee (Rs.)
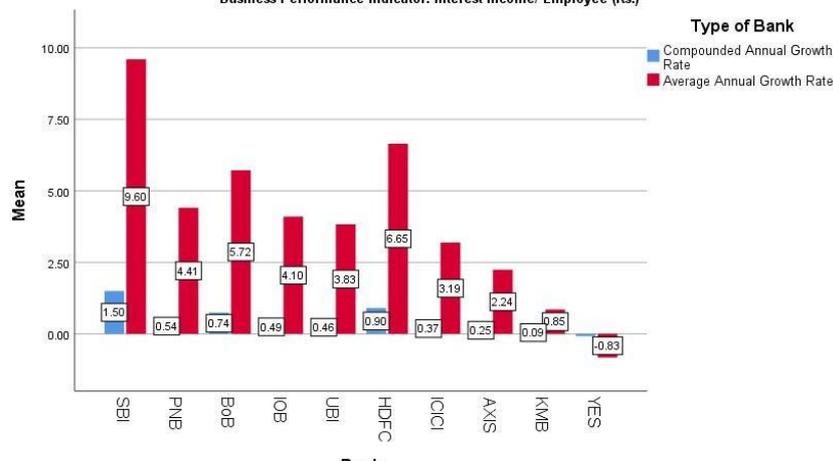
Interpretation

The analysis of Interest Income/Employee, growth among selected banks, as shown in the clustered bar graph, Compound Annual Growth Rates (CAGR) among banks reveals modest growth, with the State Bank of India (SBI) leading at 9.60%, followed by HDFC Bank at 6.65%. However, YES Bank stands out as the only bank with a negative CAGR of -0.83%. A comparison of Average Annual Growth Rate (AAGR) values indicates volatility in growth, with most banks experiencing fluctuations. Notably, SBI's AAGR is significantly lower at 1.50% compared to its CAGR, suggesting year-to-year variability.

Banks performed positively SBI, PNB, BOB, IOB, UBI, HDFC, ICICI, AXIS, and KMB exhibit positive CAGRs. Specifically, SBI, PNB, and HDFC also show positive AAGRs of 1.50%, 0.54%, and 0.50%, respectively. On the other hand, YES Bank's slight decline is reflected in its negative CAGR and AAGR of -0.83% and -0.25%, respectively. Banks like AXIS and KMB have near-zero AAGRs, indicating minimal growth momentum. Overall, the growth patterns among these banks highlight the need for sustained performance and strategic initiatives to achieve long-term stability and growth.

Net Profit/ Employee –

Bank	Mean	Rank	S.D.	Rank	Indicator
SBI	858,133.78	1.00	881,309.04	4.00	Net Profit/ Employee (Rs.)
PNB	(135,357.34)	4.00	768,123.95	5.00	
BoB	485,812.43	2.00	969,461.21	2.00	
IOB	(599,699.21)	5.00	1,434,383.73	1.00	
UBI	205,162.71	3.00	909,910.29	3.00	
HDFC	2,160,792.53	1.00	523,664.86	4.00	
ICICI	1,548,386.78	2.00	764,192.80	2.00	
AXIS	1,083,778.88	4.00	692,814.08	3.00	
KMB	1,155,199.01	3.00	325,526.29	5.00	
YES	77,716.20	5.00	2,626,105.01	1.00	

Interpretation of Rankings for Mean and Standard Deviation (S.D.)

Public Sector Banks:

Mean Rankings: SBI leads with the top rank (1.00), followed by BoB (2.00), UBI (3.00), PNB (4.00), and IOB (5.00). SBI has the highest average net profit per employee, while PNB
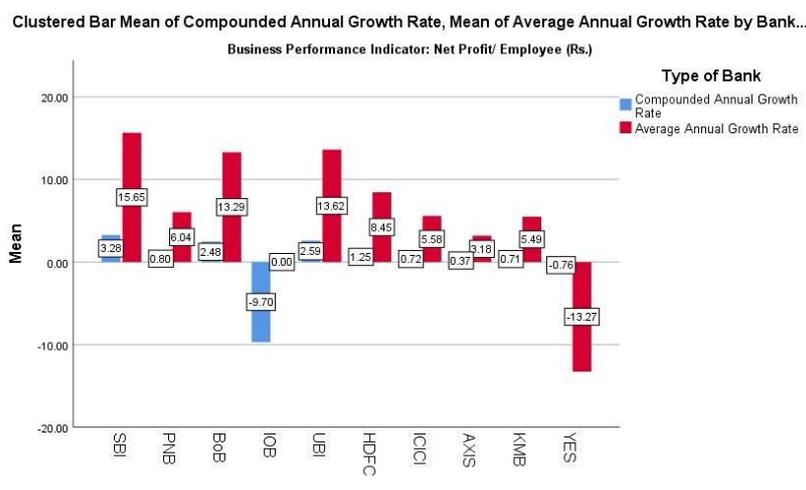
and IOB report negative means, indicating losses, with IOB having the lowest (highest negative) value.

S.D. Rankings: IOB ranks highest in variability (1.00), followed by BoB (2.00), UBI (3.00), SBI (4.00), and PNB (5.00). The S.D. rankings do not align closely with the mean rankings. IOB, despite its negative mean, shows the greatest variability in net profit per employee, while SBI, with the highest mean, has relatively lower variability.

Private Sector Banks:

Mean Rankings: HDFC holds the top rank (1.00), followed by ICICI (2.00), KMB (3.00), AXIS (4.00), and YES (5.00). HDFC has the highest average net profit per employee, while YES has the lowest, though still positive, among private sector banks.

S.D. Rankings: YES leads in variability (1.00), followed by ICICI (2.00), AXIS (3.00), HDFC (4.00), and KMB (5.00). The S.D. rankings differ significantly from the mean rankings. YES, with the lowest mean rank, exhibits the highest variability, indicating significant fluctuations in net profit per employee, while KMB, with a moderate mean rank, shows the least variability.

Clustered Bar Mean of Compounded Annual Growth Rate, Mean of Average Annual Growth Rate by Bank...

The analysis of Net Profit/Employee growth among selected banks, as shown in the clustered bar graph, reveals a diverse performance over the period.

Modest growth: Most banks show low CAGR, with SBI (15.65%), UBI (13.62%), and PNB (13.29%) leading the pack. YES Bank has a negative CAGR (-0.76%).

Volatility: AAGR values differ significantly from CAGR, indicating year-to-year fluctuations. YES Bank's AAGR (-13.27%) is much lower than its CAGR (-0.76%).

Positive performers: SBI, PNB, UBI, HDFC, ICICI, AXIS, and KMB show positive CAGRs. SBI, PNB, UBI, HDFC, ICICI, and AXIS also display positive AAGRs.

Negative performers: YES Bank shows a significant decline (AAGR: -13.27%, CAGR: -0.76%). IOB and BOB have negative AAGRs (-8.70% and -2.48%, respectively).

Business/ Employee –

Bank	Mean	Rank	S.D.	Rank	Indicator
SBI	225,708,918.55	1.00	74,305,973.06	1.00	Business/ Employee (Rs.)
PNB	166,572,483.15	4.00	29,331,929.18	5.00	
BoB		2.00	43,450,282.32	2.00	

	219,609,357.61				
IOB	153,739,630.93	5.00	36,505,163.65	3.00	
UBI	203,879,788.72	3.00	34,093,518.14	4.00	
HDFC	173,056,018.87	1.00	38,498,096.86	1.00	
ICICI	147,043,861.79	4.00	26,615,043.59	3.00	
AXIS	164,080,671.54	2.00	20,172,306.77	4.00	
KMB	88,387,549.99	5.00	12,510,428.44	5.00	
YES	162,787,284.39	3.00	32,535,356.44	2.00	

Interpretation of Mean and Standard Deviation Rankings for Public and Private Sector Banks

Mean Value Rankings
The mean value rankings demonstrate a clear bifurcation between public and private sector banks. State Bank of India (SBI) leads with a top rank of 1 as evidenced by its highest mean value of ₹225,708,918.551. Following SBI, other public sector banks including Punjab National Bank (PNB) and Bank of Baroda (BoB) hold ranks 2 and 3 respectively. This suggests public sector banks maintain higher mean values across the measured financial parameters. In contrast, private sector banks like HDFC, ICICI, and Kotak Mahindra Bank (KMB) are ranked lower, with HDFC Bank placing highest among private banks.

Standard Deviation Rankings
The standard deviation rankings present an inverse pattern. Private sector banks predominantly occupy the top SD rankings, with Kotak Mahindra Bank and YES Bank both achieving rank 5.00 for standard deviation1. HDFC Bank leads with the lowest standard deviation (rank 1.00), indicating the greatest consistency among all banks analyzed1. Public sector banks generally show higher standard deviations, with Punjab National Bank (PNB) and Bank of Baroda (BoB) ranked 4.00 and 3.00 respectively. The notable exception is Indian Overseas Bank (IOB), which achieved a relatively stable rank of 3.

Significance of the Rankings
The rankings reveal an interesting complementary relationship between public and private sector banks in India. Public sector banks demonstrate strength in higher mean values, potentially indicating larger scale operations or greater market presence. This aligns with data showing SBI's position as one of India's largest banks with extensive branch networks. Conversely, private sector banks, particularly HDFC, show superior performance in consistency (lower standard deviations), suggesting more stable operations and potentially more predictable financial performance. This pattern reflects the structural differences between these banking sectors, with public banks focusing on scale and broad service delivery while private banks emphasize operational consistency and stability.

Clustered Bar Mean of Compounded Annual Growth Rate, Mean of Average Annual Growth Rate by Bank...

Business Performance Indicator: Business/ Employee (Rs.)
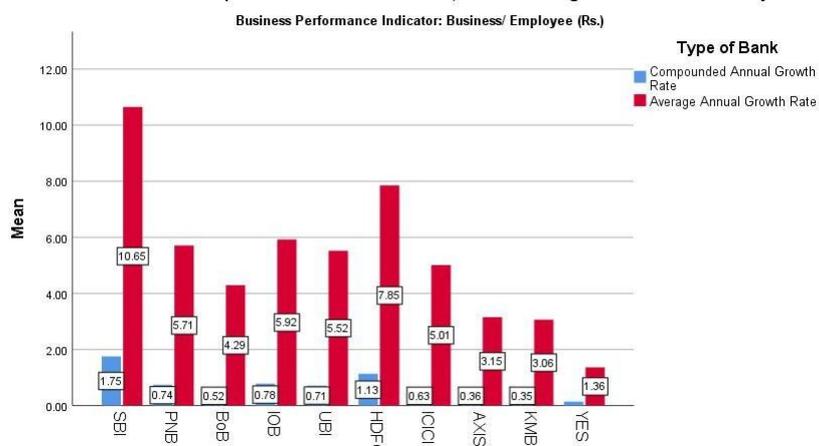
The analysis of Business/Employee (Rs.) growth among selected banks -

Modest compounded growth: Most banks exhibit low Compound Annual Growth Rates (CAGR), with SBI showing the highest at 10.65%, followed by UBI at 7.85%. YES Bank shows the lowest CAGR at 1.36%.

Volatility in growth: Average Annual Growth Rate (AAGR) values are generally lower than CAGR, indicating year-to-year fluctuations. For instance, SBI's AAGR is 1.75%, significantly lower than its CAGR of 10.65%.

Positive performers: SBI, PNB, BOB, IOB, UBI, HDFC, ICICI, AXIS, KMB, and YES Bank all show positive CAGRs, with SBI, PNB, IOB, UBI, HDFC, and YES Bank also displaying positive AAGRs at 1.75%, 0.74%, 0.78%, 1.13%, 0.63%, and 1.36%, respectively. Underperformers: BOB, ICICI, AXIS, and KMB show near-zero or low AAGRs at 0.52%, 0.36%, 0.13%, and 0.06%, respectively, despite positive CAGRs, indicating inconsistent growth.

Interest Income/ Branch –

Bank	Mean	Rank	S.D.	Rank	Indicator
SBI	118,148,605.06	2.00	27,156,697.78	1.00	Interest Income/ Branch (Rs.)
PNB	76,657,177.32	5.00	10,608,839.52	4.00	
BoB	90,394,673.44	3.00	17,677,404.40	2.00	
IOB	59,860,194.19	6.00	8,054,587.68	5.00	
UBI	83,646,818.05	4.00	12,812,031.55	3.00	
HDFC	189,374,263.98	1.00	48,044,860.62	1.00	
ICICI	144,875,969.71	4.00	33,136,825.78	2.00	
AXIS	145,602,205.87	3.00	19,516,650.59	5.00	
KMB	161,842,385.98	2.00	31,201,640.65	4.00	
YES	195,424,175.45	1.00	31,915,871.55	3.00	

Interpretation of Rankings for Mean and Standard Deviation (S.D.) -
Public Sector Banks:
Mean Rankings: SBI ranks highest (2.00), followed by BoB (3.00), UBI (4.00), PNB (5.00), and IOB (6.00). This indicates SBI generates the highest average interest income per branch among public sector banks, while IOB has the lowest.
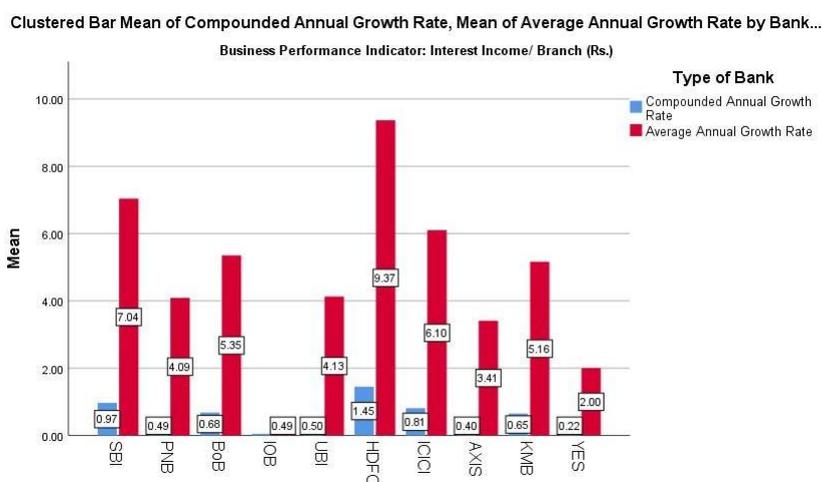**S.D. Rankings:** SBI leads in variability (1.00), followed by BoB (2.00), UBI (3.00), PNB (4.00), and IOB (5.00). The S.D. rankings align closely with the mean rankings, suggesting

that banks with higher interest income per branch also exhibit greater variability in their interest income across branches.

Private Sector Banks:

Mean Rankings: YES and HDFC share the top rank (1.00), followed by KMB (2.00), AXIS (3.00), and ICICI (4.00). This shows YES and HDFC have the highest average interest income per branch, while ICICI has the lowest among private sector banks.

S.D. Rankings: HDFC ranks highest (1.00), followed by ICICI (2.00), YES (3.00), KMB (4.00), and AXIS (5.00). Unlike the public sector, the S.D. rankings do not fully align with the mean rankings. For example, ICICI, with a lower mean rank (4.00), shows relatively high variability (2.00), while AXIS has the least variability (5.00) despite a moderate mean rank.

Clustered Bar Mean of Compounded Annual Growth Rate, Mean of Average Annual Growth Rate by Bank...

Business Performance Indicator: Interest Income/ Branch (Rs.)

The analysis of Interest Income/Branch (Rs.) growth among selected banks

Modest compounded growth: Most banks exhibit low Compound Annual Growth Rates (CAGR), with UBI showing the highest at 9.37%, followed by SBI at 7.04%. YES Bank has the lowest CAGR at 2.00%.

Volatility in growth: Average Annual Growth Rate (AAGR) values are generally lower than CAGR, indicating year-to-year fluctuations. For instance, UBI's AAGR is 1.45%, much lower than its CAGR of 9.37%.

Positive performers: SBI, PNB, BOB, IOB, UBI, HDFC, ICICI, AXIS, KMB, and YES Bank all show positive CAGRs, with UBI, SBI, PNB, and HDFC displaying positive AAGRs at 1.45%, 0.97%, 0.49%, and 0.81%, respectively.

Underperformers: AXIS and YES Bank show the lowest AAGRs at 0.02% and 0.02%, respectively, despite positive CAGRs, indicating inconsistent growth.

Net Profit/ Branches

Bank	Mean	Rank	S.D.	Rank	Indicator
SBI	9,368,561.94	1.00	9,178,810.08	2.00	
PNB	(1,476,497.99)	4.00	7,994,589.93	5.00	
BoB	4,460,510.46	2.00	8,999,469.78	3.00	
IOB	(5,375,409.97)	5.00	10,956,127.11	1.00	Net Profit/
UBI	1,801,109.01	3.00	8,011,839.27	4.00	Branches (Rs.)
HDFC	45,367,393.55	1.00	14,946,078.48	4.00	
ICICI	29,595,309.12	3.00	17,335,508.77	2.00	
AXIS	18,856,547.60	4.00	12,488,297.52	5.00	

| KMB | 39,296,185.29 | 2.00 | 16,368,029.92 | 3.00 | |
| YES | (297,493.48) | 5.00 | 51,866,619.86 | 1.00 | |

Interpretation of Rankings for Mean and Standard Deviation (S.D.) -
Public Sector Banks:
Mean Rankings: SBI leads with the top rank (1.00), followed by BoB (2.00), UBI (3.00), PNB (4.00), and IOB (5.00). SBI has the highest average net profit per branch, while IOB and PNB report negative means, indicating losses, with IOB having the lowest (highest negative) value.
**S.D. Rankings:** IOB ranks highest in variability (1.00), followed by SBI (2.00), BoB (3.00), UBI (4.00), and PNB (5.00). Unlike the mean rankings, IOB shows the greatest variability, suggesting significant fluctuations in net profit across branches, while PNB has the least variability despite its negative mean.
Private Sector Banks:
 Mean Rankings: HDFC holds the top rank (1.00), followed by KMB (2.00), ICICI (3.00), AXIS (4.00), and YES (5.00). HDFC has the highest average net profit per branch, while YES reports a negative mean, indicating losses and the lowest performance among private sector banks.
 S.D. Rankings: YES leads in variability (1.00), followed by ICICI (2.00), KMB (3.00), HDFC (4.00), and AXIS (5.00). The S.D. rankings do not align closely with the mean rankings. Notably, YES, with the lowest mean rank due to losses, shows the highest variability, indicating significant inconsistency in net profit across branches, while AXIS has the least variability.

Clustered Bar Mean of Compounded Annual Growth Rate, Mean of Average Annual Growth Rate by Bank...
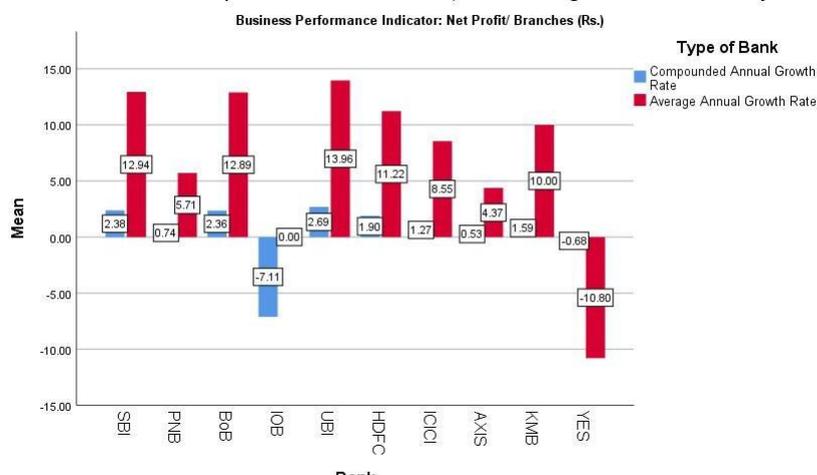
The analysis of Net Profit/Branches (Rs.) clustered bar graph, reveals a varied performance over the period.
Modest compounded growth: Most banks exhibit low Compound Annual Growth Rates (CAGR), with UBI showing the highest at 13.96%, followed by SBI at 12.94%. YES Bank has a negative CAGR at -0.68%.
Volatility in growth: Average Annual Growth Rate (AAGR) values often diverge significantly from CAGR, indicating year-to-year fluctuations. For instance, YES Bank's AAGR is -10.80%, much lower than its CAGR of -0.68%.
Positive performers: SBI, PNB, BOB, UBI, HDFC, ICICI, AXIS, and KMB all show positive CAGRs, with SBI, PNB, UBI, HDFC, ICICI, and AXIS displaying positive AAGRs at 3.28%, 0.74%, 1.90%, 2.69%, 1.27%, and 0.53%, respectively.

Negative performers: YES Bank exhibits a significant decline with an AAGR of -10.80% and a CAGR of -0.68%. IOB and BOB show negative AAGRs at -7.11% and -2.36%, respectively.

Business/ Branches

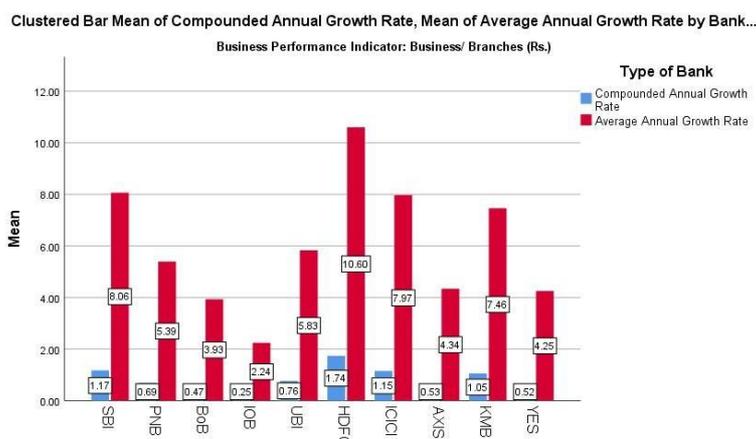| Bank	Mean	Rank	S.D.	Rank	Indicator
SBI	2,545,891,845.50	1.00	658,732,989.77	1.00	Business/ Branches (Rs.)
PNB	1,698,586,123.98	4.00	280,055,106.47	4.00	
BoB	2,085,689,926.81	2.00	370,398,165.16	2.00	
IOB	1,191,145,303.70	5.00	154,663,935.30	5.00	
UBI	1,767,714,478.07	3.00	320,448,031.20	3.00	
HDFC	3,624,230,453.05	1.00	1,104,302,255.00	1.00	
ICICI	2,757,689,270.51	5.00	757,555,690.35	2.00	
AXIS	2,810,429,456.57	4.00	475,174,270.31	5.00	
KMB	2,928,183,136.95	3.00	728,209,449.95	3.00	
YES	3,212,552,391.19	2.00	605,679,530.92	4.00	

Public Sector Banks:

Mean Rankings: SBI leads with the top rank (1.00), followed by BoB (2.00), UBI (3.00), PNB (4.00), and IOB (5.00). This indicates SBI has the highest average business per branch, while IOB has the lowest among public sector banks.

T. **D. Rankings:** The S.D. rankings mirror the mean rankings exactly, with SBI (1.00), BoB (2.00), UBI (3.00), PNB (4.00), and IOB (5.00). This suggests that banks with higher mean business per branch also exhibit greater variability in their business performance across branches.

Private Sector Banks:

Mean Rankings: HDFC holds the top rank (1.00), followed by YES (2.00), KMB (3.00), AXIS (4.00), and ICICI (5.00). This shows HDFC has the highest average business per branch, while ICICI has the lowest among private sector banks.

S.D. Rankings: HDFC again leads (1.00), followed by ICICI (2.00), KMB (3.00), YES (4.00), and AXIS (5.00). Unlike public sector banks, the S.D. rankings differ from the mean rankings, indicating that variability in business performance does not strictly align with average business size. For instance, ICICI, despite having the lowest mean rank, shows relatively high variability (rank 2.00).

Clustered Bar Mean of Compounded Annual Growth Rate, Mean of Average Annual Growth Rate by Bank...

Business Performance Indicator: Business/ Branches (Rs.)

The sources present observations and implications from an analysis of Business/Branches (Rs.). The analysis highlights varied performance over time.

Most banks showed modest Compound Annual Growth Rates (CAGR). UBI had the highest CAGR at 10.60%, followed by SBI at 8.06%, while YES Bank had the lowest CAGR at 0.52%. The Average Annual Growth Rate (AAGR) values were generally lower than CAGR, suggesting year-to-year fluctuations in growth. For instance, UBI's AAGR (1.74%) was significantly lower than its CAGR (10.60%). While many banks showed positive CAGRs, UBI and SBI were among those with positive AAGRs (1.74% and 1.17%, respectively). In contrast, YES Bank and AXIS had the lowest AAGRs (0.52% and 0.53%), indicating inconsistent growth despite positive CAGRs.

Conclusion

The analysis highlights the need for strategic interventions to enhance performance across various banks. For banks requiring improvement, such as YES Bank and AXIS Bank, focusing on better resource allocation, customer acquisition strategies, employee productivity, and cost management can help drive business growth, interest income, and operational efficiency. Meanwhile, banks with positive or strong growth, like UBI and SBI, should continue to leverage strategies such as branch network optimization, digital banking, automation, and employee upskilling to sustain their performance. Stakeholders are advised to use both Average Annual Growth Rate (AAGR) and Compound Annual Growth Rate (CAGR) metrics to evaluate the consistency and sustainability of growth indicators, ensuring a comprehensive assessment of bank performance. By adopting these recommendations, banks can improve their operational efficiency, profitability, and overall competitiveness in the industry.

Recommendations

Banks Requiring Improvement

1. Improve business generation per branch: YES Bank and AXIS should focus on better resource allocation or customer acquisition strategies.
2. Enhance interest income generation: YES Bank and AXIS should improve branch-level interest income generation through better resource allocation or customer acquisition strategies.
3. Boost business generation per employee: AXIS and KMB should enhance business generation per employee through productivity enhancements or market expansion.
4. Improve employee productivity and interest income generation: YES Bank should focus on training or process optimization.

5. Enhance operational efficiency and profitability per employee: YES Bank and IOB should implement cost management or productivity initiatives.

6. Improve branch profitability: YES Bank and IOB should focus on cost management or revenue-enhancing strategies.

Banks with Positive or Strong Growth

1. Leverage strategies to maintain performance: Banks like UBI and SBI should continue using strategies like branch network optimization and digital banking to maintain their performance in business growth per branch.

2. Sustain performance in interest income growth per employee: Banks like SBI and HDFC should continue leveraging automation and employee upskilling.

3. Maintain performance in net profit growth per employee: Banks like SBI and UBI should continue using process optimization and employee training.

Performance Evaluation by Stakeholders

1. Use both AAGR and CAGR: Stakeholders should consider both metrics to evaluate the consistency and sustainability of various growth indicators.

2. Assess consistency and sustainability: AAGR and CAGR should be used to assess the consistency and sustainability of business growth per branch, interest income growth per employee, net profit growth per employee, business growth per employee, interest income growth per branch, and net profit growth per branch.

Reference:

1. Reserve Bank of India (2022) Report on trends and progress in banking. Retrieved from https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=19887
2. Pandit, S. A. (1973) Nationalization of banks in India. International Monetary Fund. https://www.elibrary.imf.org/view/journals/022/0010/001/article-A008-en.xml
3. Reserve Bank of India (2022) Report on trends and progress in banking. Retrieved from https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=19887
4. Narasimham Committee Report (1991) Report of the Committee on the Financial System. Reserve Bank of India. Retrieved from https://rbi.org.in/history/Brief_Chro1991to2000.html?utm_source=chatgpt.com
5. Kumar, S. (2023) Technology Adoption in Indian Banking Sectors – 2023. European Academic Journal of Management Research, 10(2), 45-58.
6. Tamatam, R., Dutta, P., Dutta, G., & Lessmann, S. (2019). Efficiency analysis of the Indian banking industry over the period 2008–2017 using data envelopment analysis. Benchmarking, 26(8), 2417-2442.
7. Gupta, A. K., Maheshwari, M., & Sharma, S. (2018). Performance evaluation using balanced scorecard model in banking industry: A case study of HDFC Bank. Pacific Business Review International, 10(9), 64-78.
8. Gupta, S., Mathew, M., Syal, G., & Jain, J. (2021). A hybrid MCDM approach for evaluating the financial performance of public sector banks in India. International Journal of Business Excellence, 24(4), 481-501.
9. Bueno, L. A., Sigahi, T. F. A. C., Rampasso, I. S., Filho, W. L., & Anholon, R. (2024). Impacts of digitization on operational efficiency in the banking sector: Thematic analysis and research agenda proposal. International Journal of Information Management Data Insights, 4(1), 100230.

10. Gomber, P., Koch, J. A., & Siering, M. (2017). Digital finance and fintech: Current research and future research directions. Journal of Business Economics, 87(5), 537–580.

Annexture

Bank	Mean	S.D.	C.V.	CAGR	AAGR	Indicator
SBI	2,545,891,845.50	658,732,989.77	25.87	1.17	8.06	Business/ Branches (Rs.)
PNB	1,698,586,123.98	280,055,106.47	16.49	0.69	5.39	
BoB	2,085,689,926.81	370,398,165.16	17.76	0.47	3.93	
IOB	1,191,145,303.70	154,663,935.30	12.98	0.25	2.24	
UBI	1,767,714,478.07	320,448,031.20	18.13	0.76	5.83	
HDFC	3,624,230,453.05	1,104,302,255.00	30.47	1.74	10.60	
ICICI	2,757,689,270.51	757,555,690.35	27.47	1.15	7.97	
AXIS	2,810,429,456.57	475,174,270.31	16.91	0.53	4.34	
KMB	2,928,183,136.95	728,209,449.95	24.87	1.05	7.46	
YES	3,212,552,391.19	605,679,530.92	18.85	0.52	4.25	
Bank	Mean	S.D.	C.V.	CAGR	AAGR	Indicator
SBI	225,708,918.55	74,305,973.06	32.92	1.75	10.65	Business/ Employee (Rs.)
PNB	166,572,483.15	29,331,929.18	17.61	0.74	5.71	
BoB	219,609,357.61	43,450,282.32	19.79	0.52	4.29	
IOB	153,739,630.93	36,505,163.65	23.74	0.78	5.92	
UBI	203,879,788.72	34,093,518.14	16.72	0.71	5.52	
HDFC	173,056,018.87	38,498,096.86	22.25	1.13	7.85	
ICICI	147,043,861.79	26,615,043.59	18.10	0.63	5.01	
AXIS	164,080,671.54	20,172,306.77	12.29	0.36	3.15	
KMB	88,387,549.99	12,510,428.44	14.15	0.35	3.06	
YES	162,787,284.39	32,535,356.44	19.99	0.14	1.36	
Bank	Mean	S.D.	C.V.	CAGR	AAGR	Indicator
SBI	118,148,605.06	27,156,697.78	22.99	0.97	7.04	Interest Income/ Branch (Rs.)
PNB	76,657,177.32	10,608,839.52	13.84	0.49	4.09	
BoB	90,394,673.44	17,677,404.40	19.56	0.68	5.35	
IOB	59,860,194.19	8,054,587.68	13.46	0.05	0.49	
UBI	83,646,818.05	12,812,031.55	15.32	0.50	4.13	
HDFC	189,374,263.98	48,044,860.62	25.37	1.45	9.37	
ICICI	144,875,969.71	33,136,825.78	22.87	0.81	6.10	
AXIS	145,602,205.87	19,516,650.59	13.40	0.40	3.41	
KMB	161,842,385.98	31,201,640.65	19.28	0.65	5.16	
YES	195,424,175.45	31,915,871.55	16.33	0.22	2.00	
Bank	Mean	S.D.	C.V.	CAGR	AAGR	Indicator
SBI	10,445,795.36	3,156,337.17	30.22	1.50	9.60	Interest Income/ Employee (Rs.)
PNB	7,516,648.35	1,144,999.73	15.23	0.54	4.41	
BoB	9,529,132.84	2,112,525.44	22.17	0.74	5.72	
IOB	7,626,980.20	1,348,271.07	17.68	0.49	4.10	
UBI	9,646,098.06	1,304,545.20	13.52	0.46	3.83	
HDFC	9,096,546.44	1,572,639.89	17.29	0.90	6.65	
ICICI	7,765,890.01	996,666.75	12.83	0.37	3.19	

Bank	Mean	S.D.	C.V.	CAGR	AAGR	Indicator
AXIS	8,517,805.91	800,606.51	9.40	0.25	2.24	
KMB	4,953,380.18	683,335.85	13.80	0.09	0.85	
YES	9,927,770.91	1,811,999.14	18.25	-0.08	-0.83	
Bank	**Mean**	**S.D.**	**C.V.**	**CAGR**	**AAGR**	**Indicator**
SBI	9,368,561.94	9,178,810.08	97.97	2.38	12.94	
PNB	(1,476,497.99)	7,994,589.93	-541.46	0.74	5.71	
BoB	4,460,510.46	8,999,469.78	201.76	2.36	12.89	
IOB	(5,375,409.97)	10,956,127.11	-203.82	-7.11	0.00	
UBI	1,801,109.01	8,011,839.27	444.83	2.69	13.96	Net Profit/ Branches (Rs.)
HDFC	45,367,393.55	14,946,078.48	32.94	1.90	11.22	
ICICI	29,595,309.12	17,335,508.77	58.58	1.27	8.55	
AXIS	18,856,547.60	12,488,297.52	66.23	0.53	4.37	
KMB	39,296,185.29	16,368,029.92	41.65	1.59	10.00	
YES	(297,493.48)	51,866,619.86	-17434.54	-0.68	-10.80	
Bank	**Mean**	**S.D.**	**C.V.**	**CAGR**	**AAGR**	**Indicator**
SBI	858,133.78	881,309.04	102.70	3.28	15.65	
PNB	(135,357.34)	768,123.95	-567.48	0.80	6.04	
BoB	485,812.43	969,461.21	199.55	2.48	13.29	
IOB	(599,699.21)	1,434,383.73	-239.18	-9.70	0.00	
UBI	205,162.71	909,910.29	443.51	2.59	13.62	Net Profit/ Employee (Rs.)
HDFC	2,160,792.53	523,664.86	24.23	1.25	8.45	
ICICI	1,548,386.78	764,192.80	49.35	0.72	5.58	
AXIS	1,083,778.88	692,814.08	63.93	0.37	3.18	
KMB	1,155,199.01	325,526.29	28.18	0.71	5.49	
YES	77,716.20	2,626,105.01	3379.10	-0.76	-13.27	