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A Comparative Financial Performance of Public and Private Sector Banks Using EAGLES Model

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Abstract:
This study investigates the comparative financial performance of public and private sector banks in India using the EAGLES model, which evaluates Efficiency, Asset quality, Growth, Liquidity, Earnings, and Sustainability. The research focuses on a detailed analysis of selected public sector banks (SBI and CANARA) and private sector banks (HDFC and ICICI) over a five-year period. Employing an exploratory research design, the study uses one-way ANOVA tests to assess significant differences across various financial metrics.
The findings reveal that private sector banks generally outperform public sector banks in terms of profitability, growth, and asset quality. However, public sector banks continue to play a critical role in financial inclusion and economic stability. The results also indicate significant disparities in liquidity management and strategic responsiveness, with private banks demonstrating greater efficiency and sustainability.
This research contributes to the existing body of knowledge by providing comprehensive insights into the financial health of Indian banks, thereby informing policy formulation and banking sector reforms. The study underscores the importance of adopting robust evaluation models like EAGLES to ensure a more accurate and holistic assessment of bank performance.

Keywords: Financial Performance, EAGLES Model, RoA, RoNW, Gross and Net NPAs.

Introduction

The performance of the banking sector signifies a nation's economic growth.A robust banking system is essential for social, financial, and business advancement and underpins economic development. As a cornerstone of the economic system, banks facilitate economic activities by transferring funds from savers to borrowers, aiding businesses and individual progress. Consequently, governments and regulatory bodies must ensure banking sector stability and efficiency in order to foster sustainable economic growth. Banks' financial performance is a crucial indicator of their overall health and stability. Assessing this performance involves analyzing various financial metrics and indicators to gauge profitability, solvency, efficiency, and risk management. This evaluation also affects investor and depositor confidence in India's banking sector, highlighting the importance of measuring and assessing bank financial performance.
The comparative financial performance of public and private sector banks is a crucial area of study for understanding the dynamics of the banking sector. The EAGLES model—Efficiency, Asset quality, Growth, Liquidity, Earnings, and Sustainability—provides a comprehensive framework for evaluating these aspects. Recent research highlights significant differences in operational efficiency, asset quality, and financial sustainability between public and private banks **(Jain & Gupta, 2023; Singh & Rao, 2022).**Public sector banks often grapple with higher non-performing assets (NPAs) and lower profitability than their private counterparts, which benefit from advanced technology and customer-centric approaches **(Kumar & Sharma, 2021).**
The EAGLES model facilitates detailed analysis of these aspects.

- **Earnings**: Analyzes profitability indicators such as Return on Assets (ROA) and Return on Equity (RoE).
- **Asset Quality**: Evaluates the health of a bank's loan portfolio.
- **Growth**: Assess expansion in terms of deposits, advances, and overall size.
- **Liquidity**: Examine the ability of banks to meet short-term obligations.
- **Efficiency** measures the cost-effectiveness of banks utilizing their resources.
- **Strategic responsiveness**: Focuses on long-term viability and adherence to regulatory norms.

Review of Literature

The comparative financial performance of public- and private-sector banks in India has been a focal point of numerous studies employing the Earnings, Asset Quality, Growth, Liquidity, Efficiency, and Sustainability (EAGLES) model. **Jain and Gupta (2023)** performed an extensive analysis using this model, highlighting the significant differences in the financial metrics between these two types of banks. Their study indicated that private banks generally exhibit better asset quality and higher profitability than public sector banks. **Kumar and Sharma (2021)** evaluated the financial performance of Indian banks, emphasizing the role of the EAGLES model in identifying key performance indicators. Their findings point out that while private banks excel in earnings and growth, public banks still play a crucial role in financial inclusion and economic stability. Liquidity management is another critical aspect explored by **Mehta and Aggarwal (2020),** who compare the liquidity positions of public and private banks. Their study revealed that private-sector banks maintain a more robust liquidity position, contributing to their overall financial health. **Patil and Joshi (2021)** examined profitability metrics within the Indian banking sector. Their research found that private banks consistently outperform public banks in terms of profitability due to more efficient management practices and better risk management strategies. Sustainability practices within the banking sector were investigated by **Sharma and Verma (2022).** Their study, showed that private banks are more proactive in adopting sustainability initiatives, thereby enhancing their long-term viability. The asset quality of public sector banks, a vital component of the EAGLES model, was scrutinized by **Singh and Rao (2022)** in the *Indian Journal of Finance and Banking*. Their research concluded that public banks face more significant challenges with non-performing assets (NPAs) compared to their private counterparts. Efficiency and asset quality were also central themes in the work of **Reddy and Reddy (2019)**. Their study highlighted that while private banks demonstrate superior efficiency and asset quality, public banks contribute significantly to financial inclusion. **Kapoor and Dhillon (2020)** explored growth and liquidity aspects of Indian banks, finding that private banks tend to have higher growth rates and better liquidity management. This study, underscored the dynamic nature of private banking institutions.

Furthermore, **Gupta and Kaur (2021)** analyzed earnings and sustainability in Indian banks. Their findings suggested that private banks' superior earnings contribute to their overall financial sustainability. **Agarwal and Singh (2021)** focused on the financial stability of Indian banks using the EAGLES model. Their research in the *Journal of Economic Studies* indicated that private banks exhibit higher stability due to better earnings and asset quality. **Das and Ghosh (2020)** conducted a comparative study on liquidity positions, finding that private banks manage liquidity more efficiently than public banks. This research emphasized the importance of liquidity in banking performance. In addition, **Nair and Nair (2019)** studied growth patterns in public and private sector banks, highlighting that private banks generally experience higher growth rates. Their work, provided insights into the strategic approaches of different banking sectors. Bhattacharya and Sengupta (2020) explored asset quality and profitability in Indian banking. Their study concluded that private banks maintain better asset quality and profitability compared to public banks.

Moreover, Chatterjee and Mukherjee (2021) investigated efficiency and earnings in Indian banks. Their findings suggested that private banks are more efficient and generate higher earnings than public banks. Lastly, Rao and Kumar (2022) examined sustainability practices in Indian banks, highlighting that private banks are more engaged in sustainable banking practices. Their study underscored the growing importance of sustainability in the banking sector.

Statement of the Problem

The banking sector in India comprises a diverse mix of public and private institutions, each with distinct operational frameworks and performance metrics. Despite significant research on individual performance indicators, there remains a gap in comprehensive comparative analyses using robust models like EAGLES. Understanding the differential impacts of these performance indicators on public and private banks' overall health and sustainability is crucial for stakeholders. This study aims to bridge this gap by employing the EAGLES model to provide a holistic comparison of the financial performance of public and private sector banks in India, thereby contributing to the strategic insights necessary for policy formulation and banking reforms.

Objectives

The following objectives were framed under the study,

- To compare the Earnings Capacity of SBI and CANARA Banks and HDFC and ICICI Banks.
- To analyze the Asset Quality of SBI and CANARA Banks and HDFC and ICICI Banks.

- To examine the Growth in Loans and Deposits of SBI and CANARA Banks and HDFC and ICICI Banks.
- To evaluate the Liquidity position of SBI and CANARA Banks and HDFC and ICICI Banks.
- To analyze the Equity of SBI and CANARA Banks and HDFC and ICICI Banks.
- To measure the Strategic Quotient of SBI and CANARA Banks and HDFC and ICICI Banks.

The researcher formulated the following hypothesis and conducted a one-way ANOVA test at a 5% level of significance.

The following hypotheses are formulated under the study,

Earnings - H01: There is no significant difference in earnings performance between public and private sector banks.
Asset Quality - H02: There is no significant difference in asset quality between public and private sector banks.
Growth - H03: There is no significant difference in growth patterns between public and private sector banks.
Liquidity - H04: There is no significant difference in liquidity management between public and private sector banks.
Equity - H05: There is no significant difference in operational efficiency between public and private sector banks.
Strategic Quotient- H06: There is no significant difference in strategic quotient between public and private sector banks.

Methodology:

The researcher adopted the analytical research and measures the financial performance using EAGLES model. The existing literature is collected on the financial performance of banks, especially application of EAGLES Model at International and National level.

Data Base: The study is based on the secondary data and exploratory in nature. The data collected from various databases i.e., DBIE, RBI's reports on Trends and Progress on Banking Sector, Annual Reports and related blogs, newspapers, journals and articles etc., The study period is 2019-2023.

LIST OF SELECT PUBLIC AND PRIVATE SECTOR BANKS UNDER THE STUDY

Among the 12 public sector banks, only two, namely SBI and CANARA Banks were selected based on their market capitalization. Similarly, out of the 21 private sector banks, the top two, namely HDFC and ICICI banks were chosen based on the same criterion. Consequently, the sample size for the study consists of four banks, comprising two banks from the public sector (SBI and CANARA) and two banks from the private sector (HDFC and ICICI). These banks were selected based on market capitalization. The study also considered other parameters such as number of branches, ATMs, profitability and a low net NPA percentage.

Table - 1: Key Parameters for Selection of Public and Private Sector Banks

Sector	Bank Name	Market Capitalization (In Rs. Crs)	No. of Branches	No. of ATMs	Profits (In Rs. Crs)	Net NPA (%)
Public	SBI	4,71,531	24000	65,030	50,232.45	0.67%
	CANARA	53,980	10391	12829	10,603.76	1.73%
Private	HDFC	9,39,821	6342	18,130	44,108.71	0.27%
	ICICI	6,20,953	5,300	15,200	31,896.50	0.48%

Source: Researcher Compilation (www.screener.in)

Results and Discussions:

The following procedure is used to evaluate the financial performance of Public sector (SBI and CANARA Banks) and Private sector (HDFC and ICICI) Banks.

- The first step is to compare each parameter of EAGLES model such as Earning Appraisal, Asset Quality, Growth, Liquidity, Equity and Strategic Quotient under the study.

- The second step is to compute and compare the Mean, Standard Deviation and Coefficient of Variation (C.V) of SBI and CANARA Banks and HDFC and ICICI Banks and final step is to examine the mean differences between these banks using ANOVA One-way classification at 5% level of Significance and results are interpreted thereof.

1. **Earnings:** Earnings reflect a bank's ability to generate income and sustain profitability and are a critical component of the EAGLES model. The following ratios were discussed for each public and private sector bank in the evaluation.
   - Return on Assets
   - Return on Net worth
   - Interest to Overhead

The following hypothesis is formulated and tested with ANOVA One Way at α=5%

H_{01}: There is no significant difference in earnings performance between public and private sector banks.

Furthermore, the researcher sub-divided the above hypothesis into three sub-hypotheses.

$H_{01.1}$: There is no significant mean difference in the RoA between public and private sector banks.

$H_{01.2}$: There is no significant mean difference in the RoNW between public and private sector banks.

$H_{01.3}$: There is no significant mean difference in the ITOHR between public and private sector banks.

- **Return on Assets -** Return on Assets (ROA) is a key financial metric that indicates how efficiently a bank uses its assets to generate profits. This is calculated by dividing net income by total assets. A higher ROA indicates better efficiency and profitability.

Table –2: Comparative Analysis of Return on Assets of Public Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) Banks

Year	Public Sector		Private Sector	
	SBI	**CANARA**	**HDFC Bank**	**ICICI**
2019	0.02	0.05	1.69	0.35
2020	0.37	-0.31	0.37	0.72
2021	0.45	0.22	0.45	1.32
2022	0.64	0.46	0.64	1.65
2023	0.91	0.79	0.91	2.01
Mean	0.478	0.484	0.812	1.210
S. D	0.330	0.320	0.676	0.533
C.V. Ratio	69.00	66.01	55.83	65.64
Rank	4	3	1	2
F-Value	**2.5236**			
p-value	**0.0945**			

The comparative analysis of the Return on Assets (RoA) for public and private sector banks over the years 2019 to 2023 provides insight into their financial performance. For public sector banks, namely SBI and Canara, the mean RoA values are 0.478 and 0.484, respectively, with relatively low standard deviations of 0.330 and 0.320. Conversely, private sector banks, including HDFC and ICICI, exhibit higher mean RoA values of 0.812 and 1.210, and standard deviations of 0.676 and 0.533, respectively. The Coefficient of Variation (C.V.) ratios indicate that the variability in RoA is higher for private sector banks compared to public sector banks, with HDFC having the highest variability. The ranking of the banks based on mean RoA places HDFC at the top, followed by ICICI, while SBI and Canara are ranked lower.

The F-test was used to assess if there is a significant difference in the mean RoA between the two sectors. The computed F-value is 2.5236 with a corresponding p-value of 0.0945. Since the p-value is greater than the conventional significance level of 0.05, we fail to reject the null hypothesis.

- **Return on Net worth:** The Return on Net Worth (RoNW) is a critical financial metric that measures a bank's profitability relative to shareholder equity. This comparison focuses on two major public sector banks (State Bank of India (SBI) and CANARA Bank) and two leading private sector banks (HDFC Bank and ICICI Bank).

Table – 3:Comparative Analysis of Return on Net worth of Public Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) Banks

Year	Public Sector		Private Sector	
	SBI	CANARA	HDFC	ICICI
2019	0.4	1.0	14.1	3.1
2020	6.2	-5.7	15.4	6.8
2021	8.0	4.3	15.3	11.0
2022	11.3	8.6	15.4	13.7
2023	15.3	14.4	15.7	15.9
Mean	8.24	4.51	15.18	10.1
S.D	5.588	7.606	0.622	5.179
C.V. Ratio	67.813	168.582	4.098	51.28
Rank	3	4	1	2
F- Value	**3.3874**			
p-value	**0.044**			

The Return on Net Worth (RoNW) analysis reveals a significant difference in performance between public and private sector banks. Private sector banks (HDFC and ICICI) exhibit consistently higher mean RoNW values of 15.18% and 10.1%, respectively, compared to public sector banks (SBI and Canara) with mean values of 8.24% and 4.51%. The coefficient of variation (C.V.) indicates that HDFC has the most stable RoNW with the lowest C.V. ratio (4.098), while Canara Bank shows the highest variability (C.V. ratio of 168.582).The computed F-value of 3.3874 with a p-value of 0.044 indicates that the null hypothesis is rejected at a 5% significance level. This suggests a statistically significant difference in the mean RoNW between public and private sector banks, with private sector banks performing better in terms of RoNW.

- **Interest to Overhead**

The income-to-overhead ratio is a measure of a bank's operational efficiency, indicating how much income is generated relative to operating expenses. A higher ratio indicates better efficiency.

Table –4: **Comparative Analysis of Income to Over Heads Ratio of Public Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) Banks.**

Year	Public Sector		Private Sector	
	SBI	CANARA	HDFC Bank	ICICI
2019	1.24	1.25	1.52	4.31
2020	1.29	0.12	1.55	4.22
2021	1.30	1.31	1.65	4.55
2022	1.27	1.37	1.69	3.92
2023	1.29	1.37	1.58	3.93
Mean	1.278	1.084	1.598	4.186
S.D	0.0239	0.5412	0.0705	0.2671

C.V. Ratio	0.0107	0.242	0.0315	0.1194
Rank	1	4	2	3
F- Value	**113.5039**			
p-value	**0.000**			

The **Income to Overhead Ratio (ITOHR)** analysis reveals key insights into the financial efficiency of public and private sector banks. Private sector banks (HDFC and ICICI) exhibit higher mean ITOHR values (1.598 and 4.186, respectively) compared to public sector banks (SBI and Canara) with mean values of 1.278 and 1.084, respectively. The coefficient of variation (C.V.) indicates that SBI is the most consistent performer with the lowest C.V. ratio (0.0107), followed by HDFC (0.0315). Canara Bank shows the highest variability with a C.V. ratio of 0.242, suggesting greater fluctuations in its income-to-overheads efficiency. The computed F-value is 113.5039 with a p-value of 0.000 indicates that the null hypothesis is rejected at a 5% significance level. This result suggests a statistically significant difference in the mean ITOHR between public and private sector banks. Therefore, private sector banks are more efficient in managing their overheads relative to their income compared to public sector banks.

2. Asset Quality -The EAGLES model is used to compare the asset quality of public and private sector banks in India, revealing significant differences in their performance. Asset quality is a measure of the risk associated with a bank's assets and primarily focuses on its loan portfolio. The primary indicators include Non-performing Assets (Gross and Net NPAs), Provision Coverage Ratio (PCR) and other related metrics. This metric compares the asset quality of public sector banks (PSBs) and private sector banks (PvSBs) in India using these indicators. The following hypothesis was formulated and tested using ANOVA one-way test at the 5% level of significance.

H_{02}: There is no significant difference in asset quality between public and private sector banks.

Furthermore, the researcher sub-divided the above hypothesis into three sub – hypothesis. These are,

$H_{02.1}$: There is no significant mean difference in the Gross NPA between public and private sector banks.

$H_{02.2}$: There is no significant mean difference in the Net NPA between public and private sector banks.

$H_{02.3}$: There is no significant mean difference in the Provision Coverage Ratio between public and private sector banks.

- **Gross NPAs –** It represent the total value of loans issued by a bank or financial institution that have turned non-performing. A loan is classified as non-performing when the borrower defaults or delays the repayment of the principal or interest for 90 days or more. Gross NPAs are a crucial indicator of the asset quality of a bank.

Table – 5: Comparative Analysis of Gross NPAs ofPublic Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) Banks.

Year	**Public Sector**		**Private Sector**	
	SBI	**CANARA**	**HDFC**	**ICICI**
2019	7.9	9.17	1.37	7.79
2020	6.41	8.57	1.27	6.33
2021	5.16	9.43	1.33	5.57
2022	4.1	7.91	1.18	3.88
2023	2.84	5.56	1.13	3.06
Mean	5.282	8.128	1.256	5.326
S.D	1.969	1.551	0.1	1.968
C.V. Ratio	35.58	19.08	7.99	37.27
Rank	3	2	1	4
F- Value	**16.1839**			
p-value	**0.000**			

The comparative analysis of Gross Non-Performing Assets (NPAs) across public and private sector banks for the years 2019 to 2023 reveals distinct differences in their asset quality. Public sector banks, including SBI and Canara, have higher mean Gross NPAs compared to their private sector counterparts, with means of 5.282 and 8.128, respectively. In contrast, private sector banks, HDFC and ICICI, exhibit lower mean Gross NPAs of 1.256 and 5.326. The standard deviations show more variability in NPAs for public sector banks, with SBI and Canara having standard deviations of 1.969 and 1.551, respectively, while private sector banks show lower variability, particularly HDFC with only 0.1. The Coefficient of Variation (C.V.) ratios further illustrate that the variability of NPAs is much higher in public sector banks compared to private sector banks. Based on mean values, HDFC ranks the best in terms of asset quality, followed by ICICI, SBI, and Canara.

The computed F-value is16.1839 with a p-value of 0.000 indicates that the null hypothesis is rejected at a 5% significance level. This result suggests a statistically significant difference in the mean Gross NPAs between public and private sector banks.

- **Net NPAs -** The Net Non-Performing Assets (NPA) ratio is a critical measure of a bank's asset quality, reflecting the proportion of net non-performing loans to total loans. Below is the benchmark for the Net NPA ratio of Indian banks. This study compares two major public sector banks (State Bank of India and CANARA Bank) and two leading private sector banks (HDFC Bank and ICICI Bank).

Table – 6: **Comparative Analysis of Net NPAs of Public Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) Banks.**

Year	Public Sector		Private Sector	
	SBI	**CANARA**	**HDFC**	**ICICI**
2019	3.15	5.37	0.39	2.29
2020	2.23	4.22	0.36	1.54
2021	1.50	3.82	0.40	1.24
2022	1.02	2.65	0.32	0.81
2023	0.67	1.73	0.27	0.51
Mean	1.714	3.558	0.348	1.278
S.D	0.993	1.41	0.054	0.69
C.V. Ratio	57.59	405.27	3.12	19.38
Rank	3	4	1	2
F- Value	**10.532**			
p-value	**0.000**			

The comparative analysis of Net Non-Performing Assets (Net NPAs) for public and private sector banks from 2019 to 2023 reveals significant differences in asset quality. Public sector banks, including SBI and Canara, show a decreasing trend in Net NPAs over the years. SBI has a mean Net NPA of 1.714, while Canara has a higher mean of 3.558. In contrast, private sector banks, HDFC and ICICI, exhibit lower mean Net NPAs of 0.348 and 1.278, respectively. Notably, HDFC has the lowest standard deviation (0.054), indicating very consistent Net NPA levels, whereas public sector banks and ICICI show higher variability, particularly Canara with a standard deviation of 1.41.

The Coefficient of Variation (C.V.) ratios illustrate that the variability in Net NPAs is much higher for Canara compared to other banks, with a significantly high C.V. ratio of 405.27. This suggests substantial fluctuations in Net NPAs for Canara. In terms of ranking based on mean Net NPA, HDFC ranks the highest, indicating the best performance in managing Net NPAs, followed by ICICI, SBI, and Canara.

The computed F-value is 10.532 and a p-value of 0.000, indicate a significant difference in Net NPAs between the two sectors. Therefore, reject H02.2.

- **Provision Coverage Ratio -** In recent years, the banking sector in India has seen varied Provision Coverage Ratio (PCR) trends, influenced by regulatory changes, economic conditions and bank specific issues.

Table – 7: **Comparative Analysis of Provision Coverage Ratio of Public Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) Banks.**

Year	Public Sector		Private Sector	
	SBI	**CANARA**	**HDFC**	**ICICI**
2019	31.59	26.12	166.35	43.95
2020	35.98	31.3	177.8	49.4
2021	40.46	28.95	173.97	49.47
2022	32.31	31.28	167.99	47.79
2023	36.82	37.07	145.94	55.13
Mean	35.432	30.944	166.41	49.148
S.D	3.606	4.032	12.333	4.025
C.V. Ratio	10.18	13.03	7.41	8.19
Rank	3	4	1	2
F- Value	**420.883**			
p-value	**0.000**			

The comparative analysis of the Provision Coverage Ratio (PCR) for public and private sector banks from 2019 to 2023 shows distinct differences in how each sector manages its provisions against non-performing assets. Public sector banks, including SBI and Canara, have shown considerable variation in their PCR over the years. SBI has an average PCR of 35.432, while Canara has a lower average of 31.606. The high standard deviation for SBI (30.944) and Canara (4.032) suggests considerable fluctuation in their coverage ratios, with SBI displaying particularly high variability. In contrast, private sector banks like HDFC and ICICI have much higher average PCRs of 166.35 and 43.95, respectively, and exhibit lower standard deviations, indicating more consistent provision coverage.

The Coefficient of Variation (C.V.) ratios further reflect that the variability is much higher for public sector banks, particularly SBI, which has a C.V. ratio of 166.41, compared to much lower ratios for private sector banks. The ranking based on mean PCR shows that HDFC ranks the highest, reflecting its strong asset coverage, followed by ICICI, SBI, and Canara.

The computed F-value is420.883 with a p-value of 0.000 indicates that the null hypothesis is rejected at a 5% significance level. This result suggests a statistically significant difference in the mean Provision Coverage Ratio between public and private sector banks.

3. Growth - The growth parameter of the EAGLES Model holds considerable importance for assessing a bank's growth and financial health. By contrasting private and public sector banks, it becomes evident that the former tends to exhibit more rapid growth in areas such as loans, deposits, assets and profitability. The following hypothesis is formulated and tested with ANOVA – One way at α=5%.

H_{03}: There is no significant difference in growth patterns between public and private sector banks.

Moreover, the researcher sub- divided the above hypothesis into two sub – hypothesis. These are,

$H_{03.1}$: There is no significant difference in growth patterns between public and private sector banks.

$H_{03.2}$: There is no significant difference in growth patterns between public and private sector banks.

- **Growth in Loans -** It is a critical indicator of a bank's business expansion and financial health. This reflects a bank's ability to extend credit to customers which is essential for revenue generation and market competitiveness.

Table – 8: Comparative Analysis of Growth in Loans ofPublic Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) Banks.

Year	Public Sector		Private Sector	
	SBI	CANARA	HDFC	ICICI
2019	12.97	12.06	24.47	14.49
2020	6.38	1.04	21.27	10.00
2021	5.34	47.87	14.00	13.71
2022	11.61	10.10	20.83	17.08
2023	17.02	18.06	16.93	18.70
Mean	10.664	17.826	19.5	14.796
S.D	4.83	17.87	4.076	3.344
C.V. Ratio	45.29	100.25	20.9	22.6
Rank	3	4	1	2
F- Value	0.8122			
p-value	0.5056			

The analysis of loan growth for public and private sector banks from 2019 to 2023 shows distinct patterns in their lending performance. Public sector banks, represented by SBI and Canara, exhibit varying growth rates in loans over the years. SBI has a mean growth rate of 10.664%, while Canara shows a higher mean growth rate of 17.826%. In comparison, private sector banks, HDFC and ICICI, demonstrate more robust and consistent growth, with HDFC having a mean growth rate of 19.5% and ICICI at 14.796%.

The standard deviations reveal that Canara has the highest variability in loan growth at 17.87%, indicating fluctuating growth rates over the years. Public sector banks also show significant variability, particularly SBI with a standard deviation of 4.83%. Private sector banks, while generally more consistent, show lower variability with HDFC at 4.076% and ICICI at 3.344%. The Coefficient of Variation (C.V.) ratios highlight that Canara's growth is the most variable, followed by public sector banks and then private sector banks, suggesting that private sector banks have more stable growth patterns.

The computed F-value is0.8122with a p-value of 0.5056 indicates that the null hypothesis is accepted at a 5% significance level. This result suggests no statistically significant difference in the mean Growth in loans between public and private sector banks.

- Growth in Deposits - The growth in deposits is a key indicator of the financial health and stability of banks. Deposits form the primary source of funds for banks, enabling them to lend and invest. Understanding the trends in deposit growth helps in assessing customer confidence, economic conditions, and the competitive landscape of the banking sector.

Table -9: Comparative Analyses of Growth in Loans of Public sector (SBI and CANARA) and private sector (HDFC and ICICI) banks

Year	Public Sector		Private Sector	
	SBI	CANARA	HDFC	ICICI
2019	7.58	14.15	17.04	16.39
2020	11.34	4.39	24.30	18.08
2021	13.56	61.65	16.34	20.95
2022	10.06	7.47	16.79	14.16
2023	9.19	8.54	20.79	10.92

Mean	10.346	19.24	19.052	16.1
S.D	2.258	23.969	3.431	3.812
C.V. Ratio	21.82	124.58	18.01	23.68
Rank	2	4	1	3
F- Value	**0.5683**			
p-value	**0.6438**			

The comparative analysis of loan growth for public and private sector banks from 2019 to 2023 shows different growth trajectories and variabilities. Public sector banks, specifically SBI and Canara, exhibit varied growth rates, with SBI having a mean growth rate of 10.346% and Canara showing a higher mean of 19.24%. On the other hand, private sector banks, HDFC and ICICI, present mean growth rates of 19.052% and 16.1%, respectively.

The standard deviations illustrate that Canara has the highest variability in loan growth at 23.969%, indicating substantial fluctuations in growth rates. Public sector banks also show notable variability, with SBI at 2.258% and Canara at 23.969%. Private sector banks exhibit lower variability, with HDFC at 3.431% and ICICI at 3.812%. The Coefficient of Variation (C.V.) ratios further underscore that Canara's growth is the most variable, reflecting greater inconsistency, while HDFC's growth is relatively stable.

The computed F-value is0.5683 with a p-value of 0.6438 indicates that the null hypothesis is accepted at a 5% significance level. This result suggests no statistically significant difference in the mean Growth in Loans between public and private sector banks.

4. Liquidity -it refers to a bank's ability to meet short-term obligations and financial commitments without incurring significant loss. It is a measure of a bank's capacity to quickly and efficiently convert assets into cash to handle immediate financial needs, ensuring operational stability and customer confidence. Liquidity is vital for banks because it directly impacts their ability to operate smoothly, manage unforeseen financial demands and comply with regulatory requirements. Banks with high liquidity can readily manage withdrawals, lend funds and invest in opportunities without facing financial distress. Conversely, in extreme cases low liquidity can lead to operational challenges, increased borrowing costs and solvency issues. Liquidity is measured using loan-to-deposit and investment-to-deposit ratios.

In this context, the researcher formulated the following hypothesis and a one-way ANOVA test was used at the 5% level of significance.

H_{04}: There is no significant difference in the Liquidity between Public Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) banks.

The above hypothesis is further divided into two sub-hypotheses and tested by Anova – One way at α=5%.

$H_{04.1}$: There is no significant difference in the loan-to-deposit ratio between public sector (SBI and CANARA) and Private Sector (HDFC and ICICI) banks.

$H_{04.2}$: There is no significant difference in the investment-to-deposit ratio between public sector (SBI and CANARA) and Private Sector (HDFC and ICICI) banks.

- **LOANS TO DEPOSITS RATIO -** The loan-to-deposit ratio is a crucial indicator of a bank's financial health and provides insights into its liquidity and profitability management. By comparing the LDRs of public and private sector banks, stakeholders can gauge how effectively these institutions balance the need for liquidity against their drive to generate income through lending.

Table - 10: Comparative Analyses of Loans to Deposit Ratio of Public Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) banks

Year	**Public Sector**		**Private Sector**	
	SBI	**CANARA**	**HDFC**	**ICICI**
2019	75.08	71.4	88.76	89.85

2020	71.73	69.11	86.60	83.70
2021	66.54	63.22	84.85	78.68
2022	67.48	64.76	87.79	80.69
2023	75.08	71.4	88.76	89.85
Mean	70.63	67.79	86.6	83.85
S.D	3.55	3.6	1.72	4.44
C.V. Ratio	5.026	5.311	1.986	5.295
Rank	2	4	1	3
F- Value	**36.498**			
p-value	**0.000**			

The comparative analysis of the Loans-to-Deposit Ratio (LDR) for public and private sector banks from 2019 to 2023 reveals notable differences in their lending practices relative to their deposit base. Public sector banks, represented by SBI and Canara, have mean LDRs of 70.63% and 67.79%, respectively. In contrast, private sector banks, HDFC and ICICI, show higher mean LDRs of 86.6% and 83.85%, indicating that they lend out a larger proportion of their deposits compared to public sector banks.

The standard deviations demonstrate that private sector banks have lower variability in their LDRs, with HDFC at 1.72% and ICICI at 4.44%, suggesting more consistent lending practices. Public sector banks exhibit higher variability, with SBI having a standard deviation of 3.55% and Canara at 3.6%. The Coefficient of Variation (C.V.) ratios reflect that private sector banks have more stable LDRs, with HDFC having the lowest C.V. ratio, indicating less fluctuation in their lending relative to their deposit base.

The computed F-value is36.498 with a p-value of 0.000 indicates that the null hypothesis is rejected at a 5% significance level. This result suggests a statistically significant difference in the mean Loans to Deposits Ratio between public and private sector banks. Hence, reject $H_{04.1}$.

- **Investment to Deposits -** The investment-to-deposit ratio (IDR) is an important indicator of a bank's strategy in allocating deposits into investments rather than loans. This ratio provides insights into banks' risk-management and profitability strategies. In this scenario, the researcher compared the investment to deposits ratio between public sector (SBI and CANARA) and private sector (HDFC and ICICI) banks.

Table - 11: Comparative Analyses of Investment to Deposit Ratio of Public Sector (SBI and CANARA) and Private Sector (HDFC and ICICI) banks.

Year	**Public Sector**		**Private Sector**	
	SBI	**CANARA**	**HDFC**	**ICICI**
2019	33.22	25.54	88.76	89.85
2020	32.30	28.18	86.60	83.70
2021	36.72	25.89	84.85	78.68
2022	36.57	25.96	87.79	80.69
2023	35.50	27.06	84.98	86.35
Mean	34.86	26.53	31.11	30.83
S.D	2.00	1.09	2.78	1.29
C.V. Ratio	5.74	4.11	8.94	4.18
Rank	3	1	4	2
F- Value	**15.9399**			
p-value	**0.000**			

The analysis of the Investment-to-Deposit Ratio (IDR) for public and private sector banks from 2019 to 2023 highlights distinct patterns in how these banks allocate their deposits into investments. Public sector banks, represented by SBI and Canara, have mean IDRs of 34.86% and 26.53%, respectively. In contrast, private sector banks, HDFC and ICICI, have lower mean IDRs of 31.11% and 30.83%, indicating that public sector banks, particularly SBI, tend to allocate a slightly higher proportion of their deposits to investments compared to their private sector counterparts.

The standard deviations reveal that private sector banks, especially HDFC (2.78%), exhibit higher variability in their IDR compared to public sector banks, where SBI shows a standard deviation of 2.00% and Canara has the lowest at 1.09%. The Coefficient of Variation (C.V.) ratios indicate that Canara has the most stable IDR with a C.V. ratio of 4.11%, followed closely by ICICI at 4.18%, suggesting consistent investment patterns relative to their deposit base.

The computed F-value is15.9399 with a p-value of 0.000 indicates that the null hypothesis is rejected at a 5% significance level. This result suggests a statistically significant difference in the mean Investment to Deposits between public and private sector banks. Therefore, reject $H_{04.2}$.

5. Equity - The equity parameter in the EAGLES model is fundamental for evaluating bank financial health and stability. It encompasses various metrics that reflect a bank's capital strength, its ability to absorb losses and compliance with regulatory standards. By maintaining robust equity levels, banks can ensure long-term stability, mitigate risks and in still confidence among stakeholders, thereby contributing to the financial system's overall health. Equity represents the ownership interests of shareholders in a bank. It consists of the common stock, retained earnings and other reserves. The researcher formulated the following hypothesis and ANOVA – One way test is applied at α=5%.

H_{05}: There is no significant difference in operational efficiency between public and private sector banks.

- **Capital Adequacy:** Equity is a key indicator of a bank's ability to absorb losses and support operations during periods of financial stress. A higher equity base provides a buffer against potential losses, thus ensuring that banks remain solvent.

$H_{05.1}$: There is no significant difference in the capital adequacy ratio between public sector (SBI and CANARA) and private sector banks (HDFC and ICICI).

Table - 5.11: Comparative Analyses of Capital Adequacy Ratio of Public sector banks (SBI and CANARA) and Private sector banks (HDFC and ICICI)

Year	Public Sector		Private Sector	
	SBI	**CANARA**	**HDFC**	**ICICI**
2019	12.72	11.90	17.11	16.89
2020	13.13	13.65	18.52	16.11
2021	13.74	13.18	18.79	19.12
2022	13.85	14.90	18.90	19.16
2023	14.68	16.68	19.26	18.34
Mean	13.624	14.062	18.516	17.924
S.D	0.748	1.815	0.83	1.368
C.V. Ratio	5.49	12.91	4.48	7.63
Rank	2	4	1	3
F- Value	**20.1892**			
p-value	**0.000**			

The comparative analysis of the Capital Adequacy Ratio (CAR) for public and private sector banks from 2019 to 2023 reveals significant differences in how these banks manage their capital to cushion against risks. Public sector banks, represented by SBI and Canara, have mean CARs of 13.624% and 14.062%, respectively. In contrast, private sector banks, HDFC and ICICI, demonstrate higher mean CARs of 18.516% and 17.924%, indicating that private sector banks maintain a stronger capital buffer relative to their risk-weighted assets.

The standard deviations indicate that Canara Bank exhibits more variability in its CAR, with a standard deviation of 1.815%, compared to SBI's 0.748%. Private sector banks show more consistency, with HDFC's standard deviation at 0.83% and ICICI at 1.368%. The Coefficient of Variation (C.V.) ratios further highlight this stability, with HDFC having the lowest C.V. ratio of 4.48%, followed by SBI at 5.49%, ICICI at 7.63%, and Canara at 12.91%. These ratios suggest that HDFC has the most stable CAR over the years, while Canara's CAR shows the highest fluctuation. The Ranking were based on mean CAR places HDFC at the top, reflecting its strong capital position, followed by ICICI, SBI, and Canara.

The computed F-value is20.1892 with a p-value of 0.000 indicates that the null hypothesis is rejected at a 5% significance level. This result suggests a statistically significant difference in the mean Capital Adequacy Ratio between public and private sector banks. Hence, reject $H_{04.1}$.

6. Strategic Response Quotient - The "Strategy" parameter in the EAGLES model is vital for assessing how well banks are positioned for future success. The strategic Response Quotient (SRQ) measures a bank's ability to manage lending, deposits, fee income and operating costs. It determines the appropriate balance of core banking activities, with a higher SRQ indicating better risk control. Public sector banks, with their emphasis on inclusivity and stability, contrast with private sector banks' focus on innovation and market competitiveness. Evaluating strategic initiatives helps stakeholders to understand a bank's long-term vision, adaptability and potential for sustainable growth.

A robust and coherent strategy is essential to navigate the complexities of the banking sector and achieve superior financial performance. The researcher formulated the following hypothesis and applied one way ANOVA at the 5% level of significance.

H_{06}: There is no significant difference in the Strategy Response Quotient between public sector (SBI and CANARA) and private sector (HDFC and ICICI) banks.

Moreover, the researcher formulated the following sub-hypothesis to measure the significant difference in the means of strategic response quotient.

$H_{06.1}$: There is no significant difference in the Interest Income to Interest Cost between Public sector (SBI and CANARA) and Private sector banks.

$H_{06.2}$: There is no significant difference in the Non-interest Income to Non-interest Cost between public sector (SBI and CANARA) and private sector banks (HDFC and ICICI).

- **Interest Income to Interest Cost**

  The interest income-to-interest cost ratio is a critical metric for evaluating a bank's profitability, operational efficiency and risk management abilities. This ratio compares the income generated from interest earning assets with the interest paid on liabilities, providing useful information about a bank's core income generating capacity relative to its interest expenses.

Table – 12: Comparative Analyses of Interest Income to Interest Cost of Public sector (SBI and CANARA) and Private sector banks.

Year	Public Sector		Private Sector	
	SBI	**CANARA**	**HDFC**	**ICICI**
2019	1.57	1.45	1.95	1.74
2020	1.62	1.37	1.96	1.8
2021	1.72	1.53	2.16	1.97
2022	1.78	1.61	2.29	2.22
2023	1.77	1.59	2.16	2.32
Mean	1.692	1.51	2.104	2.01
S.D	0.093	0.1	0.146	0.254
C.V. Ratio	5.5	6.62	6.94	12.65
Rank	1	2	3	4
F- Value	**14.5759**			

p-value	**0.000**

The comparative analysis of the Interest Income to Interest Cost ratio for public and private sector banks from 2019 to 2023 reveals distinct differences in their efficiency in generating interest income relative to their interest expenses. Public sector banks, represented by SBI and Canara, have mean ratios of 1.692 and 1.51, respectively. In contrast, private sector banks, HDFC and ICICI, demonstrate higher mean ratios of 2.104 and 2.01, respectively. This indicates that private sector banks are more efficient in converting interest costs into interest income compared to their public sector counterparts.

The standard deviations reveal that ICICI has the highest variability in its Interest Income to Interest Cost ratio, with a standard deviation of 0.254, indicating more fluctuation in efficiency over the years. HDFC also shows some variability with a standard deviation of 0.146. Public sector banks exhibit lower variability, with SBI at 0.093 and Canara at 0.1, suggesting more consistent performance in their interest income relative to interest costs.

The computed F-value is14.5759 with a p-value of 0.000 indicates that the null hypothesis is rejected at a 5% significance level. This result suggests a statistically significant difference in the mean Interest Income to Interest Cost between public and private sector banks. Therefore, reject $H_{06.1}$.

- **Non-interest Income to Non-interest Cost -** The ratio of Non-interest Income to Non-interest Cost is an important metric for evaluating banks' operational efficiency in generating income from non-interest-related activities, such as fees, commissions, and trading income, relative to their non-interest-related expenses.

Table -13: Comparative Analyses of Non-interest Income to Non-interest Cost ratios for public sector banks (SBI and CANARA) and private sector banks (HDFC and ICICI).

Year	**Public Sector**		**Private Sector**	
	SBI	**CANARA**	**HDFC**	**ICICI**
2019	0.16	0.63	0.67	0.92
2020	0.14	0.67	0.76	0.91
2021	0.22	0.79	0.77	0.88
2022	0.35	0.83	0.79	0.86
2023	0.31	0.83	0.66	0.74
Mean	0.24	0.75	0.73	0.86
S.D	0.09	0.09	0.06	0.07
C.V. Ratio	37.5	12	8.22	8.14
Rank	4	3	2	1
F- Value	**59.4173**			
p-value	**0.000**			

The analysis of the Non-Interest Income to Non-Interest Cost ratios for public sector banks (SBI and Canara) and private sector banks (HDFC and ICICI) from 2019 to 2023 reveals significant differences in how these banks generate income from non-interest activities relative to their non-interest expenses. Public sector banks, represented by SBI and Canara, have mean ratios of 0.24 and 0.75, respectively. In contrast, private sector banks, HDFC and ICICI, demonstrate higher mean ratios of 0.73 and 0.86, respectively. This indicates that private sector banks are more efficient in generating non-interest income compared to their public sector counterparts.

The standard deviations reveal that SBI has the highest variability in its Non-Interest Income to Non-Interest Cost ratio, with a standard deviation of 0.09, indicating more fluctuation in its performance over the years. Canara, HDFC, and ICICI show relatively lower variability with standard deviations of 0.09, 0.06, and 0.07, respectively, indicating more consistent efficiency in their non-interest operations.

The Coefficient of Variation (C.V.) ratios highlight that ICICI and HDFC are the most stable in generating non-interest income relative to costs, with C.V. ratios of 8.14% and 8.22%, respectively. Canara follows with a C.V. ratio of 12%, while SBI exhibits the highest variability with a C.V. ratio of 37.5%. These rankings suggest that private sector banks,

particularly ICICI and HDFC, are not only more efficient but also more consistent in their non-interest income generation**.** The ranking based on mean Non-Interest Income to Non-Interest Cost ratio places ICICI at the top, followed by HDFC, Canara, and SBI.

The computed F-value is**59.4173** with a p-value of 0.000 indicates that the null hypothesis is rejected at a 5% significance level. This result suggests a statistically significant difference in the mean Non - Interest Income to Non - Interest Cost between public and private sector banks. Therefore, reject $H_{06.2}$.

Moreover, the researcher compiled the hypotheses testing using ANOVA one way and presented in tabular form.

Summary of Hypothesis testing and results

Table – 14: ANOVA test results

Null Hypothesis	Sub - Hypothesis	F-Value	p	Results
H01: Earnings	$H_{01.1:}$ Return on Assets	**2.5236**	**0.0945**	**Accepted**
	$H_{01.2}$: Return on Net worth	3.3874	0.044	Rejected
	$H_{01.3:}$ Interest to Overhead Ratio	113.5039	0.000	Rejected
H02: Asset Quality	$H_{02.1:}$ Gross NPA	16.1839	0.000	Rejected
	$H_{02.2:}$ Net NPA	10.532	0.000	Rejected
	$H_{02.3:}$ Provision Coverage Ratio	420.883	0.000	Rejected
H03: Growth	$H_{03.1:}$ Growth in Loans	**0.8122**	**0.5056**	**Accepted**
	$H_{03.2:}$ Growth in Deposit	**0.5683**	**0.6438**	**Accepted**
H04: Liquidity	$H_{04.1:}$ Loans to Deposit	36.498	0.000	Rejected
	$H_{04.2:}$ Investment to Deposit	15.9399	0.000	Rejected
H05: Equity	$H_{05.1:}$ Capital Adequacy Ratio	20.1892	0.000	Rejected
H06: Strategic Performance	$H_{06.1:}$ Interest Income to Interest Cost	14.5759	0.000	Rejected
	$H_{06.2:}$ Non-Interest Income to Non-Interest Cost	59.4173	0.000	Rejected

Conclusions: This paper highlights the key financial metrics of public and private sector banks using EAGLES model. The study provides a deep insight into their earnings, asset quality, growth, liquidity, equity and strategic performance. The study concludes that, both public and private sector banks return on assets, growth in deposits and growth in loans are not significantly differ. On the other metrics, such as return on networth, interest on overhead, gross and net naps, provisional coverage, loans to deposits, investments to deposits, interest income to interest cost and non-interest income to non-interest cost are significantly different among public and private sector banks. In particular, private sector banks are outperformed compared to public sector banks. Bank wise, HDFC Bank is outperformed and achieved top rank in Earnings (Return on assets, Return on Net Worth), Asset Quality (Gross & Net NPAs and Provision coverage), Growth (both loans and deposits), and Equity (Capital Adequacy). It establishes the benchmark in the banking industry to be followed by the remaining banks.

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